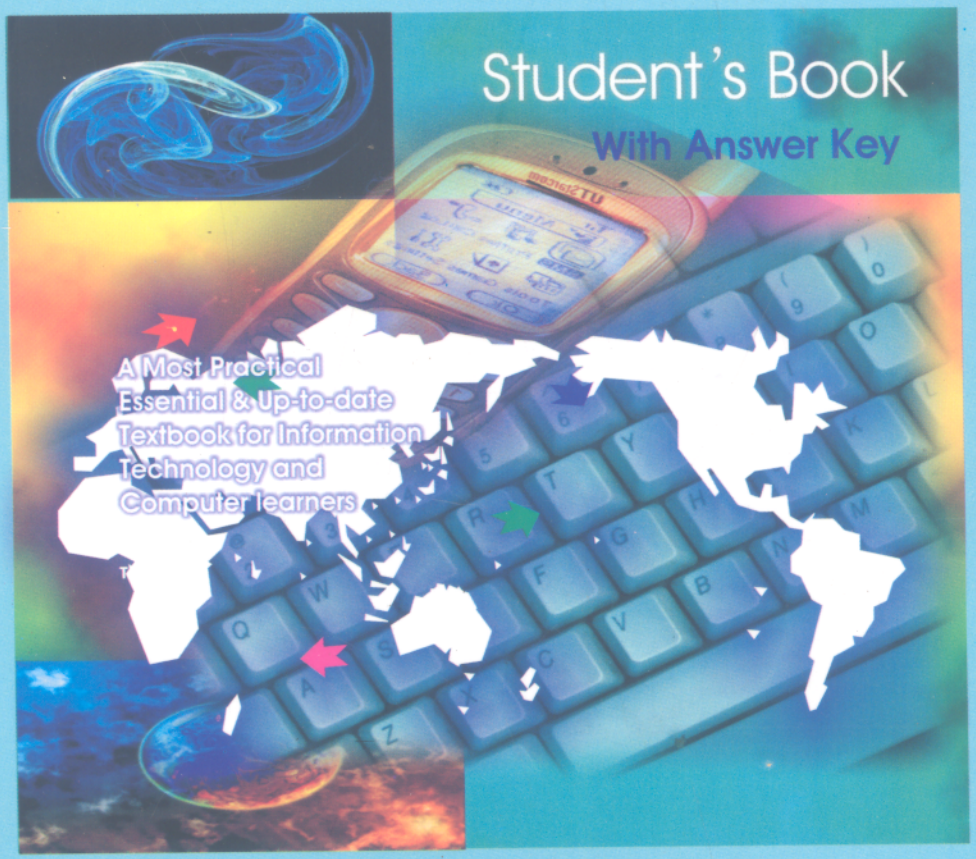
THẠC BÌNH CƯỜNG (CHỦ BIÊN)
HỒ XUÂN NGỌC

TIẾNG ANH
chuyên ngành
CÔNG NGHỆ THÔNG TIN

ENGLISH FOR IT & COMPUTER USERS



NHÀ XUẤT BẢN KHOA HỌC VÀ KỸ THUẬT

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THẠC BÌNH CƯỜNG (Chủ biên)
HỒ XUÂN NGỌC

Tiếng Anh chuyên ngành Công nghệ Thông tin

English for IT & Computer Users

Student's Book

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With Answer Key

A Most Practical Essential & Up-to-date Textbook for Information Technology and Computer Learners

NHÀ XUẤT BẢN KHOA HỌC VÀ KỸ THUẬT
HÀ NỘI

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Introduction

This book has been produced in response to the urgent need of a growing number of students and teachers of Information technology and people working with computers to acquire a reading knowledge of IT to study and teach the subject in English to meet the requirements of regional and international integration in the fleld of IT. The aim of this book is to develop a basic knowledge of how English is used for communication in Information Technology. It is suitable for use in universities, colleges and technical schools with intermediate students who already know how to handle the common English sentence pattems but who want to improve and extend their language skills in the context of IT.

Little or no previous knowledge of Information Technology is assumed, but if students work through the book carefully they will certainly learn a great deal about it since the material does embrace all the basic concepts of Information Technology.

There are 7 lessons covering a wide range of current IT topics using a variety of texts and visual material taken from textbooks, newspapers, popular computing magazines, Intemet newsgroups, Webpages, manuals, and advertisements. The aim is to help students to acquire and develop the skills they will need in order to learn the subject of Information Technology. Emphasis is placed on developing reading skills; important lexical items are isolated for special attention and significant points of grammar are thoroughly treated and revised. The book also includes a comprehensive glossary of current IT terminology with Vietnamese translation, the answer key as well as many teaching notes.

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It is user-friendly to both teachers and students and its clear layout, using both photos and graphics, will make it a very popular choice for those wishing to acquire what are now regarded by many to be mandatory skills for employees in almost every palt ofthe workforce.

Having many years of experience of teaching Information technology in English and teaching English for Computing, the authors have devoted much time and effort to compile this book of English for Information Technology appropriate to the Vietnamese environment. Nevertheless, the book cannot escape from shortcomings that the authors would like to insist the tolerance from the users of the book and to thank them for their comments and remarks that will be valuable for the next publication.

Finally, in helping this book come to fruition, the authors would like to thank Miss Vu Thi Huong Tra, our fourth year stuaent of the English Department of Hanoi University of Technology for the marvelous job she has made of desktop publishing a long and complex manuscript and for her enthusiasm and stoicism in the face of repeated massive revision. In a practical sense, she has been a co-author.

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Lời giới thiệu

Việc đọc các tài liệu và hướng dẫn bằng tiếng Anh trong lĩnh vực công nghệ thông tin (CNTT) là một nhu cầu cấp thiết, tiến tới việc hội nhập CNTT trong khu vực và trên thế giới, đó là giảng và học các chuyên đề bằng tiếng Anh. Trước tình hình đó, Nhà xuất bản Khoa học và Kỹ thuật cho biên soạn cuốn sách này nhằm giúp học sinh, sinh viên phát triển những kiến thức cơ bản để giao tiếp bằng tiếng Anh trong ngành công nghệ thông tin. Sách có thể dùng trong các trường đại học, cao đẳng, và dạy nghề cho học sinh, sinh viên đã biết làm chủ những mẫu câu tiếng Anh thông dụng nhưng muốn mở rộng và nâng cao các kỹ năng ngôn ngữ trong môi trường công nghệ thông tin.

Sách cập nhật và bao gồm tất cả những khái niệm cơ bản trong ngành công nghệ thông tin nhằm giúp học sinh, sinh viên mới làm quen với chuyên ngành này tiếp thu những kiến thức hữu ích về môn học.

Với 7 bài bao gồm nhiều chủ đề về công nghệ thông tin, sử dụng các bài đọc và hình minh họa được trích từ sách, báo, các tạp chí chuyên ngành máy tính, Intemet, trang Web, sách hướng dẫn và các mẩu tin quảng cáo nhằm giúp học viên thu nhận và phát triển những kỹ năng cần thiết để học các chuyên ngành Công nghệ Thông tin sau này. Giáo trình đặc biệt chú trọng vào việc phát triển kỹ năng đọc; những thuật ngữ và từ vựng quan trọng được tách ra thành một mục riêng để thu hút và phát triển vốn từ của học viên; trong mỗi bài có phần bài tập ngữ pháp giúp học viên ôn lại những điểm ngữ pháp cơ bản. Phần cuối giáo trình là bảng tra cứu các thuật ngữ chuyên ngành đã được dịch sang tiếng Việt, đáp án và một số gợi ý giảng dạy cần thiết cho giáo viên.

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Giáo trình dễ sử dụng cho cả giáo viên và học sinh nhờ cách trình bày rõ ràng, sử dụng nhiều hình ảnh và đồ họa. Đây là giáo trình hữu ích cho những người muốn có được những kỹ năng vốn được coi là bắt buộc để có thể làm việc trong bất cứ lĩnh vực nào của ngành CNTT.

Với nhiều năm kinh nghiệm giảng dạy CNTT bằng tiếng Anh và tiếng Anh chuyên ngành CNTT, nhóm tác giả đã bỏ ra nhiều công sức, nỗ lực để biên soạn giáo trình phù hợp với môi trường giảng dạy ở Việt Nam. Tuy nhiên, những sai sót trong lúc biên soạn và trình bày là không thể tránh khỏi. Rất mong nhận được sự đóng góp của các đồng nghiệp và người học để cuốn sách ngày càng hoàn thiện hơn, phục vụ cho đông đảo bạn đọc.

Cuối cùng, để cuốn sách này ra đời, nhóm tác giả xin cảm ơn Chị Vũ Thị Hương Trà, sinh viên năm cuối Khoa Tiếng Anh Khoa học Kỹ thuật và Công nghệ Trường Đại học Bách khoa Hà Nội đã nhiệt tình và có trách nhiệm trong việc chế bản rất hiệu quả cho cuốn sách này. Với một ý nghĩa thực tế, chị cũng là người đồng biên soạn cuốn sách này.

Nhóm biên soạn:
ThS. Thạc Bình Cường - Khoa Công nghệ Thông tin
ThS. Hồ Xuân Ngọc - Khoa Ngoại ngữ
Trường Đại học Bách khoa Hà Nội

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Map of the book

	Topic	Reading	Speaking
Lesson 1 Computers today	**1** *Computer applications*	*What can computers do?*	*How are/ were computer used in your school?*
	2 *Configuration*	*What is a computer?*	
	3 *Inside the system*	*What's inside a microcomputer?* *Main memory: RAM and ROM*	*Your ideal computer system*
	4 *Bits and bytes*	*Units of memory: bits, bytes, KB, MB, GB; binary system* *Bits for pictures*	
	5 *Buying a computer*	*Computers for particular work situations*	*Role play: buying a computer*
Lesson 2 Input/output devices	**6** *Type and click!*	*About the keyboard* *Point and click! (the mouse)*	*Describing and identifying input devices*
	7 *Capture your favorite image*	*What does a scanner do?* *Facts and opinions in advertisements*	
	8 *Viewing the output*	*The monitor*	*Describing your computer screen*
	9 *Choosing a printer*	*Types of printers* *Adverts for printers*	*Describing the printer you would like to use*
	10 *I/O devices for the disabled*	*Computers for the disabled*	*Discussing devices for computer users with vision and mobility limitations*
Lesson 3 Storage devices	**11** *Floppies*	*Types of disks* *Technical details*	*How to protect your disk*
	12 *Hard drives*	*When buying a hard disk ... (drive mechanisms)*	
	13 *Optical breakthrough*	*Optical disks and drives*	*Choosing the most suitable storage devices for specific purposes*

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Writing	Grammar	Vocabulary
Specific computer applications	*The passive*	*Word fields: computers in education, banks, sports, airports, medicine, factories, entertainment*
		Basic terminology: hardware, software, peripherals, input/ output devices, central processing unit
	Contextual reference *Defining relative clauses*	*Acronyms and abbreviations: CPU, ALU, RAM, ROM, bit, SIMMs*
Translations		*Word building: Prefixes*
Recommending a computer to a friend		*Word building: Suffixes*
Describing a joystick	*Describing function*	*Work field: input devices* *Symbols and special keys* *Mouse actions: click, drag*
	Making comparisons	
Explaining tables	*Instructions and advice: imperative, should, ought to*	*Monitor: resolution, pixels, display, hertz, VGA, LCD, CRT, phosphor*
The pros and cons of the printer you use	*Discourse cohesion: reference signals and inking devices* *Comparison: revision*	*Types of printers: dot-matrix, ink-jet, thermal and laser printers, photosetters, plotters*
A letter asking for information about I/O equipment for disabled workers	*Compound nouns*	*Braille, speech synthesizers, Morse code, optical head pointer; voice recognition, screen-pointing device*
	Instructions with must/ must not	*Floppies: track, sector, format, magnetic, read/ write heads, directory, DD/ HD* *Suffixes: -ic, -ism, -ize, -izable, -er*
Completing a hard disk advertisement		*Hard disks: access time, data, transfer rate, password, fragmentation, removable cartridge*
Completing a table with relevant information about optical disks	*Discourse cohesion: reference signals and connectors and modifiers*	*Acronyms and abbreviations: laser, ms, CD-ROM, CD-R, DVD-ROM*

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	Topic	Reading	Speaking
Lesson 4 Basic software	**14** *Operating systems*	*Operating systems: MS-DOS, Windows, Mac OS, OS/ 2 Warp. UNIX, Linux, Open VMS, java OS*	*What's the function of the operating system?*
	15 *The graphical user interface*	*GUIs*	
	16 *A walk through word processing*	*Word processing facilities Writing tools: spell checker, thesaurus, grammar checker*	*Comparing word processors*
	17 *Spreadsheets*		*Visual representations versus spreadsheets*
	18 *Databases*	*Basic features of database programs*	
	19 *Faces of the Internet*	*Internet software: email, Web browser newsreader; IRC/ chats, FTP, conferencing, Telnet*	*Internet applications Holidays*
Lesson 5 Creative software	**20** *Graphics and design*	*Computer graphics*	*Describing 2-D and 3-D graphics*
	21 *Desktop publishing*	*What is desktop publishing?*	*Exchanging information about computers for newspapers*
	22 *Multimedia*	*Multimedia magic Multimedia on the Web: recognizing file format*	
Lesson 6 Programming	**23** *Program design*	*Programming languages A short description of BASIC What is PostScript?*	
	24 *Languages*		*Sharing information about computer languages Personal experience with computers Discussing personal qualities and professional skills*
	25 *The PostScript revolution*	*Job advertisements*	
	26 *Jobs in computing*		
Lesson 7 Computers tomorrow	**27** *Electronic communications*	*Channels of communication*	*Planning a cybercafe with a partner*
	28 *Internet issues*	*Security and privacy on the net. Hackers!*	*Discussing computer crime, security, privacy, Internet ratings, etc.*
	29 *LANs and WANs*	*Network configurations Worldwide communications*	*Describing two networks connected via satellite*
	30 *New technologies*	*New products*	*Discussing the advantages and limitations of pen and hand-held computers*

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Writing	Grammar	Vocabulary
Answering a quiz		*System software* *Basic DOS commands* *Abbreviations: OS, MS-DOS, IBM*
A summary *Describing the process of moving text*	*Ways of reducing sentences* *Sequencers ...first, now, next, finally*	*GUIs: windows, icons, pull-down menus, pointer, user-friendly, folder* *WP programs: edit, format, search, replace, indent, WYSIWYG, clipboard, typeface*
Writing a standard letter to clients *Replying to an email message*	*Prepositions of place* *Requirements: need to, have to, must, be + essential/critical* *Be going to + infinitive*	*Spreadsheet: cell, column, row, formula, invoice, expenses* *Databases: field, record, file, sort, update* *Modem, Internet service provider, Web browser, newsgroup, IRC, online chatting, Telnet, FTP, HTML, hypertext, link, URL, intranet*
A letter to a newspaper *Creating a home page with a Web page editor*	*Gerunds (-ing nouns)* *Time clauses* *Conditional clauses*	*Graphics: patterns, primitives, attributes, dithering, zoom, rotation, scaling, rendering* *DTP packages: layout application, imagesetter, service bureau, font software design, import* *Multimedia PC built-in sound, stereo speaker, sound card, animation, full motion video* *File formats: htm, gif, jpg*
Describing C language *Letter applying for a job*	*Infinitive constructions* *Revision of time clauses* *Revision of Past simple questions* *For, since and ago* *Past simple and Present perfect*	*Programming: flowchart, compiler, debug, bugs, machine code* *BASIC, COBOL, LOGO, Pascal, C++, Java applets, HTML* *Jobs.: programmer, DTP operator, computer operator*
Mini project: Designing a cybercafe *Descriptions of network connections* *Making predictions*	*Making predictions* *Past simple (revision)* *Prepositional phrases of reference* *will + infinitive* *The future continuous/ perfect* *may/ might/ could + infinitive*	*Data communication systems: fax, fax-modem, teletext, BBS* *Prefixes: tele-, auto-, inter-, trans-* *Internet security: user name, password, encryption, decryption, cracker, hacker, cookies, digital certificate, filter* *Networks: local area network, node, transceiver, protocol, token, gateway* *New technologies: smart phone, virtual reality, PDA, palmtop, Internet TV video teleconferencing, pen computer*

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Computers today

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Learning objectives

In this lesson, you will learn how to:

- talk and write about computer applications in everyday life
- recognize the basic components of a computer system and understand their functions
- understand the structure of different CPUs (central processing units)
- understand the units of memory (bits, bytes, KB, MB, GB)
- build up new words by using prefixes and suffixes
- buy a computer from a shop
- use synonyms, acronyms, and abbreviations when talking about computers.

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Topic 1: Computer Applications

Vocabulary

computer-aided design (CAD) (n)	phần mềm thiết kế và vẽ bằng máy tính
workstation (n)	máy trạm, trạm làm việc
timing system (n)	hệ thống tính giờ
real time (n)	thời gian thực
drug-detecting test (n)	kiểm tra dopping
transaction (n)	giao dịch
automatic cash dispenser (n)	máy rút tiền tự động
inventory (n)	bảng kiểm kê
interact (v)	tương tác
gadget (n)	vật dụng
computer-aided manufacturing software (n)	phần mềm sản xuất hỗ trợ bằng máy tính

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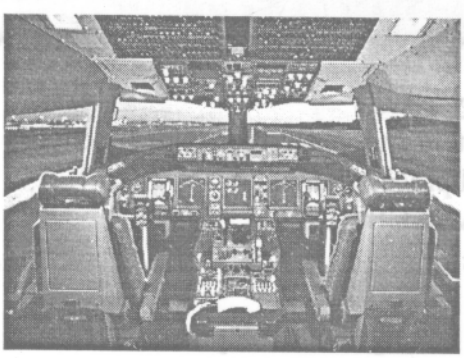
I. Match the pictures

A. Computers have many applications in a great variety of fields. Look at these photographs of different situations and match them with texts 1 to 4 below.

a

b



c

d

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1 Computers can help students perform mathematical operations and solve difficult questions. They can be used to teach courses such as computer-aided design, language learning, programming, mathematics, etc.

PCs (personal computers) are also used for administrative purposes: for example, schools use databases and word processors to keep records of students, teachers, and materials.

2 Race organizers and journalists rely on computers to provide them with the current positions of riders, and teams in both the particular stages of the race, and in the overall competition.

Workstations in the race buses provide the timing system, and give up-to-the-minute timing information to TV stations. In the press room, several PCs give real-time information on the state of the race. Computer databases are also used in the drug-detecting tests for competitors.

3 Computers store information about the amount of money held by each client, and enable staff to access large databases, and to carry out financial transactions at high speed. They also control the automatic cash dispensers which, by the use of a personal coded card, dispense money to clients.

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4 Airline pilots use computers to help them control the plane. For example, monitors display data about fuel consumption, and weather conditions.

In airport control towers, computers are used to manage radar systems, and regulate air traffic.

On the ground, airlines are connected to travel agencies by computer. Travel agents use computers to find out about the availability of flights, prices, times, stopovers, and many other details.

B. Match these captions with the pictures

Using an automatic cash dispenser	☐
In education, computers can make all the difference	☐
Organizing a race demands the use of computer technology	☐
Controlling the plane	☐

C. When you read texts like these, you do not always need to understand every word. However, there are words which you can guess from the context. Look at these words. Are they nouns (n), verbs (v), or adjectives (adj)?

1	workstation …	2	data …	3	perform …	4	automatic …	5	monitor
6	financial …	7	store …	8	connected …	9	word processor	10	large

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Now find the words in texts 1 to 4, and match them with the meanings below.

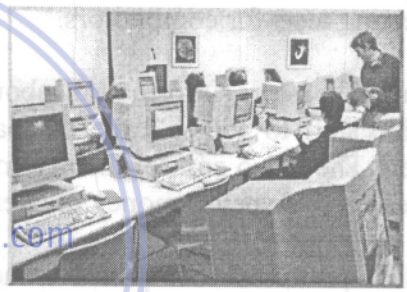
a	information	☐	g	self-acting, mechanical	☐
b	execute (do)	☐	h	screen	☐
c	connected with money	☐	i	powerful computer usually connected to a network	☐
d	keep (safe)	☐			☐
e	massive	☐	j	program used for text manipulation	☐
f	linked	☐			

D. Look at text 1 again and discuss these questions.

1. How are/were computers used in your school?
2. What other areas of study would benefit from the introduction of computers?

Example:

In my school, computers are used to speed up the process of looking for references in the library.



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II. Language work: The passive

Passives are very common in technical writing where we are more interested in facts, processes, and events than in people. We form the passive by using the appropriate tenses of the verb 'to be' followed by the past participle of the verb we are using.

Examples:

Active

1 We sell computers. (simple present)
2 Babbage invented 'The Analytical Engine'. (simple past)

Passive

1 Computers **are sold**. (simple present)
2 'The Analytical Engine' **was invented** in 1830. (simple past)

Facts and processes

When we write or talk about facts or processes that occur regularly, we use the present passive.

Examples:

1 Data **is transferred** from the internal memory to the arithmetic-logical unit along channels known as buses.

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2 The other users **are** automatically **denied** access to that record.
3 Distributed systems **are built** using networked computers.

A. Read the text below, which describes the insurance company's procedure for dealing with PC-users' problems. Fill in the gaps using the correct form of the verb in brackets.

All calls [1]..... (register) by the Help Desk staff. Each call [2]..... (evaluate) and then [3]..... (allocate) to the relevant support group. If a visit [4]..... (require), the user [5]..... (contact) by telephone, and an appointment [6]..... (arrange). Most calls [7]..... (deal with) within one working day. In the event of a major problem requiring the removal of a user's PC, a replacement can usually [8]..... (supply).

B. Fill in the gaps in the following sentences using the appropriate form of the verb in brackets.

1 The part of the processor which controls data transfers between the various input and output devices ..... (call) the control unit.
2 The address bus ..... (use) to send address details between the memory and the address register.
3 The pixel positions ..... (pass on) to the computer's pattern recognition software.
4 An operating system ..... (store) on disk.
5 Instructions written in a high-level language ..... (transform) into machine code.
6 In the star configuration, all processing and control functions ..... (perform) by the central computer.
7 When a document arrives in the mail room, the envelope ..... (open) by a machine.
8 Once the index ..... (store), a temporary key number ..... (generate) and ..... (write) on the document.

Events

When we write or talk about past events, we use the past passive. Let us look at some examples.

Examples:

1 COBOL **was first introduced** in 1959.
2 Microsoft **was founded** on the basis of the development of MS/DOS.
3 The organization **was created** to promote the use of computers in education.

C. Fill in the gaps in the following sentences using the appropriate form of the verb in brackets.

1 Microsoft ..... (found) by Bill Gates.
2 C language ..... (develop) in the 1970s.
3 During that period, enormous advances ..... (make) in computer technology.

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4 The following year, twice as many PCs ..... (sell).
5 In the 1980s, at least 100,000 LANs ..... (set up) in laboratories and offices around the world.
6 The first digital computer ..... (build) by the University of Pennsylvania in 1946.
7 Last year, more software companies ..... (launch) than ever before.
8 IBM's decision not to continue manufacturing mainframes ..... (reverse) the year after it ..... (take).

III. Reading

A. Write a list of as many uses of the computer, or computer applications, as you can think of.

B. **Now read the text below and underline any applications that are not in your list.**

What can computers do?

Computers and microchips have become part of our everyday lives: we visit shops and offices which have been designed with the help of computers, we read magazines which have been produced on computer, and we pay bills prepared by computers. Just picking up a telephone and dialing a number involves the use of a sophisticated computer system, as does making a flight reservation or bank transaction.

We encounter daily many computers that spring to life the instant they're switched on (e.g. calculators, the car's electronic ignition, the timer in the microwave, or the programmer inside the TV set), all of which use chip technology.

What makes your computer such a miraculous device? Each time you turn it on, it is a tabula rasa that, with appropriate hardware and software, is capable of doing anything you ask. It is a calculating machine that speeds up financial calculations. It is an electronic filing cabinet which manages large collections of data such as customers' lists, accounts, or inventories. It is a magical typewriter that allows you to type and print any kind of document – letters, memos, or legal documents. It is a personal communicator that enables you to interact with other computers and with people around the world. If you like gadgets and electronic entertainment, you can even use your PC to relax with computer games.

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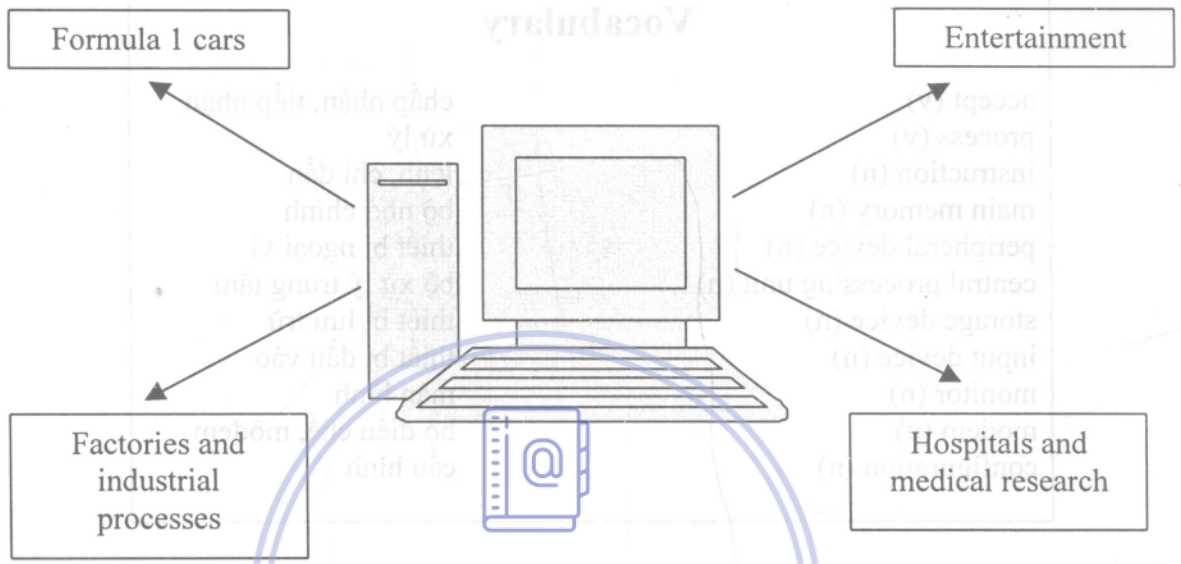
IV. Other applications

A. In small groups, choose one of the areas in the diagram below and discuss what computers can do in this area.



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Useful words

Formula 1: *racing car, car body, design, mechanical parts, electronic components, engine speed*
Entertainment: *game, music, animated image, multimedia, encyclopedia*
Factories: *machinery, robot, production line, computer-aided manufacturing software*
Hospitals: *patients, medical personnel, database program, records, scanner, diagnose, disease, robot, surgery*

Useful constructions

Computers are used to ...
A PC can also be used for ...
Computers can help ... make ... control ... store ... keep ... provide ... manage ... give ... perform ... measure ... test ... provide access to ...

B. Now write a short paragraph summarizing your discussion. Then ask one person from your group to give a summary of the group's ideas to the rest of the class.

Examples

In business, computers are used for financial planning, accounting, and specific calculations. In the office, computers are used to write letters and keep records of clients, suppliers, and employees.

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Topic 2: Configuration

Vocabulary

accept (v)	chấp nhận, tiếp nhận
process (v)	xử lý
instruction (n)	lệnh, chỉ dẫn
main memory (n)	bộ nhớ chính
peripheral device (n)	thiết bị ngoại vi
central processing unit (n)	bộ xử lý trung tâm
storage device (n)	thiết bị lưu trữ
input device (n)	thiết bị đầu vào
monitor (n)	màn hình
modem (n)	bộ điều chế, môđem
configuration (n)	cấu hình

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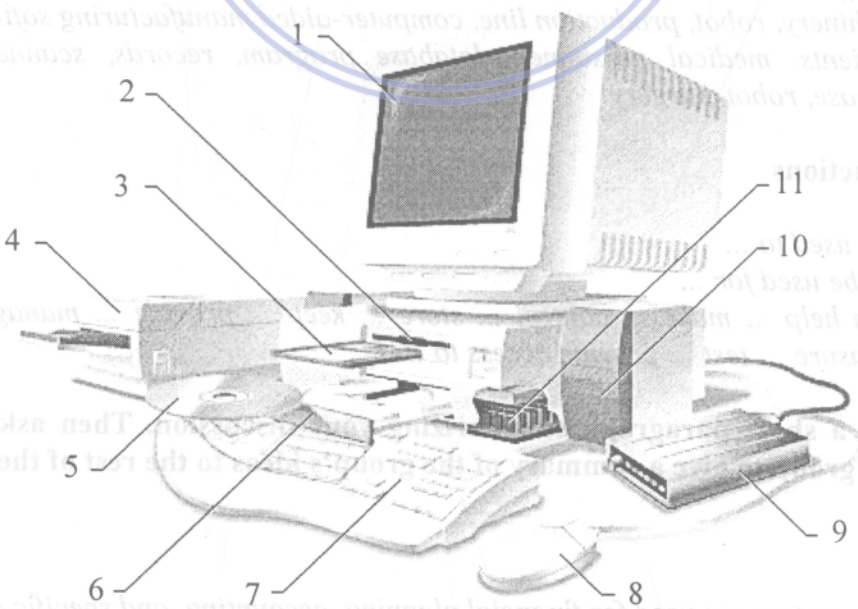
I. Warm-up

In pairs, label the elements of this computer system. Then read the text in Task 2 and check your answers.



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II. Reading

A. Read the text and study the diagram below.

What is a computer?

Computers are electronic machines which can accept data in a certain form, process the data and give the results of the processing in a specified format as information.

Three basic steps are involved in the process. *First*, data is fed into the computer's memory. *Then*, when the program is run, the computer performs a set of instructions and processes the data. *Finally*, we can see the results (the output) on the screen or in printed form (see the diagram below).

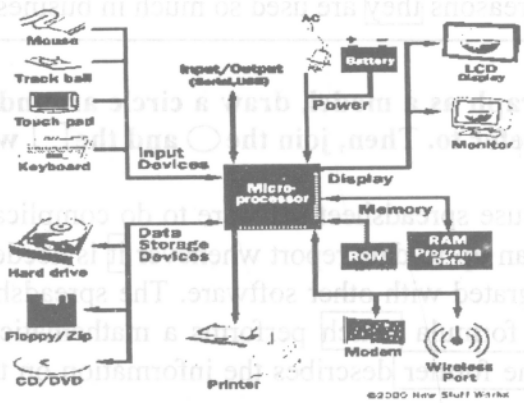
Information in the form of data and programs is known as **software**, and the electronic and mechanical parts that make up a computer system are called **hardware**. A standard computer system consists of three main sections: the central processing unit (CPU), the main memory, and the peripherals.

Perhaps the most influential component is the **central processing unit**. Its function is to execute program instructions and coordinate the activities of all the other units. In a way, it is the 'brain' of the computer. The **main memory** holds the instructions and data which are currently being processed by the CPU. The **peripherals** are the physical units attached to the computer. They include storage devices and input/output devices.

Storage devices (floppy, hard or optical disks) provide a permanent storage of both data and programs. **Disk drives** are used to handle one or more floppy disks. **Input devices** enable data to go into the computer's memory. The most common input devices are the **mouse** and the **keyboard**. **Output devices** enable us to extract the finished product from the system. For example, the computer shows the output on the **monitor** or prints the results onto paper by means of a **printer**.

On the rear panel of the computer, there are several ports into which we can plug a wide range of peripherals – modems, fax machines, optical drives, and scanners.

These are the main physical units of a computer system, generally known as the **configuration**.



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B. Use the information in the text and the diagram to help you match the terms in the box with the appropriate explanation or definition below.

a. software	b. peripheral devices	c. monitor	d. floppy disk
e. hardware	f. input g. port	h. output	i. CPU

1 The brain of the computer. ☐
2 Physical parts that make up a computer system. ☐
3 Programs which can be used on a particular computer system. ☐
4 The information which is presented to the computer. ☐
5 Results produced by a computer. ☐
6 Hardware equipment attached to the CPU. ☐
7 Visual display unit. ☐
8 Small device used to store information. Same as 'diskette.' ☐
9 Any socket or channel in a computer system into which an input/output device may be connected ☐

III. Language work: Contextual reference

Transitional markers are words used to link ideas together so that the text is easier to read. When pronouns such as *it, they, them, I, he, she, which, who, whose, that, such, one,* and demonstrative adjectives such as *this, that, these,* and *those* are used as transitional markers, they refer to a word, or words mentioned earlier in the sentence or paragraph. Their function is to take your thoughts back to something that has already been mentioned. Other words which are often used to refer backwards are *the former, the latter, the first, second,* etc., *the last.*

Sample paragraph:

A computer like any other machine is used because it does certain jobs better and more efficiently than humans. It can receive more information and process it faster than any human. The speed at which a computer works means it can replace weeks or even months of pencil-and-paper work. Therefore, computers are used when the time saved offsets their cost, which is one of the many reasons they are used so much in business, industry, and research.

Using the sample paragraph as a model, draw a circle around the word, or words, that the words in rectangles refer to. Then, join the ○ and the □ with arrows.

Modern accounting firms use spreadsheet software to do complicated calculations. They can provide their clients with an up-to-date report whenever it is needed. This software has many functions and can be integrated with other software. The spreadsheet's basic component is a cell. This may contain a formula which performs a mathematical operation. It could also contain a label or data. The former describes the information on the worksheet. The latter is the information itself.

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The worksheet is the basic work area of a spreadsheet program. It is made up of cells arranged in rows and columns. The number of these varies depending on the software you are using. You can change the width and format of cells. Such parameters are usually quite easy to change with just a few keystrokes.

IV. Read and guess

Read these slogans or quotations, and say what computer element they refer to.

1 a 'Point and click here for power' .....
  b 'Obeys every impulse as if it were an extension of your hand' .....
2 a 'Displays your ideas with perfect brilliance' .....
  b 'See the difference – sharp images and a fantastic range of colors' .....
3 a 'I love this drive. It's quiet and fast' .....
  b 'With this, it's easy to back up your data before it's too late' .....
4 a 'Power and speed on the inside' .....
  b 'Let your computer's brain do the work' .....
5 a '... a big impact on the production of text and graphics' .....
  b 'Your choice: a laser powerhouse' .....

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V. Follow-up: Minis and Micros

Complete the text below with the words in the box.

systems	memory	terminals	desktop
CAD	applications	task	

The first microcomputers, also known as (1) '.....' PCs, were for single users only, and this clearly distinguished them from minicomputers. Another important difference was that 'minis' were much more powerful than 'micros': they could execute more than one (2) '.....' simultaneously and were used as file servers for (3) '.....' and workstations. However, modern microcomputers have operating (4) '.....' and network facilities that can support many simultaneous users. Today, most personal computers have enough (5) '.....' to be used for word processing and business (6) '.....'. Some PCs can even handle multitasking and (7) '.....' applications. As a result, the division between 'minis' and 'micro' is now disappearing.

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Topic 3: Inside the system

Vocabulary

integrated circuit (n)	mạch tích hợp, IC
execute (v)	xử lý, thực thi
control unit (n)	đơn vị điều khiển
arithmetic logic unit (ALU) (n)	đơn vị logic số học
register (n)	thanh ghi
keep track of (v)	theo dõi
internal memory (n)	bộ nhớ trong
expansion slot (n)	khe cắm mở rộng
pulse (n)	xung
emit (v)	bức xạ
platform (n)	một kiểu hệ thống máy tính (nền)
sequential (adj)	trình tự
location (n)	vị trí
capacity (n)	dung tích, dung lượng
single in-line memory module (SIMM) (n)	môđun nhớ một hàng chân
designate (v)	chỉ định
cache (n)	bộ nhớ đệm có tốc độ cao
firmware (n)	chương trình cơ sở (phần sụn)

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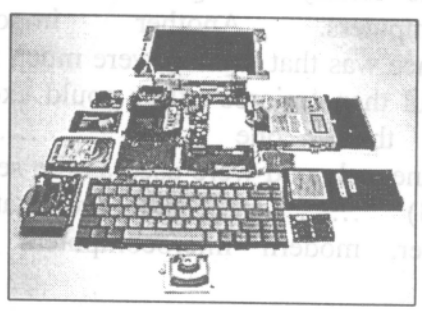
I. Warm-up

A. Read the advertisement and translate the technical specifications into your own language.



B. Try to answer these questions. (If necessary look at the Glossary)

1. What is the main function of a microprocessor?
2. What unit of frequency is used to measure processor speed?
3. What does 'RAM' stand for?

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II. Reading

A. Read the text below and then sentences 1 to 8 that follow. Decide if the sentences are true (T) or false (F), and rewrite the false ones to make them true.

What's inside a microcomputer?

The nerve centre of a microcomputer is the central processing unit or CPU. This unit is built into a single microprocessor chip – an integrated circuit – ***which*** executes program instructions and supervises the computer's overall operation. The unit consists of three main parts:

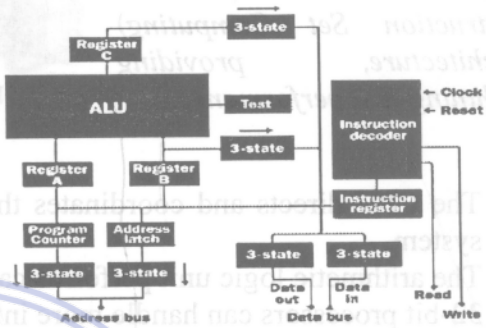
i the **control unit**, which examines the instructions in the user's program, interprets each instruction and causes the circuits and the rest of the components – disk drives, monitor, etc. – to be activated to execute the functions specified;

ii **the arithmetic logic unit** (ALU), which performs mathematical calculations (+, –, etc.) and logical operations (and, or, etc);

iii **the registers**, which are high-speed units of memory used to store and control information. One of these registers is the program counter (PC) which keeps track of the next instruction to be performed in the main memory. Another is the instruction register (IR) which holds the instruction ***that*** is currently being executed.

One area where microprocessors differ is in the amount of data – the number of bits – ***they*** can work with at a time. There are 8, 16, 32, and 64-bit processors. The computer's internal architecture is evolving so quickly that the new 64-bit processors are able to address 4 billion times more information than a 32-bit system (see Fig.1).

The programs and data which pass through the central processor must be loaded into the **main memory** (also called the **internal memory**) in order to be processed.



Thus, when the user runs an application, the microprocessor looks for ***it*** on secondary storage devices (disks) and transfers a copy of the application into the RAM area. RAM (random access memory) is temporary, i.e. ***its*** information is lost when the computer is turned off. However, the ROM section (read only memory) is permanent and contains instructions needed by the processor.

Most of today's computers have internal **expansion slots** ***that*** allow users to install adapters or expansion boards. Popular adapters include high-resolution graphics boards, memory expansion boards, and internal modems.

The power and performance of a computer is partly determined by the speed of its microprocessor. A **clock** provides pulses at fixed intervals to measure and synchronize circuits and units. The clock speed is measured in MHz (megahertz) and refers to the frequency at which pulses are emitted. For example, a CPU running at 500 MHz (500 million cycles per second) is likely to provide a very fast processing rate and will enable the computer to handle the most demanding applications.

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The new generation of processors

Figure 1 shows the 600 MHz Alpha microprocessor from Digital, with a 64-bit RISC implementation (Reduced Instruction Set Computing) architecture, providing lightning-fast performance.

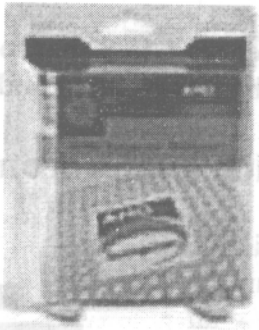

Figure 1

Other popular platforms are:

- *Intel's Pentium*
- *Apple, IBM and Motorola's PowerPC*
- *Sun's SuperSPARC*
- *Silicon Graphics/Mips R10000 and R5000.*

1 The CPU directs and coordinates the activities taking place within the computer system. ☐
2 The arithmetic logic unit performs calculations on the data. ☐
3 32-bit processors can handle more information than 64-bit processors. ☐
4 A chip is an electronic device composed of silicon elements containing a set of integrated circuits. ☐
5 RAM, ROM, and secondary storage are the components of the main memory. ☐
6 Information cannot be processed by the microprocessor if it is not loaded into the main memory. ☐
7 'Permanent' storage of information is provided by RAM (random access memory). ☐
8 The speed of the microprocessor is measured in megahertz. One MHz is equivalent to one million cycles per second. ☐

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B. Contextual reference. What do the words in bold and *italics* print refer to?

1 …***which*** executes program instructions and supervises …
2 …the instruction ***that*** is currently being executed.
3 …the amount of data – the number of bits – ***they*** can work with at a time.
4 …the microprocessor looks for ***it*** on …
5 …**its** information is lost when the computer is turned off.
6 …expansion slots ***that*** allow users to install adapters or expansion boards.

III. Language work: Relative clauses

A. Study these sentences:

1. The microprocessor is a chip.
2. The chip processes the information provided by the software.

Both these sentences refer to chip. We can link them by making sentence 2 a relative clause:

The microprocessor is a chip ***which processes the information provided by the software.***

The *relative clause* is in ***bold italics***. Note that '***The chip***' in sentence 2 becomes '***which***'.

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Study these other pairs of sentences and note how they are linked.

3. The teacher has just arrived.
4. The teacher is responsible for the computer centre.

3+4: The teacher ***who is responsible for the computer centre*** has just arrived.

B. Now link these sentences. Make the second sentence in each pair a relative clause.

1. The microprocessor coordinates the activities.
   These activities take place in the computer system.
2. Last night I met someone.
   He works for GM as a computer programmer.
3. A co-processor is a silicon chip.
   The chip carries out mathematical operation at a very high speed.
4. A megahertz is a unit of frequency.
   The unit is used to measure processor speed.
5. A password is a secret word.
   The word must be entered before access is given to a computer system.
6. A gateway is a device.
   The device is used to interconnect different types of networks.
7. Here's the floppy disk.
   You lent me the disk.
8. A USB port is a gateway.
   The gateway is used to connect all kinds of external devices to your computer.
9. Virus is a destructive software.
   This software causes damage to the data, the information or the hardware of the computer.

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IV. Reading

A. Read the text and complete it with the phrases in the box.

a All the information stored in the RAM is temporary
b Microcomputers make use of two types of main memory
c ROM chips have 'constant' information
d The size of RAM is very important.

Main memory: RAM and ROM

The main memory of a computer is also called the 'immediate access store', as distinct from any storage memory available on disks. (1) .....: RAM and ROM, both contained in electronic chips connected to the main board of the computer.

RAM stands for 'random access memory' and is the working area of the computer, that is, the basic location where the microprocessor stores the required information. It is called 'random access' because the processor can find information in any cell or memory address with equal speed, instead of looking for the data in sequential order.

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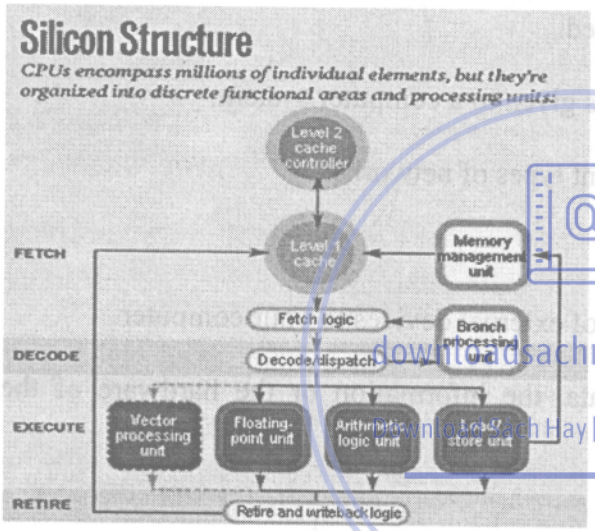
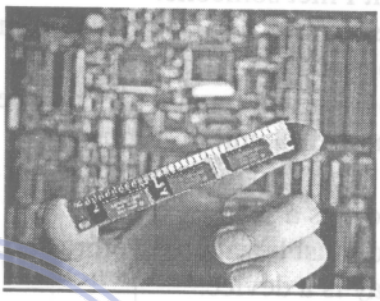
(2) ....., so it is lost when the machine is turned off. Therefore, if we want to use this information later on, we have to save it and store it on a disk. When running an application, the microprocessor finds its location in the storage device (the floppy or hard disk) and transfers a temporary copy of the application to the RAM area. Consequently, (3) ..... If we want to increase the performance of a computer when several applications are open at the same time or when a document is very complex.



The RAM capacity can sometimes be expanded by adding extra chips. These are usually contained in single in-line memory modules or SIMMs, which are installed in the motherboard of the computer.

We can designate a certain amount of RAM space as a **cache** in order to store information that an application uses repeatedly. A RAM cache may speed up our work, but it means that we need enough internal memory or a special cache card.



Memory module.

ROM is an acronym for 'read only memory', which implies that the processor can read and use the information stored in the ROM chip, but cannot put information into it. (4) ....., including instructions and routines for the basic operations of the CPU. These instructions are used to start up the computer, to read the information from the keyboard, to send characters to the screen, etc. They cannot be changed and are not erased when the power is turned off. For this reason, the ROM section is also referred to as **firmware.**

B. As we have seen, there are three types of memory used by computers: RAM, ROM and secondary storage. Look through this list of features and decide which type of memory they refer to.

1 Any section of the main memory can be read with equal speed and ease.
2 It is available in magnetic, optical and video disks
3 A certain amount of this memory can be designated as 'cache' memory to store information in applications that are used very frequently.
4 It stores basic operating instructions, needed by the CPU to function correctly.
5 Memory which can be expanded by adding SIMMs of 8 MB, 16 MB, 32 MB or other major increments.
6 Information is permanent and cannot be deleted.
7 You can save and store your documents and applications.

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V. Vocabulary quiz

In groups of three, write answers to these questions. The winners are the group that answers the most questions correctly in four minutes.

1 What are the main parts of the CPU?
2 What is RAM?
3 What memory section is also known as 'firmware'?
4 What information is lost when the computer is switched off?
5 What is the typical unit used to measure RAM memory and storage memory?
6 What is the meaning of the acronym SIMM?
7 What is a megahertz?
8 What is the ALU? What does it do?
9 What is the abbreviation for 'binary digit'?
10 How can we store data and programs permanently?

VI. Your ideal computer system

A. Make notes about the features of the computer that you would like to have

CPU: ……..
Speed: ……..
Optical disk drives: ……..
Minimum/maximum RAM: ……..
Monitor: ……..
Hard disk: ……..
Software: ……..

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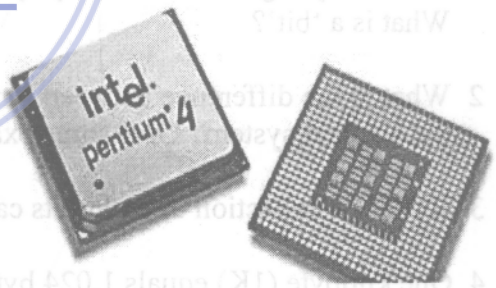
B. Now describe it to your partner.

Useful expressions

It has got…
It's very fast. It runs at…
The standard RAM memory… and it is expandable…
The hard disk can hold…
I need a SuperVGA monitor because…
As for the Internet…



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Topic 4: Bits and bytes

Vocabulary

binary notation (n)	biểu diễn nhị phân
character (n)	ký tự
representation (n)	diễn đạt, biểu thị
figure (n)	số liệu, con số
equivalent (adj)	tương đương
pixel (n)	điểm ảnh
refresh (v)	làm tươi lại
buffer (n)	bộ đệm, bộ nhớ trung gian
monochrome (n)	đơn sắc
color palette (n)	bảng màu
graphics adaptor (n)	bộ thích ứng đồ họa
primary color (n)	màu chính, màu nguyên thủy

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I. Reading

A. With a partner, try to answer these questions.

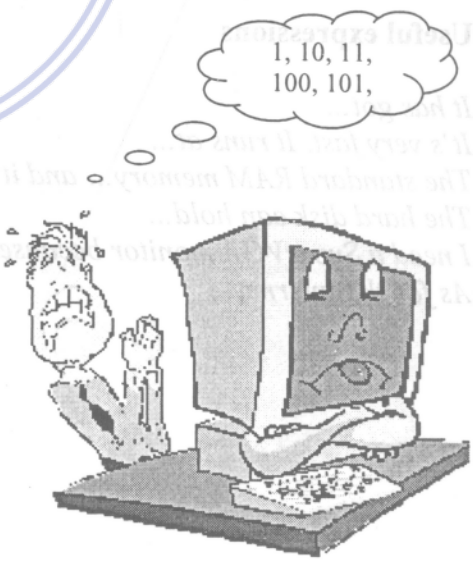
1 How many digits does a binary system use?
What is a 'bit'?

2 What is the difference between binary notation and the decimal system? Give some examples.

3 What is a collection of eight bits called?

4 One kilobyte (1K) equals 1,024 bytes.
Can you work out the value of these units?
1 megabyte = ……..bytes/1,024 kilobytes
1 gigabyte = ……..bytes/1,024 megabytes
(kilo-: one thousand)
(mega-: one million)
(giga-: one thousand million)

5 What does the acronym 'ASCII' stand for?
What is the purpose of this code?



B. Now read the text to check your answers or to find the correct answer.

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Units of memory

Bits – basic units of memory

Information is processed and stored in computers as electrical signals. A computer contains thousands of electronic circuits connected by switches that can only be in one of two possible states: ON (the current is flowing through the wire) or OFF (the current is not flowing through the wire). To represent these two conditions we use **binary notation** in which 1 means ON and 0 means OFF. This is the only way a computer can 'understand' anything. Everything about computers is based upon this binary process. Each 1 or 0 is called a **binary digit** or **bit**.

Bytes and characters

1s and 0s are grouped into eight-digit codes that typically represent characters (letters, numbers, and symbols). Eight bits together are called a **byte**. Thus, each character in a keyboard has its own arrangement of eight bits. For example, 01000001 for the letter A, 01000010 for B and 01000011 for C.

The ASCII code

The majority of computers use a standard system of the binary representation of characters. This is the American Standard Code for Information Interchange, known popularly as 'ASCII' (pronounced 'ask-key'. There are 256 different ways of combining 0 and 1 bits in a byte. Therefore, they can give us 256 different signals. However, the ASCII code only uses 128 bytes to represent characters. The rest of the bytes are used for other purposes.

The first 32 codes are reserved for characters such as the Return key, Tab, Escape, etc. Each letter of the alphabet and many symbols (such as punctuation marks) as well as the ten numbers have ASCII representations. What makes this system powerful is that these codes are standard.

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Kilobytes, megabytes, and gigabytes

In order to avoid astronomical figures and sums in the calculation of bytes, we use units such as kilobytes, megabytes, and gigabytes. One kilobyte is 1,024 bytes (2^{10}) and it is represented as KB, or more informally as K. One megabyte is equivalent to 1,024 KB, and one gigabyte is 1,024 MB.

We use these units (KB, MB, and GB) to describe the RAM memory, the storage capacity of disks and the size of any application or document.

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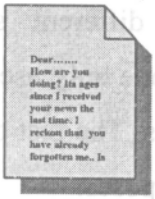
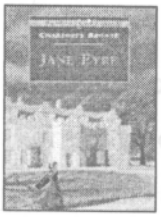
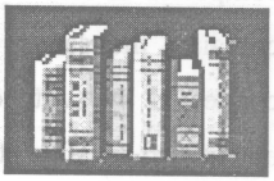
C. Look at the illustrations and the captions below. Then fill in the blanks with the correct unit of memory.

English







1 One ..... represents one character.

2 One ..... represents 1,024 characters (about a small page of text)

3 One ..... represents 1,000,000 characters (about the text of this book)

4 One ..... represents 1,000,000,000 characters (about 1,000 books in a library)

II. Language work

Word formation: prefixes

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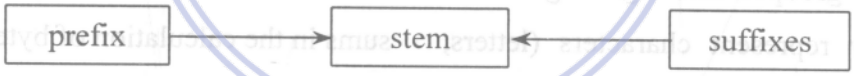
When you are reading, you will come across unfamiliar words. It is often possible to guess the meaning of these words if you understand the way words in English are generally formed.



An English word can be divided into three parts: a prefix, a stem, and a suffix. *Pre-* means 'before'. A prefix, therefore, is what comes before the stem. Consider, as an example, the prefix *de-* (meaning 'reduce' or 'reverse') in a word like '**de**magnetize' (meaning 'to deprive of magnetism'). A suffix is what is attached to the end of the stem. Consider, as an example, the suffix *–er* (meaning 'someone who') in 'programm**er**' ('a person who programs').

Suffixes change the word from one part of speech to another. For example, *-ly* added to the adjective *'quick'* gives the adverb *'quickly'*. Prefixes, on the other hand, usually change the meaning of the word. For example, *un-* changes a word to the negative. '**Un**magnetizable' means 'not capable of being magnetized'.

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A. Study these tables. Try to find additional examples, using your dictionary if necessary.

1 Negative and positive prefixes:

	Prefix	Meaning	Example
Negative	un-	not	unmagnetized
	in-		incomplete
	im-		impossible
	il-		illegal
	ir-		irregular, irrelevant
	non-	not connected with	non-programmable
	mis-	bad, wrong	misdirect
	dis-	opposite feeling	disagree
		opposite action	disconnect
	anti-	against	antiglare
	de-	reduce, reverse	demagnetize, decode
	under-	too little	underestimate
Positive	re-	do again	reorganize
	over-	too much	overload

2 Prefixes of size

Prefix	Meaning	Examples
semi-	half, partly	semiconductor
equi-	equal	equidistant
mini-	small	minicomputer
micro-	very small	microcomputer
macro-	large, great	macroeconomics
mega-		megabyte

3 Prefixes of time and order

Prefix	Meaning	Examples
ante-	before	antecedent
pre-		prefix
prime-	first	primary, primitive
post-	after	postdated
retro-	backward	retroactive

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4 Prefixes of location

Prefix	Meaning	Examples
inter-	between, among	interface, interactive
super-	over	supersonic
trans-	across	transmit, transfer
ex-	out	exclude, extrinsic
extra-	beyond	extraordinary
sub-	under	subschema
infra-	below	infra-red
peri-	around	peripheral

5 Prefixes of numbers

Prefix	Meaning	Examples
semi-	half	semicircle
mono-	one	monochromatic
bi-	two	binary
tri-	three	triangle
quad-	four	quadruple
penta-	five	pentagon
hex-	six	hexadecimal
sept(em)-	seven	September
oct-	eight	octal
dec-	ten	decimal
multi-	many	multiplexor

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6 Other prefixes

Prefix	Meaning	Examples
pro-	before, in advance forward	program progress
auto-	self	automatic
co- con-	together, with	co-ordinate connect

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B. Read the following sentences and circle the prefixes. For each word that has a prefix, try to decide what the prefix means. Refer back to the table if you need help.

1 Floppy disks are inexpensive and reusable.
2 If a printer malfunctions, you should check the interface cable.
3 The multiplexor was not working because someone had disconnected it by mistake.
4 Improper installation of the antiglare shield will make it impossible to read what is on the screen.
5 After you transfer text using the 'cut and paste' feature, you may have to reformat the text you have inserted.
6 You can maximize your chances of finding a job if you are bilingual or even trilingual.
7 Peripheral devices can be either input devices (such as keyboards) or output devices (such as printers).
8 Your pay rise is retroactive to the beginning of June and you will receive a biannual bonus.
9 The octal and hexadecimal systems are number systems used as a form of shorthand in reading groups of four binary digits.
10 As the results are irregular, the program will have to be rewritten.

III. Bits for pictures

A. Read the questions and text and study the diagrams.

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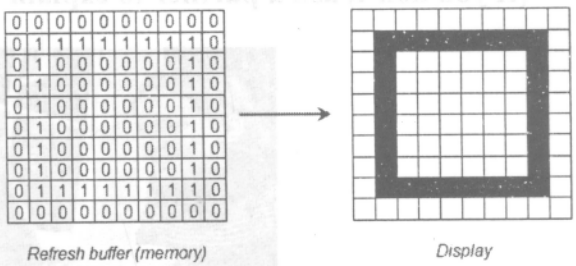
Did you know that...?

1 bits can also be used to code pictures?
2 the information displayed on the computer screen corresponds, dot by dot, with bits held in the main memory?
3 on color systems, if you have 8 bits per primary color, the palette of your computer can obtain 16.7 million colors?

Each tiny dot on the screen of a computer is called a picture element or **pixel**. Images and text are formed by combining a large number of pixels.

On monochrome system, one bit in this 'map' represents one pixel on the screen and can be either 'on' or 'off' (black or white).

In a bit-mapped display, the dots displayed on the screen correspond, pixel by pixel, with bits in the main memory of the computer. The bits are held in an area of the memory called the 'refresh buffer' and are stored in groups that represent the horizontal and vertical position of the pixels on the screen and whether the pixels are on or off.



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On color systems, each pixel is a certain combination of the three primary colors: red, green, and blue. The total number of colors which can be shown on the screen is called the color palette. The size of this palette depends on the graphics adaptor, a separate video card that converts the bits into visual signals. A graphics adaptor with 1 bit per primary color can generate up to 8 or 2^3 colors as you can see from the following table. A graphics adaptor with 8 bits per primary color can generate 16.7 million or $(2^3)^8$ colors.

Color	Red	Green	Blue
black	0	0	0
blue	0	0	1
green	0	1	0
cyan	0	1	1
red	1	0	0
magenta	1	0	1
yellow	1	1	0
white	1	1	1

One bit per primary color.

B. Using the information in the passage and the illustrations, match the terms in the box with the appropriate explanation or definition.

a. pixel	b. bit	c. bit-mapped display
d. primary colors		e. palette

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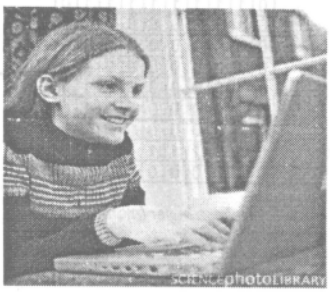
1 The menu of colors available on a graphics system; its size depends on the hardware. ☐
2 Red, green, and blue (RGB) in computers. ☐
3 The smallest element of a display surface. ☐
4 A display on the screen which corresponds, pixel by pixel, with bits stored in memory cells. ☐
5 The acronym for 'binary digit'; one of the digits (0 and 1) used in binary notation. ☐

C. Translate the last paragraph (starting from 'On color systems ...') into your language.

Do you understand the calculations made to obtain a palette of 16.7 million colors? (If you don't, ask a partner to explain them to you.)



Science photo library.

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Topic 5: Buying a computer

Vocabulary

compiler (n)	trình dịch
accumulator (n)	thanh tổng, bộ tích lũy, bộ cộng
compilation (n)	sự biên dịch
conversion (n)	sự chuyển đổi
magnetism (n)	từ tính
computerize (n)	máy tính hóa

I. Language work

Word formation: suffixes

We have already seen how prefixes can change the meaning of a word. Let us now consider some suffixes, their usual meanings, and how they change an English word from one part of speech to another.

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A. Study these tables and try to make additional examples. Use your dictionary if necessary.

1 Noun-forming suffixes

Suffix	Meaning	Example
-ance	state	performance
-ence	quality of	independence
-er, -or	a person who a thing which	programmer, operator compiler, accumulator
-ist, -yst	a person who	analyst, typist
-ian	pertaining to	electrician
-tion, -ation	the act of	compilation
-ness	condition of	readiness
-ion	action/state	conversion
-ing	activity	multiplexing
-ment	state, action	measurement
-ity	state, quality	electricity
-ism	condition/state	magnetism
-dom	domain/condition	freedom
-ship	condition/state	relationship/partnership

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2 Verb-forming suffixes

Suffix	Meaning	Example
-ize/-ise	to make	computerize
-ate		automate, activate
-ify		simplify
-en		harden, widen

3 Adverb-forming suffix

Suffix	Meaning	Example
-ly	in the manner of	electronically, helpfully

4 Adjective-forming suffixes

Suffix	Meaning	Example
-al	having the quality of	computational, logical
-ar		circular
-ic		magnetic, automatic
-ical		electrical
-able	capable of being	comparable
-ible		divisible
-ous	like, full of	dangerous
-ful	characterized by	helpful
-less	without	careless
-ish	like	yellowish
-ed	having the quality of	computed
-ive		interactive

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Note: Words ending in *–ing* are formed from verbs. The *–ing* form may be used as a noun, part of a noun phrase, or part of a verb.
Examples:

1 **Programming** is an interesting job. (noun)
2 **Programming** in C is interesting. (part of noun phrase)
3 He is **working** as a programmer. (part of verb)

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B. Read the following sentences and circle the suffixes. Underline the stem if it can be used on its own. The first one has been done for you.

1 A programm(er) designs, writes, and tests programs for perform(ing) various tasks on a comput(er).
2 A systems analyst studies organizational systems and decides what action needs to be taken to maximize efficiency.
3 Laser printers are preferable to other types of printing devices because of their speed and quietness.
4 The microcomputer we have purchased does not have a FORTRAN compiler. It is programmable in BASIC only.
5 We have found that operators who have the freedom to take short breaks during the day greatly improve their performance.
6 The number of shipments will increase over the coming months.
7 We decided to computerize the entire plant to give each division more independence.
8 Spooling is a way of storing data temporarily on disk or tape until it can be processed by another part of the system.
9 Turning your office into a paperless environment may be expensive at the beginning but can produce big savings in the long run.
10 Software developers are producing increasingly sophisticated applications for a growing global market.

II. Role play

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Work with a partner. One of you wants to buy a computer; the other is the sales assistant. Ask and answer questions, using the information and instructions below to help you.

Products available	Processor/ Speed	Minimum/ Maximum RAM	Hard disk	Disk drives	Monitor	Price
Explora 700 Net PC	Mips R4700 300 MHz	32 MB expandable to 256 MB	4 GB	Optional 3.5'' drive	Super VGA compatible	£799
Toshiba portable	Pentium III 500 MHz	64 MB expandable to 256 MB	10 GB	3.5'' drive 32x CD	Color LCD DVD-ROM	£2,450
IBM Aptiva	AMD Athlon 700 MHz	128 MB expandable to 384 MB	20 GB	3.5'' drive DVD	XGA	£2,640
Polywell	AMD Athlon 700 MHz	128 MB expandable to 768 MB	20 GB	3.5'' drive CD/Zip	Super VGA	£2,330
Compaq	Pentium III 650 MHz	64 MB expandable to 768 MB	16 GB	Zip drive DVD	XGA	£2,580

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Shop assistant	**Customer**
Greet the customer and offer help.	
	Ask to see some computers.
Show the customer some models.	
	Ask for details: processor, RAM, etc.
Describe the speed in megahertz and the main memory.	
	Ask about the hard disk.
Give explanations (MB storage capacity, etc.).	
	Ask about the monitor and other features.
Give the required information.	
	Ask the price.
Give the price and explain different ways of paying.	
	Decide to buy one/to think about it.
	Thank the shop assistant and leave the shop.

III. Read and talk

A. Read the descriptions of the four people and the four computers below. With a partner, choose the most suitable computer for each person. Give reasons for your choices.

1 Daniel is a history student. He needs a computer to write essays, assignments, and letters.

2 Sarah is the manager of an advertising company. She needs a powerful system which will work with optical disks and multimedia applications, integrating text and pictures with animation and voice annotations. Digitized images and sound occupy a lot of disk space.

3 Andy is a CAD engineer. His job involves computer-aided design, simulations, and three-dimensional modelling. These applications require a lot of memory and a large drive.

4 Tanya is a sales representative. She needs a lightweight machine with which she can process orders and communicate with head office while she is on the road.

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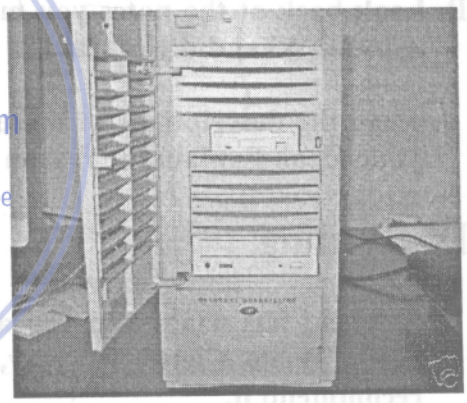
HP Vectra

- Pentium processor running at 333 MHz
- 32 MB of RAM
- High density 3.5'', 1.44 MB floppy disk drive
- 32x CD-ROM drive
- 3.22 GB hard disk
- Network care
- Standard keyboard and Microsoft mouse
- Windows
- £ 709

Digital Alpha workstation

- 600 MHz 64-bit Alpha microprocessor
- 128 MB RAM expandable up to 1.5 GB
- Hard disk capacity: 9 GB
- Supports several graphics formats
- Lets you attach any peripherals and link up to any network
- Allows you to handle your toughest technical, scientific and business-critical applications
- Supports Digital UNIX, open VMS and Windows operating systems
- £ 4,049



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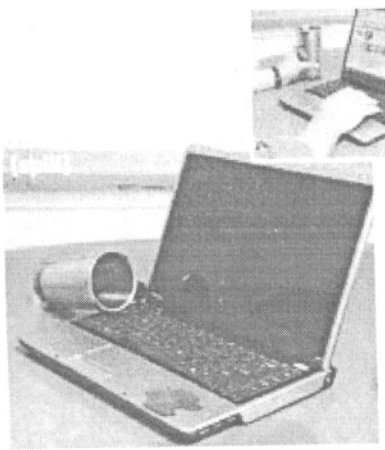
Compact Notebook



- 300 MHz Pentium processor with MMX technology
- 64 MB RAM
- 6 GB hard drive
- 3.5'' floppy disk drive and CD-ROM drive
- Internal 56k modem
- 12.1''color TFT display with high resolution
- Compaq trackball mouse
- Extended life NiMH battery
- Weighs only 6 lbs
- Windows comes pre-installed
- £ 2,399

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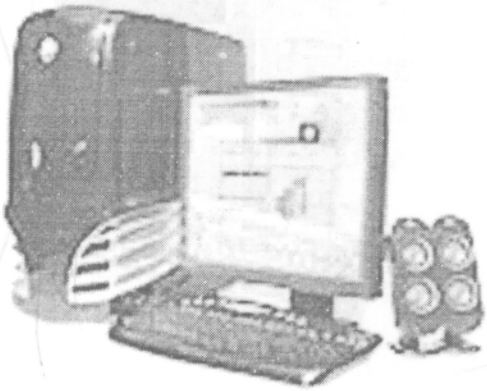
Power Macintosh



- PowerPC processor at 400 MHz
- 128 MB of RAM expandable to 1 GB
- 1 MB of in-line cache on the processor card
- 16 MB of video RAM
- 12 GB hard disk
- 3.5'' floppy drive, 24x CD-ROM and Zip unit
- Optional DVD-ROM drive
- Comes with AppleVision monitor, sound board, built-in microphone, and stereo speakers
- Mac OS with QuickTime (an extension that lets you play video and animation on the computer)
- £ 2,999

B. Look back at the notes you made for Task 6 in Topic 3 about your ideal computer system. What did you want?

Read the descriptions of these computers again and choose the one that is closest to your ideal. Explain the reason for your choice.

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IV. Writing

A friend has written to you asking you to recommend a computer that suits their needs. Write a letter in reply, describing its technical features and saying why you recommend it.

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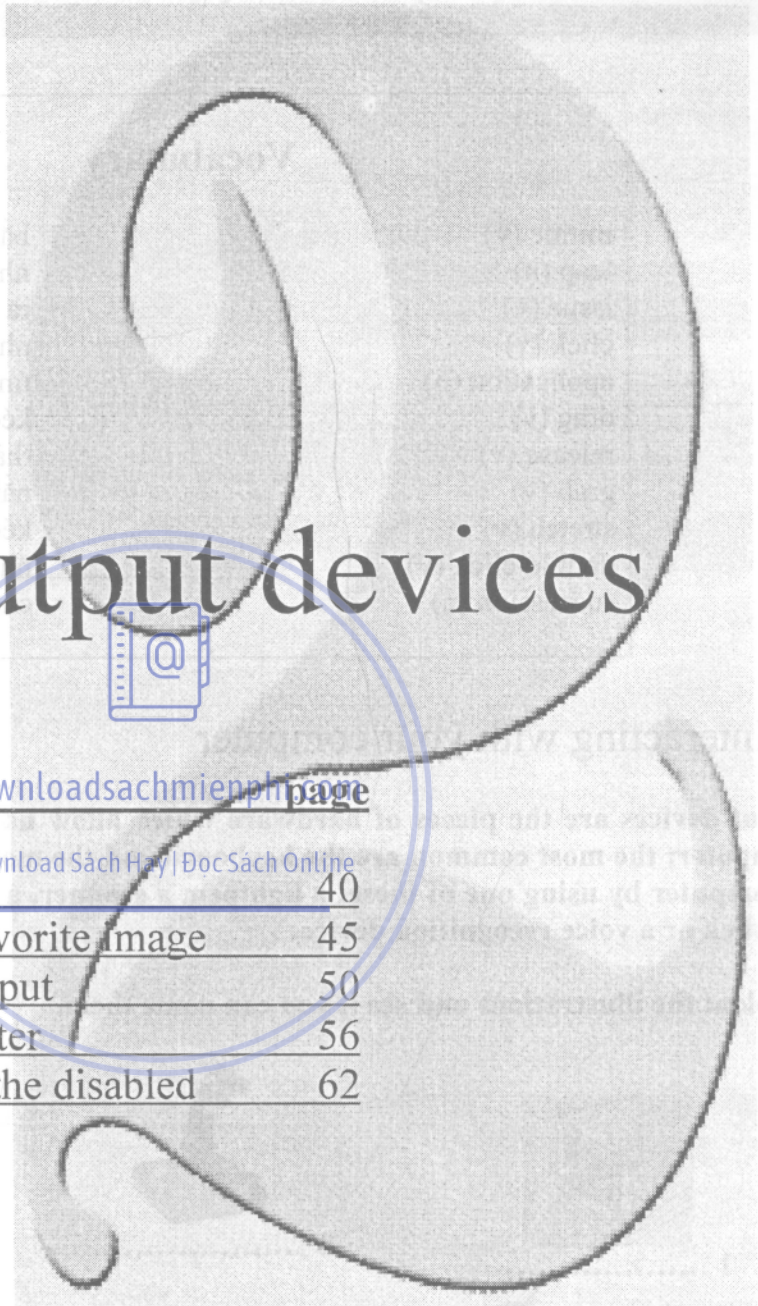

Input/output devices

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Learning objectives

In this lesson, you will learn how to:

- describe input and output devices
- identify important keys on a keyboard and explain their functions
- distinguish between facts and opinions in advertisements about peripherals (e.g. scanners)
- understand technical specifications given about monitors
- use different grammatical forms to give instructions, advice or warnings
- compare different types of printers, and choose one for yourself
- understand what sort of input/output devices are used by disabled people.

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Topic 6: Type and click!

Vocabulary

mimic (v)	bắt chước
leap (n)	nhảy, trượt
issue (v)	ra (lệnh), phát hành
click (v)	nháy, kích
application (n)	ứng dụng
drag (v)	kéo
release (v)	thả
grab (v)	nắm
stretch (v)	kéo căng
double-click (v)	nháy đúp
succession (n)	chuỗi, liên tục

I. Interacting with your computer

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Input devices are the pieces of hardware which allow us to enter information into the computer; the most common are the keyboard and the mouse. We can also interact with a computer by using one of these: a lightpen, a scanner, a trackball, a graphics tablet, a joystick or a voice recognition device.

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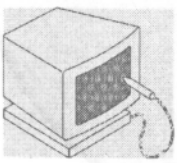
Look at the illustrations and see if you can name them.



1 .....

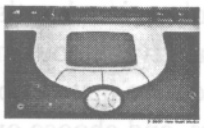
2 .....

3 .....

4 .....

5 .....

6 .....



7 .....

8 .....

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II. Speaking

Work in pairs. Student A: turn to page 162 and Student B: turn to page 166.

III. About the keyboard

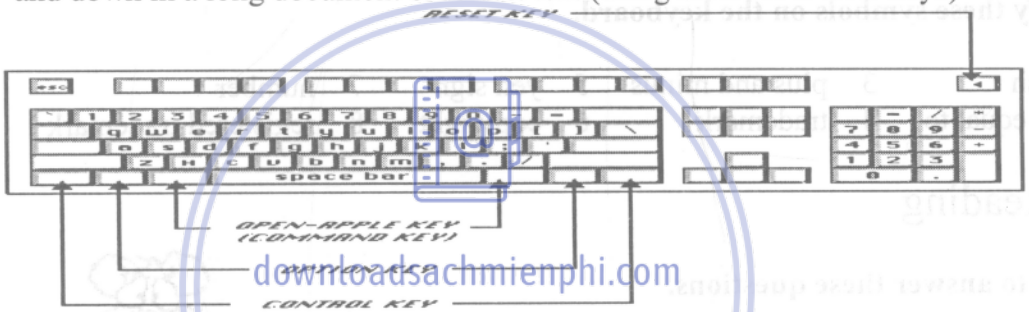
A. Look at the picture of a PC-compatible keyboard below and identify these groups of keys.

1 **Alphanumeric keys:** arranged in the same order as a typewriter.

2 **Function keys:** used by various programs to instruct the PC to perform specific tasks such as Save, Copy, Cut, Paste, Help, etc.

3 **Numeric keypad:** set of numeric or editing keys. The Num Lock key is used to switch from numbers to editing functions.

4 **Editing keys:** cursor and other keys usually used within word processors to page up and down in a long document or to edit text (using Insert or Delete keys)



A PC-compatible keyboard

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B. Match these descriptions with the names of keys on the right. Then find them on the keyboard.

1 A long key at the bottom of the keyboard. Each time it is pressed, it produces a blank space. (=.....)

2 It moves the cursor to the beginning of a new line. It is also used to confirm commands. (=.....)

3 It stops a program without losing the information from the main memory. Sometimes, its use depends on the applications. (=.....)

4 It works in combination with other keys to produce special characters or specific actions. (=.....)

5 It removes the character on the left of the cursor or any selected text. (=.....)

6 It produces UPPER-CASE characters. (or the upper-case character of the key). (=.....)

7 It produces upper-case letters, but it does not affect numbers and symbols. (=.....)

8 It moves the cursor horizontally to the right for a fixed number of spaces (in tabulations and data fields). (=.....)

9 They are used to move the cursor, as an alternative to the mouse. (=.....)

arrow keys

return

caps lock

shift

tab

escape

space bar

backspace

alt

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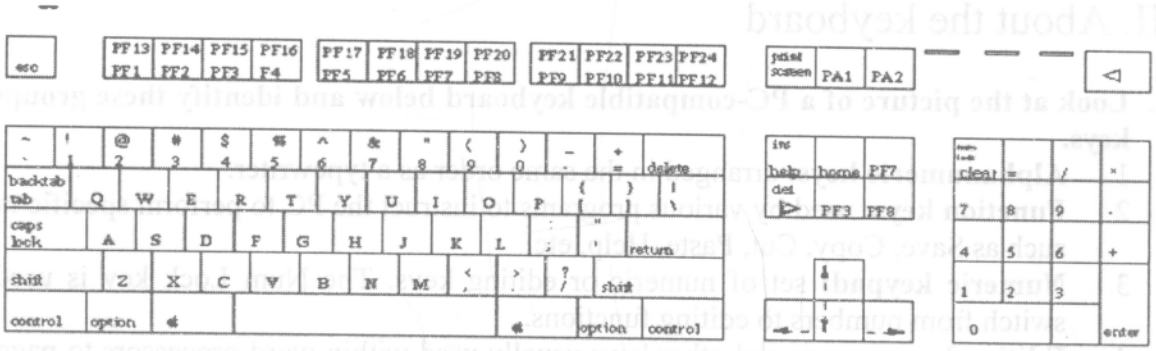
C. Computer system may have different keyboard options. Here is an example. If we enter the Key Caps menu on a Macintosh in Courier and then press the Option key, we obtain the following symbols on the screen.



Identify these symbols on the keyboard.

1	slash	3	plus and minus	5	yen sign	7	number
2	not equal to	4	trademark	6	copyright	8	registered trademark

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IV. Reading

A. Try to answer these questions.

1 How is the mouse connected to the computer?
2 What does the mouse pointer look like on the screen?
3 What are the functions of the mouse buttons?
4 What are the advantages of a computer mouse over a keyboard?

Read the text to check your answer or to find the right answers.

Point and click!

Typically, a mouse is a palm-sized device, slightly smaller than a pack of cards. On top of the mouse there are one or more buttons for communicating with the computer. A 'tail' or wire extends from the mouse to a connection on the back of the computer.

The mouse is designed to slide around on your desktop. As it moves, it moves an image on the screen called a **pointer** or **mouse cursor.** The pointer usually looks like an arrow or I-bar, and it mimics the movements of the mouse on your desktop.

What makes the mouse especially useful is that it is a very quick way to move around on a screen. Move the desktop mouse half an inch and the screen cursor will leap four inches. Making the same movements with the arrow keys takes much longer. The mouse also issues instructions to the computer very quickly. Point to an available option with the cursor, **click** on the mouse, and the option has been chosen.

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Mice are so widely used in graphics application because they can do things that are difficult, if not impossible, to do with keyboard keys. For example, the way you move an image with a mouse is to put the pointer on the object you want to move, press the mouse button and **drag** the image from one place on the screen to another. When you have the image where you want it, you release the mouse button and the image stays there. Similarly, the mouse is used to **grab** one corner of the image (say a square) and stretch it into another shape (say a rectangle). Both of these actions are so much more difficult to perform with a keyboard that most graphics programs require a mouse.

The buttons on the mouse are used to select items at which the mouse points. You position the pointer on an object on the screen, for example, on a menu or a tool in a paint program, and then you press the mouse button to 'select' it. Mice are also used to load documents into a program: you put the pointer on the file name and **double-click** on the name – that is you press a mouse button twice in rapid succession.

(Adapted from *Your First Computer,* A. Simpson, Sybex, 1992)

B. Here are some basic mouse actions. Match the terms in the box with the explanations below.

a. click b. double-click c. drag

1 Position the pointer on something, then rapidly press and release the mouse button twice. (You do this to load a program, open a document, or select text or graphics)

2 Position the pointer on something, hold down the mouse button, and move the mouse to the desired position, then release the button. (You do this to move an image to a new location on the screen)

3 Position the pointer on something, then press, and release the mouse button. (You do this to place the insertion point, to choose an option, or to close a window)

V. Language work: Describing function

We can describe the function of an item in a number of ways. Study these examples.

Using the Present simple

1 ROM holds instructions which are needed to start up the computer.

***Used to-infinitive, Used for* + *'-ing'* form**

2 ROM is used to hold instructions which are needed to start up the computer.

3 ROM is used for holding instructions which are needed to start up the computer.

Emphasizing the function

4 The function of ROM is to hold instructions which are needed to start up the computer.

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Lesson 2 Input/output devices

Now, match each item in Column A with its function in Column B. Then describe its function in two ways.

A	Item	B	Function
1	RAM	a	controls the cursor.
2	processor	b	inputs data through keys like a typewriter.
3	mouse	c	displays the output from a computer on a screen.
4	clock	d	reads DVD-ROMs.
5	3.5'' floppy drive	e	reads and writes to removable magnetic disks.
6	monitor	f	holds instructions which are needed to start up the computer.
7	keyboard	g	holds data read or written to it by the processor.
8	DVD-ROM drive	h	provides extremely fast access to sections of a program and its data.
9	cache	i	controls the timing of signals in the computer.
10	ROM	j	controls all the operations in a computer.

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Topic 7: Capture your favorite image

Vocabulary

scanner (n)	máy quét
manipulate (v)	vận dụng, chế tác
flatbed scanner (n)	máy quét hình phẳng
digitize (v)	số hóa
treat (v)	xử lý, đối xử
rotate (v)	quay
color filter (n)	bộ lọc màu
resolution (n)	độ phân giải
scanning area (n)	vùng quét
crisp (adj)	sinh động
animation (n)	hoạt hình
image-capture software (n)	phần mềm nắm bắt hình ảnh
retouch (n)	tô màu
self-calibrate (v)	tự chỉnh
accelerator (n)	máy gia tốc
compression (n)	nén
decompression (n)	giải nén

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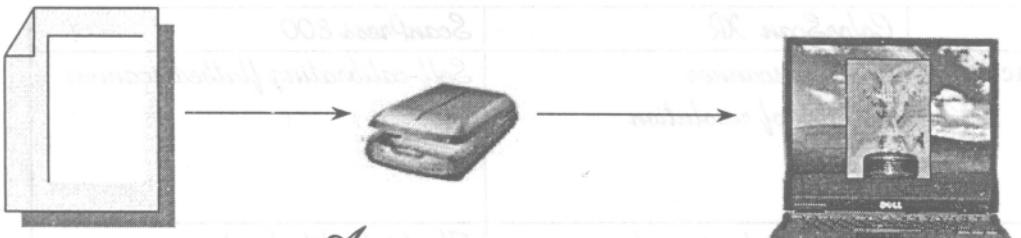
I. Scanners: The eyes of your computer

Use the information in the text and the illustration to answer these questions.

1 What is a scanner? Give a definition in your own words.
2 How does a color scanner work?



A scanner 'sees' images and translates them into a form that can be understood by the computer.

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What does a scanner do?

A scanner converts texts or pictures into electronic codes that can be manipulated by the computer.

In a flatbed scanner, the paper with the image is placed face down on a glass screen similar to a photocopier. Beneath the glass are the lighting and measurement devices. Once the scanner is activated, it reads the image as a series of dots and then generates a digitized image that is sent to the computer and stored as a file. The manufacturer usually includes software which offers different ways of treating the scanned image.

A color scanner operates by using three rotating lamps, each of which has a different colored filter: red, green, and blue. The resulting three separate images are combined into one by appropriate software.

What do you think are the benefits of using scanners in business?

II. Facts and opinions

A. Read the advertisements on the following page and underline what you think are facts and circle the opinions. Then write them in the table below.

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Facts are 'real' objective information. Opinions usually include emotive words, positive/negative phrases, and subjective (persuasive) statements.

Note:

- **dpi:** dots per inch
- **9'' x 15'':** scanning area measured in inches.
- **JPEG:** Joint Photographic Experts' Group – a standard format in image compression. With JPEG, your images can be compressed to 1/50th of normal size, resulting in a substantial saving of disk space and time.

	ColorScan XR	ScanPress 800
Facts	Flatbed scanner 600 dpi of resolution	Self-calibrating flatbed scanner
Opinions	You can get crisp, clean scans	The highest technology

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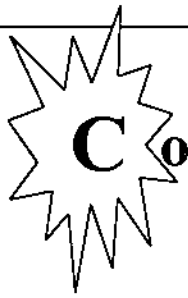

ColorScan XR from Sunrise

The ColorScan XR from Sunrise is a flatbed scanner with 600dpi of resolution and 9'' x 15'' of scanning area.

Think of the possibilities.

You can enter data and graphic images directly into your applications – word processors or databases. You can get crisp, clean scans for color compositions, video, and animation work.

It comes complete with its own image-capture software which allows for color and grey retouching. And it's easy to use. What more could you want for only £616? It couldn't be cheaper.

In the field of flatbeds, the ColorScan XR is a clear winner.

ColorScan XR

ScanPress 800

The ScanPress 800 is a self-calibrating, flatbed scanner with 800 dpi of resolution. You can scan from black and white to 24-bit color. The package includes a hardware accelerator for JPEG compression and decompression. JPEG technology saves disk space by compressing images up to 50 to 1.

In creating ScanPress 800, the manufacturers have chosen the highest technology to give you the best scans with the least effort. It produces images with high color definition and sharpness. And it comes with OCR software and Adobe Photoshop, so you can manipulate all the images you capture.

This is fantastic machine you will love working with. And at only £1,037 it is an excellent investment.

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B. In small groups, compare your answers and decide:

1. Which text has got more persuasive language?
2. Which text is more factual or objective?

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III. Language work: Making comparisons

A. Formation

The regular comparative and superlative forms of descriptive words (adjectives and adverbs) are shown below:

1 **Words of one syllable add the ending *–er* and *–est.***

Examples:

	Absolute	Comparative	Superlative
Adjectives	new	newer	newest
	old	older	oldest
	big	bigger	biggest
Adverbs	soon	sooner	soonest
	late	later	latest

2 **Words with three or more syllables are preceded by *more* and *most.***

Examples:

	Absolute	Comparative	Superlative
Adjectives	interesting	more interesting	most interesting
	convenient	more convenient	most convenient
Adverbs	easily	more easily	most easily
	carefully	more carefully	most carefully

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3 **Adjectives with two syllables may be like 1 or 2 above in that they will add the ending *–er* and *–est* if they end in *–y* or *–ly*, *-ow*, *-le*, and *–er*.**

Examples:

	Absolute	Comparative	Superlative
-y	tiny	tinier	tiniest
	speedy	speedier	speediest
-ly	early	earlier	earliest
	friendly	friendlier	friendliest
-ow	shallow	shallower	shallowest
-er	clever	cleverer	cleverest

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4 **Most of the remaining two-syllable adjectives take *more* and *most* in front of them.**

Examples:

Absolute	Comparative	Superlative
careful	more careful	most careful
boring	more boring	most boring
awful	more awful	most awful

5 **Some common two-syllable adjectives can have either type of formation.**

Examples:

Absolute	Comparative	Superlative
common	commoner/ more common	commonest/ most common
gentle	gentler/ more gentle	gentlest/ most gentle
quiet	quieter/ more quiet	quietest/ most quiet

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6 **Two-syllable adverbs ending in *–ly* take *more* and *most*.**

Examples:

Absolute	Comparative	Superlative
quickly	more quickly	most quickly
slowly	more slowly	most slowly

7 **A small number of adjectives and adverbs have an irregular comparative and superlative form.**

Examples:

	Absolute	Comparative	Superlative
Adjectives	bad	worse	worst
	far	further/farther	furthest/farthest
	good	better	best
	many	more	most
Adverbs	badly	worse	worst
	much	more	most
	little	less	least

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B. Use in sentences

Comparison may show equivalence, non-equivalence, the highest degree of something, and parallel increase.

1 **Equivalence: the following words and constructions are used to show that things or people are similar in some way.**

as … as	the same	similar/ly	either
as many … as	are similar	equal/ly	all
as much … as	equal to	compared to/with	both
similar to	is like	each	alike

Examples:

1 Here, the term 'processor' is **equivalent to** the central processing unit.
2 Laptops are **as** powerful **as** microcomputers.

2 **Non-equivalence: the following words and constructions are used to compare or contrast things or people that are separate from each other.**

not as … as	greater than	unequal(ly)	less … than
…-er than	not as many … as	unlike	not equal to
more … than	not as much … as	not the same as	fewer … than

Examples:

1 A mainframe **is larger** and **more** expensive **than** a microcomputer.
2 Learning to use a computer is **not as** difficult **as** learning to program.

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3 **The highest degree: the following words and constructions are used to compare one member of a group with the whole group (superlative).**

the …-est	the most …	the least …

Examples:

1 This is **the most popular** package on the market today.
2 BASIC is probably **the least difficult** programming language to learn.

4 **Parallel increase: the following words and constructions are used to show parallel increase (two comparatives).**

the … -er, the more …	the more…, the ….-er	the …-er, the less…

Examples:

1 The more memory your computer has, the more data it can store.
2 The bigger your computer system is, the less time you spend waiting.
3 The more training you give to your employees, the better they will perform.

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C. The following sentences express computer capabilities and limitations. Decide whether the sentences express equivalence, non-equivalence, or the superlative, then underline the words expressing the comparison. The first one has been done for you.

1 *equivalence* Speeds for performing decision-making operations are *comparable to* those for arithmetic operations.
2 ..... Even the most sophisticated computer, no matter how good it is, must be told what to do.
3 ..... A computer can perform similar operations thousands of times without becoming bored, tired, or careless.
4 ..... For example, modern computers can solve certain classes of arithmetic problems millions of times faster than a skilled mathematician.
5 ..... One of the most important reasons why computers are used so widely today is that almost every big problem can be solved by solving a number of little problems.
6 ..... Finally, a computer, unlike a human being, has no intuition.

IV. Further reading

Advertisement: A scanner

Some of the adjectives have been left out of this persuasive advertisement. Read it and complete it with words from the box.

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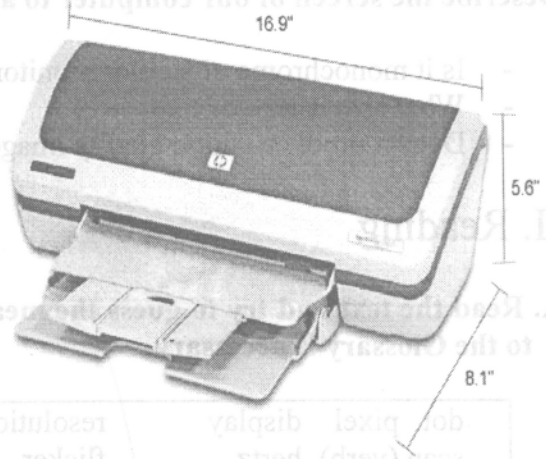
stunning	affordable	wide	excellent	complete	easy-to-use

The GT-7000 provides amazing quality with powerful, (1) ..... software and hardware at a very (2) ..... price. Using a combination of EPSON Advanced Scanning Technologies, the GT-7000 provides (3) ..... quality whether scanning text documents, photos, or films.

The EPSON START Button takes the complexity out of scanning. Simply press this button once and your photo or document is scanned and inserted into the software package of your choice ready for editing, printing, or publishing.

Included with the GT-700 is a (4) ..... range of bonus software to help with home and business scanning, printing, and publishing, allowing you to create (5) ..... posters, letters, flyers, and Web pages.

The GT-7000 is also available as the GT-7000 Photo scanner (6) ..... with advanced film adapter unit.



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Topic 8: Viewing the output

Vocabulary

sharp (adj)	sắc nét, nhọn
density (n)	mật độ
cathode ray tube (n)	ống tia âm cực, đèn hình
electron beam (n)	chùm tia điện tử
continuous sequence (n)	trình tự liên tục
flicker (v)	nhấp nháy
eliminate (v)	khử, loại bỏ
bit-mapped (adj)	ánh xạ bit
electron gun (n)	súng điện tử
intensity (n)	cường độ
display adaptor (n)	bộ thích ứng hình ảnh
liquid-crystal display (n)	màn hình tinh thể lỏng
video graphics array (VGA)	bộ điều hợp VGA
polarizing filter (n)	bộ lọc cực
block (v)	phong tỏa, ngăn chặn

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I. Read and think

We interact with computer by entering instructions and data into them. After this information has been processed internally, we can see the results on the **visual display unit** or **VDU.** To obtain a permanent copy of these results, we can use plotters, printers, or video recorders. In this interactive process with the computer, the screen plays an important part.

Describe the screen of our computer to another student. Use these questions to help you.

- Is it monochrome or a color monitor?
- What size is it?
- Does it produce a high quality image?

II. Reading

A. Read the text and try to guess the meaning of any new words in the box below. Refer to the Glossary if necessary.

dot	pixel	display	resolution	cathode ray tube	electron beam
scan (verb)	hertz		flicker	bit-mapped	visualize

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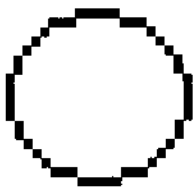
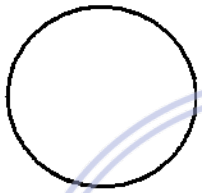
The monitor

The characters and pictures that we see on the screen are made up of dots, also called picture elements (pixels). The total number of pixels in which the display is divided both horizontally and vertically is known as the **resolution.** If the number of pixels is very large, we obtain a high-resolution display and therefore a sharp image. If the number of pixels is small, a low resolution is produced.



Low resolution display



High resolution display

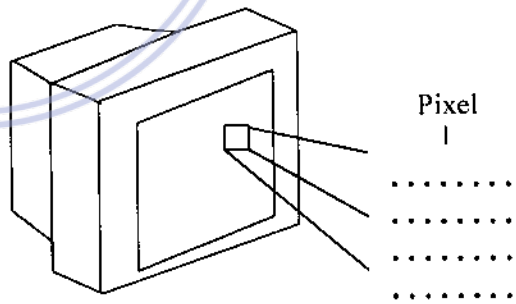
Typical resolutions are 640 x 480 or 1,024 x 768 pixels. The diagrams above show how pixel density affects the image: a larger number of pixels gives a much clearer image.

The **cathode ray tube** of the monitor is very similar to that of a TV set. Inside the tube there is an electron beam which scans the screen and turns on or off the pixels that make up the image. The beam begins in the top left corner, and scans the screen from left to right in a continuous sequence, similar to the movement of our eyes when we read, but much faster. This sequence is repeated 50, 60, or 75 times per second, depending on the system. If the rate of this repetition is low, we can perceive a flickering, unsteady screen, which can cause eye fatigue. However, a fast-moving 75 Hz 'refresh rate' eliminates this annoying flicker.

What we see on the screen is created and stored in an area of RAM, so that there is a memory cell allocated to each pixel. This type of display is called **bit-mapped**. On monochrome monitors, bits 0 are visualized as white dots, and bits 1 as black dots.

On color displays, there are three electron guns at the back of the monitor's tube. Each electron gun shoots out a beam of electrons; there is one beam for each of the three primary colors: red, green, and blue. These electrons strike the inside of the screen which is coated with substances called phosphors that glow when struck by electrons. Three different phosphor materials are used – one each for red, green, and blue. To create different colors, the intensity of each of the three electron beams is varied.

The monitor is controlled by a separate circuit board, known as the display adaptor, which plugs into the motherboard of the computer. Different boards drive different types of displays. For example, the **VGA** (video graphics array) card has become a standard for color monitors.



Each dot on the screen is a pixel

Portable computers use a flat **liquid-crystal display** (LCD) instead of a picture tube. An LCD uses a grid of crystals and polarizing filters to show the image. The crystals block the light in different amounts to generate the dots in the image.

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Lesson 2 Input/output devices

B. Read the text again and answer these questions.

1 According to the writer, what is the importance of 'pixel resolution?'
2 Which unit of frequency is used to measure the refresh rate of a monitor?
3 In the writer's opinion, why can a low refresh rate produce eye fatigue?
4 What substance is hit by electrons in a monitor?
5 What is the standard display system for many PCs?
6 What does 'LCD' stand for? What type of computers are use LCD display?

III. Writing

A. Tables often include abbreviations and technical words that are not easy to understand. Look at this table and the explanation of Monitor A's specifications.

	CRT size	CRT face	Pixel res.	Visual display	Refresh rate	Tilt-and-swivel	Other features
Monitor A Superview	16''	flat	870 x 640	256 shades of grey	60 Hz	✓	anti-glare filter
Monitor B Paintview	19''	flat	1,024 x 768	32,000 colors	75 Hz	✓	video card

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The specifications of Superview (Monitor A) may be explained like this:

1 This monochrome monitor has a 16-inch screen.
2 This displays system has a resolution of 870 x 640 pixels that gives you enough quality for graphics.
3 It offers 256 shades of grey.
4 It has a 60-hertz refresh rate. (This is quite low, so it will probably produce a flickering, unsteady image.)
5 A tilt-and-swivel stand is used to move the monitor up, down and around so that the angle can be adjusted for each user.
6 The anti-glare filter helps eliminate eye fatigue and electromagnetic radiation.

B. Use this example to help you describe Monitor B

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IV. Language work: Instructions and advice

Study these ways of giving instructions and advice and then rewrite the sentences below about what you should do to protect your eyes. Use modal auxiliary verbs in your sentences.

- **Using imperatives**
  Position your keyboard at the same height as your elbows.
  Don't use a monitor that is fuzzy or distorts the image.

- **Using should/ought to**
  You **should** position your keyboard at the same height as your elbows. = You **ought to** position …
  You **shouldn't** use a monitor that is fuzzy or distorts the image. = You **ought not (oughtn't)** to use …

1 Do not stare at the screen for long periods of time.
2 Avoid placing the monitor so that it reflects a source of bright light, such as a window.
3 Keep the screen clean to prevent distorting shadows.
4 If you work in an office with a large number of computers, don't sit too close to the sides or backs of the monitors.
5 Buy a protective filter that cuts down the ELF (extremely low frequency) emissions.

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Topic 9: Choosing a printer

Vocabulary

compatibility (n)	sự tương thích
evolve (v)	phát triển, tiến hóa
dot-matrix printer (n)	máy in ma trận điểm
preliminary draft (n)	bản in thử, bản nháp đầu
ink-jet printer (n)	máy in phun mực
bubble-jet printer (n)	máy in phun bọt
laser printer (n)	máy in laze
laser beam (n)	chùm tia laze
emulate (v)	bắt chước
thermal printer (n)	máy in nhiệt
plotter printer (n)	máy vẽ
photosetter (n)	thiết bị tạo ảnh
microfilm (n)	vi phim
drawback (n)	nhược điểm
illustration (n)	minh họa

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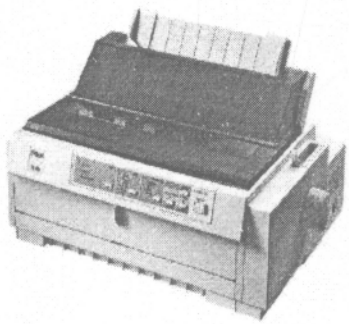
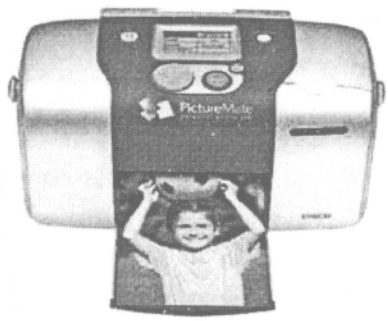
I. Reading

A. How many kinds of printers can you think of? Make a list.

B. Read the text below and label these types of printers.



The resolution depends on the number of pins (9 or 24)
1 .....



The quality (resolution) of the images ranges from 180 to 720 dots per inch (dpi)
2 .....

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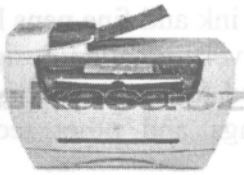
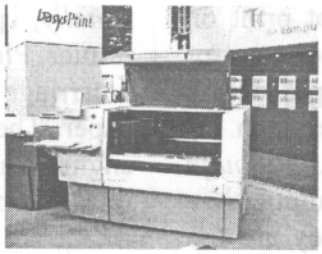
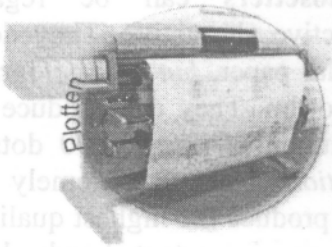


Provides high quality output – a resolution of 600/1200 (dpi)
3 .....



Provides the highest resolution – more than 2,000 dpi.
4 .....



Provides high quality for linework (like lines and curves)
5 .....

Types of printers

Printing is the final stage in creating a document. That is the purpose of the printers joined to your computing equipment. *Since* the results you can obtain with different types of printers will vary substantially, here is a guide to help you decide which one is most suitable for your needs.

To begin with, it must be taken into account that printers vary in cost, speed, print quality and other factors such as noise or compatibility. In fact, printing technology is evolving so quickly that there is always a printer for every application or personal requirement.

Dot-matrix printers use pins to print the dots required to shape a character. They print text and graphics and nowadays some of them can print up to 450 characters per second (cps); *however*, they produce relatively low-resolution output – 72 or 144 dots per inch. This level of quality, *while* suitable for preliminary drafts, is not recommended for reports or books that have a wide audience. They are slower than laser printers *but* much cheaper.

One common type of non-impact printer is an **ink-jet** printer. It operates by projecting small ink droplets onto paper to form the required image. This type of printer is quite fast, silent, and not so expensive as a laser printer. *Nevertheless*, you can expect high quality results because there are some ink-jet printers on the market with a resolution of 720 dpi. **Bubble-jet** printers work the same way.

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Laser printers produce output at great speed and with a very high resolution of 600/1200 dpi. They scan the image with a laser beam and transfer it to paper with a special ink powder. They are constantly being improved. In terms of speed and image quality they are preferred by experts for different reasons: they have a wider range of scalable fonts, they can emulate different language systems, they can produce graphics, and they have many other advantages. It goes without saying that they are still expensive.

We must not forget to mention **thermal** printers. They use heat, a special kind of paper and electrosensitive methods. They are silent and considered to be inexpensive. However, some color models that emulate HP (Hewlett Packard) plotters cost too much to be included in the same category.

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Photosetters can be regarded as an attractive alternative. They do not print on regular paper, *but* on photographic paper or microfilm. They can produce output with a resolution of over 2,000 dots per inch. *In addition*, they are extremely fast. *Although* they produce the highest quality output, they have one important drawback: they are the most expensive.

Finally, **plotters** are a special kind of printer. Plotters use ink and fine pens held in a carriage to draw very detailed designs on paper. They are used for construction plans, engineering drawings and other technical illustrations.

C. Read the text again and complete this table with the most relevant information. Then compare your notes with a partner.

Type of printer	*Technical specifications and other features*
Dot-matrix	.....
Ink-jet	.....
Laser	.....
Thermal	.....
Photosetter	.....
Plotter	.....

II. Discourse cohesion

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A. Reference signals: Read the text and say what the underlined words refer to.

Printing is the final stage in creating a document. That is the purpose of the printers joined to your computing equipment. Since the results you can obtain with different types of printers will vary substantially, here is a guide to help you decide which one is most suitable for your needs.

To begin with, it must be taken into account that printers vary in cost, speed, print quality and other factors such as noise or compatibility. In fact, printing technology is evolving so quickly that there is always a printer for every application or personal requirement.

Dot-matrix printers use pins to print the dots required to shape a character. They print text and graphics and nowadays some of them can print up to 450 characters per second (cps).

B. Linking devices

In pairs, look at the text in Task 1 again and put the words in italics into one of the columns in the table below.

Indicating addition	Contrasting	Sequencing	Reason/cause

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III. Scan reading: Quiz

Read the advertisements for printers below, and then with your partner, answer the questions. See who in your group/class can finish first.

1 How many laser printers are advertised here?
2 Is there a printer that operates by spraying ink droplets onto paper?
3 Which laser printer offers the highest resolution or output quality?
4 Which printer is the most expensive?
5 Which one would you recommend to a friend who does not have much money?
6 Which one has more internal fonts?
7 A printer language is software that tells printers how to print a document. Can you find two types of laser printer languages?
8 What connectivity features are offered by the Turbo Laser Writer QR?
9 A very common feature in advertisements is the use of abbreviations. Find the abbreviations for these expressions: dots per inch, characters per second, pages per minute, small computer system interface, and liquid-crystal display.

TURBO LASERWRITER QR

Workgroup laser printer. 15 pages per minute. 600 dpi for graphics. 36 MB of RAM. Includes Adobe PostScript and Hewlett Packard PCS printer languages. 75 resident fonts. Connectivity: one bi-directional parallel port, one LocalTalk port, and one Ethernet port for networks. 12 month warranty.

£1,150

STYLUS PRINTER **DOT-MATRIX**

£179

Dot-matrix printer with 24 pins. Prints text and graphics. 450 cps. Compatible special interface. Free unlimited hotline support for our customers. One year on-site maintenance.

COLOR POSTSCRIPT PRINTER

Color printer. 40 Adobe PostScript fonts. 36 MB RAM with a SCSI interface for an optional 20 MB hard disk. Parallel, serial and AppleTalk interfaces. HP plotter emulation. Thermal printing system. 30-day money-back guarantee and 1 year's on-site parts and labor.

£2,249

Crystal laser Printer II

14 pages per minute.

6 MB.

Two 200 sheet selectable input trays. LCD display.

80 internal scalable fonts.

A resolution of 1,200dpi.
Comes with PostScript language and PCL (printer control language).
Telephone hotline support.

£999

COLOR INK JET

£210

Color: Up to 18 ppm
Resolution: Up to 4800 x 1200 optimized dpi on premium photo paper
Paper input capacity: Up to 150 sheets
Duplex printing: Automatic (optional)
Reliable color printer with cost-effective features for the home or office on a budget

Micro Laser XT

Personal laser printer, 5 pages per minute. 4 MB RAM expandable to 64 MB. Parallel interface. 200 sheet input tray. 35 resident fonts. One-year on-site maintenance. Prints on a wide range of materials and sizes.

£649

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IV. Language work: Revision of comparison

A. Study the sentences below and do the following:

- draw a circle around comparatives and a rectangle around superlatives
- identify two special cases.

1 Dot-matrix printers are cheaper than laser printers.
2 A photosetter is the fastest output device.
3 A thermal wax printer is more expensive than a monochrome laser printer.
4 The Micro Laser XT is the most reliable of all.
5 Personal laser printers cost less than ordinary laser printers. They also weigh less and require less space.
6 My printer has more resident fonts than yours.
7 This printer offers laser quality at a lower price.
8 Monochrome printers operate faster than color ones.
9 Dot-matrix printers are too slow.
10 Dot-matrix printers are not quick enough.

B Write your own comparison of printer types.

Type	Speed	Test Quality	Graphics Capability	Color Quality	Cost
Dot-matrix	Slow to medium	Fair to good	Limited	Fair if you add a color option	Low
Ink-jet	Medium to fast	Good to excellent	Good to excellent	Good to Very good	Low to high
Laser	Medium to very fast	Excellent	Good to excellent	Good in color laser printer	Medium to high
Thermal Transfer	Medium to fast	Excellent	Good to excellent	Good to superior	Medium to high
Solid ink	Medium to fast	Excellent	Good to excellent	Good	Medium to high
Electro-static	Slow to fast	Fair to good	Fair to good	Fair to good	Low to high

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V. Describing your ideal printer

Describe to your partner the characteristics of the printer you would like to use. Give reasons. (Does your ideal printer look like the one below?)

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Topic 10: I/O devices for the disabled

Vocabulary

telemarketer (n)	nhân viên tiếp thị qua điện thoại
office correspondence (n)	thư tín văn phòng
adapt (v)	thích ứng
subject to (adj)	phụ thuộc vào
cost-effective (adj)	tiết kiệm, có lợi
adaptive technology (n)	công nghệ thích ứng
blind user (n)	người khiếm thị
speech-synthesis system (n)	hệ thống tổng hợp tiếng nói
verbalize (v)	âm thanh hóa
magnification (n)	phóng đại
emboss (v)	chạm nổi
breath control (n)	sự điều khiển bằng hơi thở
voice-recognition (n)	nhận dạng tiếng nói

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I. Adaptive technology

Working in pairs or small groups, look at the pictures and discuss these questions. Use the phrases in the box to help you.

1 What sort of difficulties do you think are experienced by computer users with limitations of vision or mobility?
2 What types of devices could be helpful to blind users?
3 How can a person with mobility limitations communicate with a computer? Think of possible tools or solutions.

Key words

blind person	adapted keyboard
magnification	on-screen keyboard
software	voice recognition system
Braille printer	screen-pointing device
adaptive switch	speech synthesis system
motor-impaired person	optical head pointer

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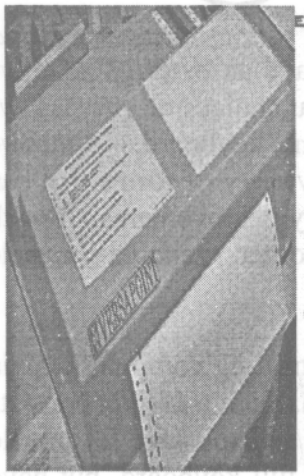

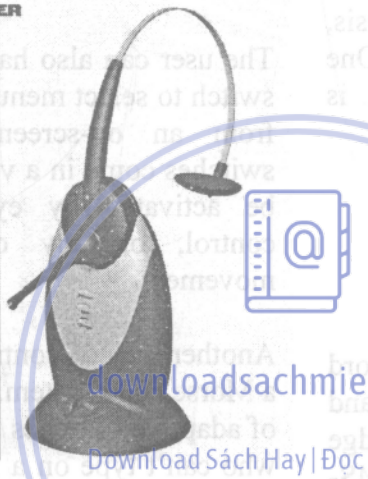

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II. Reading

A. Read the text below and find:

1 two examples of speech synthesis systems.
2 the kind of software which is recommended for someone with partial vision.
3 the speed of the Juliet Braille printer.
4 the ways adaptive switches can be activated.
5 the function of voice recognition devices.
6 the devices used by the disabled person at the Center for the Handicapped in Seattle.
7 how the blind student interacts with the machine.

Computer for the disabled

Sal has all the necessary qualities for becoming a good telemarketer*. He's bright, outgoing, and persistent. He is also blind. Phillis wants to hire him, but she has some concerns. How will he be able to use the company's database if he can't see the monitor? How will he read office correspondence? And more important, what will it cost the company to adapt the workplace to accommodate him?

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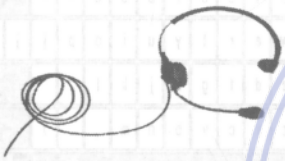
Phillis *must* accommodate him, since her company is in the US, and therefore subject to the Americans with Disabilities Act or ADA #. But she needn't worry. The latest adaptive technology for personal computers provides a cost-effective way to allow Sal and workers with other disabilities to do their job with independence.

The first task in adding adaptive technology to a computer is to determine the specific needs of the disabled worker in question. To work effectively, most **blind users** need to have their computers adapted with technologies such as speech synthesis, magnification, Braille and OCR. One example of a speech-synthesis system is VertPro from TeleSensory.



Voice system

This product can read MS-DOS-based word processors, databases, spreadsheets, and other text-based software. Window Bridge from Syntha-Voice can verbalize both MS-DOS and Windows-based applications.

For someone with limited but usable vision, a software magnification package may be appropriate. Magnification software can enlarge text appearing on the screen by up to 16 times.

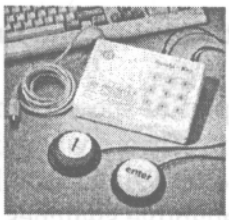
For Braille output, the Juliet printer from Enabling Technologies interfaces to any standard serial or parallel port. This printer can emboss Braille on both sides of a page at a speed of 40 characters per second. The Reading Edge OCR from Xerox Imaging Systems and the Arkenstone Open Book Unbound from Arkenstone can read printed material to blind people and send the text to a PC.

To adapt equipment for **motor-impaired workers** unable to type on standard keyboard, you can employ adapted keyboards, head pointers, and Morse code systems.

Adapted keyboard.

The user can also have an external adaptive switch to select menu choices or virtual keys from an on-screen keyboard. Adaptive switches come in a variety of forms that can be activated by eye movements, breath control, or any other reliable muscle movement.

Another way of controlling computers is via a Morse code system. Such a system consists of adaptive switches and software for people who can't type on a full keyboard, but have the ability to physically push at least one key.



Adaptive switch

Voice-recognition systems permit people to issue verbal commands to a computer to perform data entry.

(Adapted from 'Computers for the disabled', Joseph J. Lazzaro, *BYTE Magazine*, June 1993)

* Someone who markets products by phone.

This makes it illegal for employers to discriminate against people with disabilities.

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B. Match the terms in the box with the explanations below.

a. disability	b. Braille	c. port
d. interface	e. Morse code	f. speech synthesizer

1 a system of writing and reading (using raised dots) for blind people, to enable them to read by touch. ☐
2 a socket to connect I/O devices ☐
3 Incapacity ☐
4 a system of dots and dashes, or short and long sounds, representing letters of the alphabet and numbers. ☐
5 a hardware device used in conjunction with a screen reader program to convert screen contents into spoken words. ☐
6 channels and control circuits which allow different parts of a computer to communicate with one another. It also refers to the part of the system that allows a user to interact with programs. ☐

III. Writing

Write a letter to Mike Hartley – the director of the Adaptive Technology Project for the Blind in Washington, DC. – asking for information about computers for the disabled. Make sure you include the following points.

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- Begin by saying why you're writing: *I'm writing to...*
- Ask for information about specific I/O equipment for deaf, blind, and motor-disabled workers: *I would like to know...*
  Ask for a free handbook about how to add adaptive technology to personal computers: *I would be very grateful if...*
- End the letter appropriately: *I look forward to hearing from you soon.*
  Yours sincerely,

IV. Language work: Compound nouns

A. Formation and use

The language of computing in English contains an ever-increasing number of compound nouns, that is, a group of two or more nouns which act as a single noun.
Examples:

memory capacity	an address bus	an arithmetic unit
information systems	a bar code scanner	a computer keyboard

It is important to be able to recognize how such compounds are formed in order to understand what they mean.

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The exact relationship between the words depends on the particular expression, but all these expressions have one thing in common: the last word in the chain says what the thing is, while the preceding word or group of words describes the thing. So when we read compound nouns, we have to start with the last word and work backwards.

Examples:

An **address bus** is a bus dedicated to address information.

The **memory capacity** of a computer is the capacity of its memory.

A large number of possible meanings can be expressed by compound nouns. For instance, the first noun or group of nouns can tell us what the second noun is made of, what it is for, or what it is part of.

1 **Material:** the first noun tells us what the second noun consists of.

Example:

a silicon chip (a chip made of silicon)

a ferrite ring (a ring made of ferrite)

2 **Function:** the first noun tells us what the second noun is for.

Example:

an address bus (a bus dedicated to address information

an arithmetic unit (a unit which performs arithmetic functions)

3 **Part:** the second noun refers to a part of the first noun.

Example:

a computer keyboard (the keyboard of a computer)

a monitor screen (the screen of a monitor)

a program feature (a feature of a program)

4 **Activity or person:** the second noun refers to an activity or person related to the first noun.

Example:

computer programming (the programming of computers)

a computer programmer (a person who programs computers)

systems analysis (the analysis of organizational systems)

a systems analyst (a person who analyses organizational systems)

5 **Multiple nouns:** sometimes a compound noun will join together with one or more other nouns to give an expression that has three or four words. In such cases, it is important to examine the expression very carefully to break it into its constituent parts. The secret, as always, is to read the expression from the back towards the front.

Example:

4 3 2 1

a document-image-processing program (a program which processes images of documents)

Note: some expressions are written separately, while others are joined by hyphens. There are no clear rules for this. Sometimes you will see the same expression written in different ways in different texts.

Example:

document-image-processing program

document image-processing program

document image processing program

However, it is important to be consistent within a single text.

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B. Exercises

1. A device that scans bar codes is called a bar code scanner.
What name is given to:

1 a unit that gives a visual display of information on a screen?
2 a device that reads magnetic cards?
3 a device that plots graphs?
4 a device that prints using a laser as the light source?
5 a unit that holds magnetic disks?
6 a device that prints using a jet of ink?
7 the rate of transmission of data?
8 a package for making presentations using multimedia?
9 a program which processes data in batches?
10 the process for the conversion of disks for computers?

2. Using the explanations in Exercise 1 as models, write short simple explanations of the following items:

1 an input device
2 an optical character reader
3 a graphics stylus
4 a document sorter
5 a fibre optics transmission system
6 a sequence control register
7 a liquid crystal display
8 network configuration information
9 a desktop document manager
10 a multimedia editing software package

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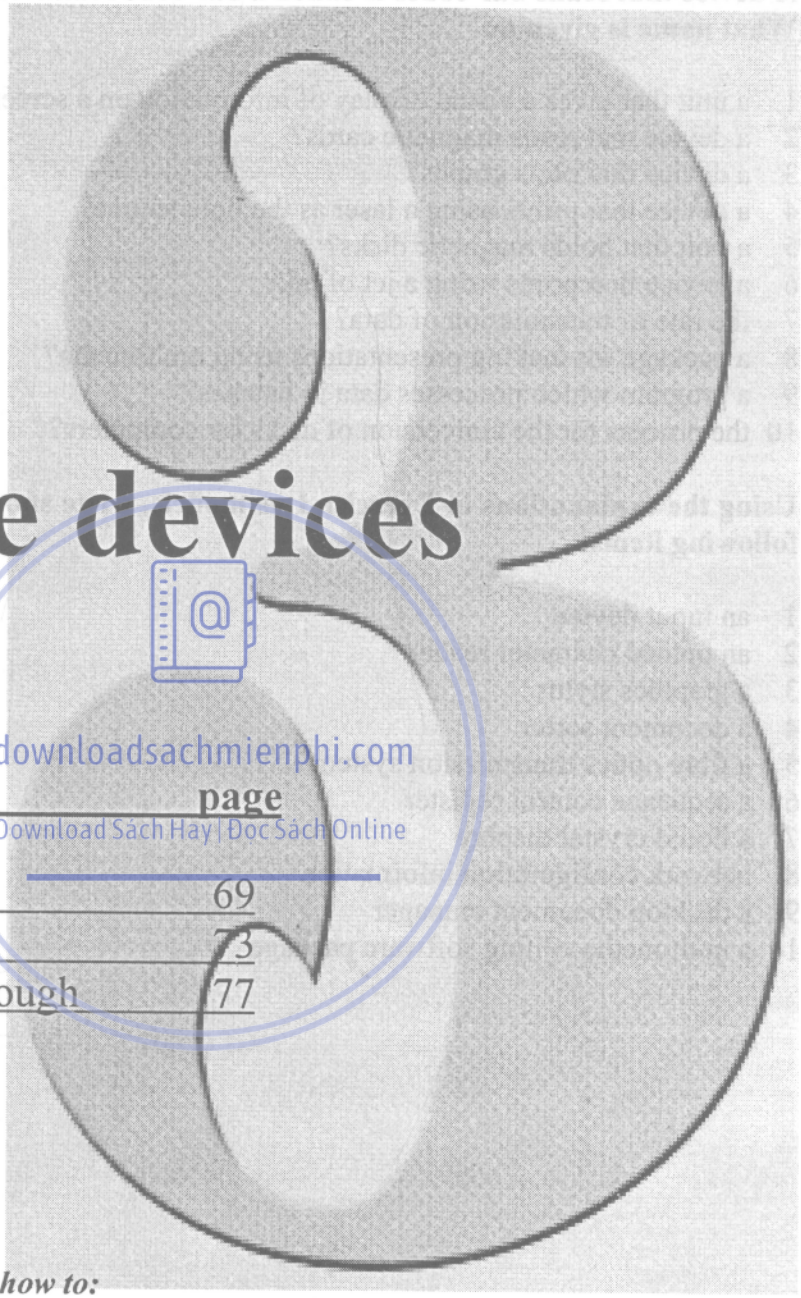

Storage devices

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Learning objectives

In this lesson, you will learn how to:

- ask and answer questions about floppy and hard disks
- describe different types of storage devices
- locate specific information in texts about optical disks
- use technical vocabulary connected with disks and drives
- give advice and make recommendations about disks and drives.

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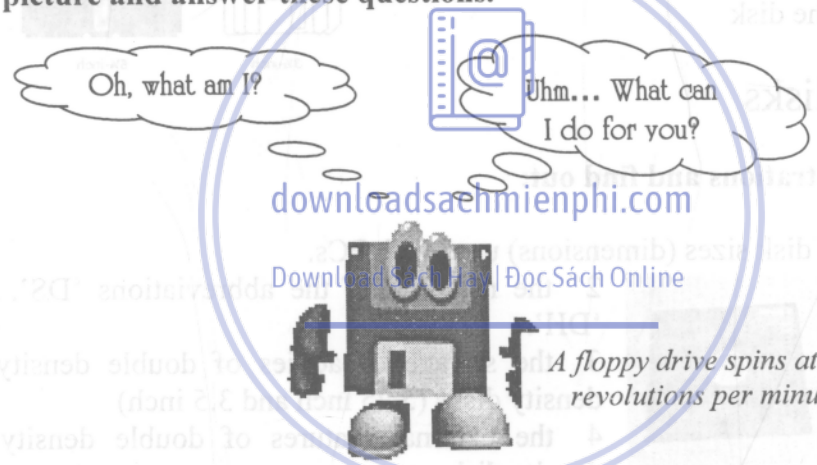
Topic 11: Floppies

Vocabulary

floppy disk (n)	đĩa mềm
flexible (adj)	dẻo, linh hoạt
magnetizable (adj)	(thuộc) từ tính
track (n)	rãnh ghi
sector (n)	cung

I. Warm up

Look at the picture and answer these questions.



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A floppy drive spins at 360 revolutions per minute.

II. Protect your floppies

A. Match the instructions to the pictures.

1 Protect your floppies against high temperatures. ☐
2 Remember to block the disk if you want to be sure that information is not changed or erased by accident. ☐
3 Do not put heavy objects on top of the disk. ☐
4 Magnetic fields can damage the information stored on disks. Don't leave them near the telephone. ☐
5 Keep disks away from water and humidity. ☐
6 Do not touch the magnetized surface under the metallic cover. ☐

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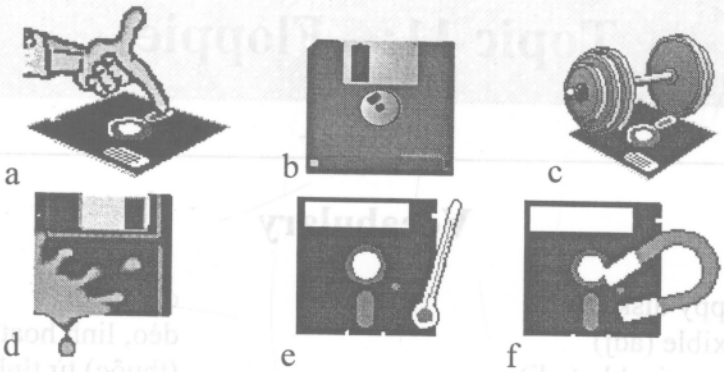
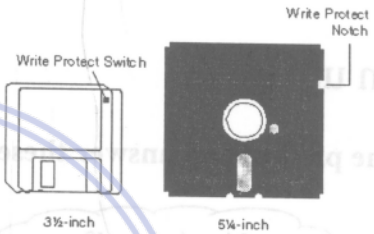


B. In pairs, tell each other what you must or mustn't do to protect your disks

Example

You mustn't leave them on top of your computer.

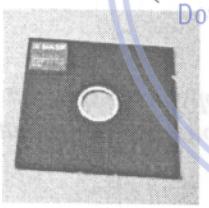
1 in a protective case
2 into the disk drive very carefully
3 near strong magnetic fields
4 at a temperature of between 10^0C and 52^0C
5 bend or fold the disk



III. Types of disks

A. Look at the illustrations and find out:

1 the two standard disk sizes (dimensions) used with PCs.



2 the meaning of the abbreviations 'DS', 'DD', and 'DH'.
3 the storage capacities of double density and high density disks (5.25 inch and 3.5 inch)
4 the external features of double density and high density disks.
5 the storage capacity of the floppy disk that is made of barium ferrite.

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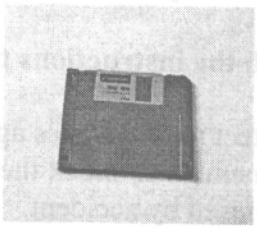
B. Check your answers with a partner.



5.25 – inch diameter disk (used in old computer)

Small, flexible magnetic disk supplied within a plastic envelope.

Options:

a. 360 KB, double density
b. 1.2 MB, high density

3. 5 – inch micro-floppy disk, DS, DD

Double-sided, double density, 720/800 KB capacity. Conventional disk with ferrous (iron) oxide surface

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3. 5-inch floppy disk 2 HD

Double-sided, high density, 1.44 MB capacity. Conventional disk.

IV. Reading

A. Read the text and look at the diagram

Technical details

Information stored in the RAM is lost when the computer is turned off. Because of this, data and applications are stored in either hard or floppy disks which provide a more permanent backing store.

Floppy disks are so called because they consist of flexible plastic material which has a magnetizable surface. They are available in two sizes: 5.25-inch disks are used in old computers; 3.5-inch disks are the most popular today.

The surface of a floppy disk is divided into concentric circles or 'tracks', which are then divided into 'sectors'. When you insert a blank disk into a disk drive, it must be 'initialized', or formatted, before information can be recorded onto it. This means that magnetic areas are created for each track and sector, along with a catalogue or 'directory' which will record the specific location of files.

When you save a file, the operating system moves the read/write heads of the disk drive towards empty sectors, records the data and writes an entry for the directory. Later on, when you open that file, the operating system looks for its entry in the directory on the disk, moves the read/write heads to the correct sectors, and reads the file into the RAM area.

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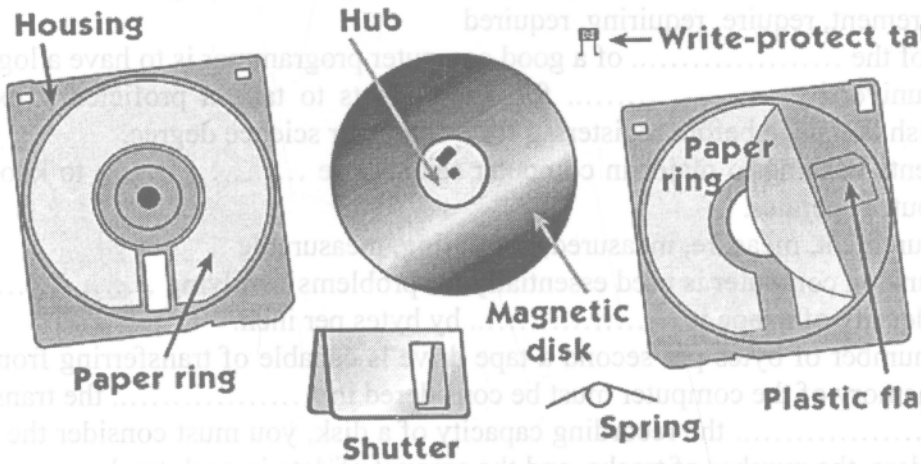

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B. Match the words and expressions on the left with the explanations on the right.

1	backing store	a	a catalogue of where each piece of data is stored and how to find it
2	floppies	b	recording heads
3	disk drive	c	secondary storage
4	formatting	d	diskettes
5	directory	e	initializing; setting tracks and sectors on magnetic disks
6	read/write heads	f	a peripheral which spins disks and contains a read/write head

V. Language work: Word building

First, choose the appropriate form of the words to complete the sentences. Then check the differences of meaning in your dictionary.

1 magnet, magnetism, magnetic, magnetize, magnetized, magnetization, magnetizing

a Both tapes and disks are considered …….. storage media.

b Information is recorded on a disk in the form of …….. spots called bits.

c …….. is the principle underlying the storage of information in computer memories.

2 record, recorder, recording, recorded

a Disk drives have two sets of …….. heads which move from track to track to access information.

b Information …….. on disks can be accessed much faster than information …….. on tapes.

c Computers are capable of storing a lot of information by …….. it on tapes or disks.

3 access, accessible, accessibility, accessed, accessing

a Do you have …….. to the student files in the database?

b To …….. information recorded on a disk, a disk drive must be used.

c Tapes are a faster medium than punched cards for ……..information

d A cylinder is …….. by all the recording heads acting at once.

4 requirement, require, requiring, required

a One of the …….. of a good computer programmer is to have a logical mind.

b Our university …….. foreign students to take a proficiency exam in the English language before registering for a computer science degree.

c Students wishing to major in computer science are …….. to know how the computer operates.

5 measurement, measure, measured, measuring, measurable

a The analog computer is used essentially for problems involving ……..

b The density of a tape is …….. by bytes per inch.

c The number of bytes per second a tape drive is capable of transferring from a tape to the memory of the computer must be considered in …….. the transfer speed.

d To …….. the recording capacity of a disk, you must consider the number of cylinders, the number of tracks, and the amount of data in each track.

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Topic 12: Hard drives

Vocabulary

spin (v)	quay tròn
retrieve (v)	truy lục, tìm kiếm
vast (adj)	lớn, khổng lồ
bear (v)	mang, chịu đựng
vital (adj)	thiết yếu
attention (n)	sự lưu ý, sự chú ý
access time (n)	thời gian truy cập
seek time (n)	thời gian tìm kiếm
distinguish (v)	phân biệt
data transfer rate (n)	tốc độ truyền dữ liệu
transmit (v)	truyền
drive mechanism (n)	cơ cấu ổ đĩa
rigid (adj)	cứng
seal (v)	gắn, bọc
removable (adj)	mang tính di động, có thể tháo rời
cartridge (n)	cuộn, hộp
security (n)	an ninh
optical technology (n)	công nghệ quang học
reality (n)	thực tế, thực tiễn
encyclopedia (n)	bách khoa toàn thư
warranty (n)	bảo hành
optimization (n)	sự tối ưu hóa

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I. Before you read

Try to answer these questions.

1 What is the main function of a hard disk?
2 Which unit is used to measure hard disk capacity?
3 Can you think of one advantage that hard disks have over floppies?

A hard disk drive spins at about 7,200 revolutions per minute – 20 times the speed of a floppy disk drive

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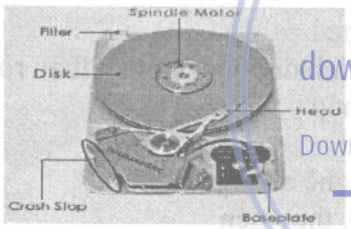
II. Reading

A. Read the text quickly to find out if you were right in task 1.

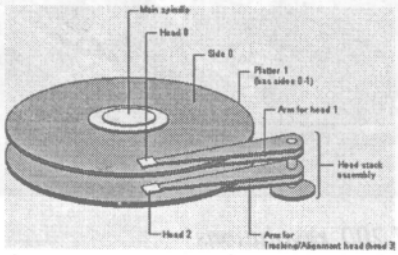
B. Read the text again and make a list of the technical aspects that you should consider when buying a hard disk

When buying a hard disk...

Hard disks have important advantages over floppy disks: they spin at a higher speed, so you can store, and retrieve information much faster than with floppies. They can also hold vast amounts of information, from 500 MB up to several gigabytes. Apart from this, both types of disks work in the same way. To directly access the necessary information, the read/write heads of rigid disks seek the required tracks and sectors, and then transfer the information to the main memory of the computer or to another form of storage, all of which is done in a few milliseconds (ms).



Bearing in mind that you always need disk storage, it is good sense to ask yourself some vital questions: What size capacity do I need? What speed can I use? What kind of storage device is the most suitable for my requirements? If you only use word-processing programs, you will need less storage capacity than if you use CAD, sound and animation programs. For most users, 2 GB on the hard disk is enough.



Now let's turn our attention to speed. Access times vary from 8 ms to 20 ms. 'Access time' – or seek time – is the time it takes your read/write heads to find any particular record. You have to distinguish clearly between seek time (e.g. 20 ms) and 'data transfer rate' (the average speed required to transmit data from a disk system to the RAM, e.g. at 20 megabits per second). Remember that the transfer rate also depends on the power of your computer.

When buying a hard disk you should consider the kinds of drive mechanisms and products available. There are 'internal' and 'external' drives which are both fixed hard drives, i.e. rigid disks sealed into the drive unit, either within or attached to the computer. A third type of hard drive, known as 'removable', allows information to be recorded on 'cartridges', which can be removed and stored off-line for security purposes. Popular removable hard disks include Jaz and Zip drives. A Jaz cartridge can store up to 2 GB of data, whereas a Zip drive can store up to 250 MB of data.

Finally, a few words about 'optical' technology: CD-ROMS and CD-Recordable drives have become a reality. However, magnetic hard disks are still preferred for personal data storage, whereas optical discs are used for recording large amounts of information such as a dictionary or encyclopedia.

Note:
- **ms**: milliseconds (thousandths of a second)
- **CAD**: computer aided design
- **CD-ROM**: acronym for Compact Disk – Read Only Memory

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C. Now read these sentences and decide if they are true (T) or false (F)

1 Hard disks use rigid rotating disks. ☐
2 'Seek time' refers to the average time required for the recording heads to move and access data. ☐
3 If you use multimedia applications, you need the same storage capacity as required for word processors. ☐
4 'Access time' and 'data transfer rate' mean the same. ☐
5 Optical disks are magnetic. ☐
6 Each Jaz cartridge can hold up to 1,000 MB of data ☐
7 CD-ROM disks are used for storage of massive amounts of information. ☐

III. Follow-up: A hard disk advertisement

Complete the advertisement for the MegaMind hard disk with the words in the box.

megabytes	drive	compatible	highest	time
protection	secure	write	multimedia	

MegaMind XT

Today's personal computers are very powerful, but to handle large applications like databases, (1)..... , DTP publishing and CAD, you need to have more than 200 (2) ..... in your hard disk. That's where MegaMind XT comes in: a reliable hard (3) ..... with 6 gigabytes of capacity; 8 ms average seek (4) ..... and 13 mbits/sec average data transfer rate; and a 3.5'' drive unit with a five-year warranty.

You also receive software utilities that let you easily manage and (5) ..... your data. Our software provides formatting, partitions, disk optimization, and password (6) .....

MegaMind XT is (7) ..... with IBM PCs as well as Macintosh computers. As with every MegaMind product – hard disk or optical, 1 GB to 6 GB – the XT gives you the (8) ..... performance. So call us today on (0181)796 0402. Or (9) ..... to MegaMind, PO Box 673, London, N22 1 XB.

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IV. Vocabulary

The phrase *hard disk* consists of the adjective *hard* and the noun *disk*. Make other phrases or words by combining *hard* and *disk* with these words. Give the meaning of each phrase or word in your own language.

(Use your dictionary if necessary)

sell drive
copy drugs
worker optical
internal **hard** | **disk** magnetic
compact labor
currency capacity
ware directory
time

V. Language work: Revision of prefixes

Fill in the gaps with the correct prefix from the following list

auto	de	dec	inter
maxi	mega	micro	mini
mono	multi	semi	sub

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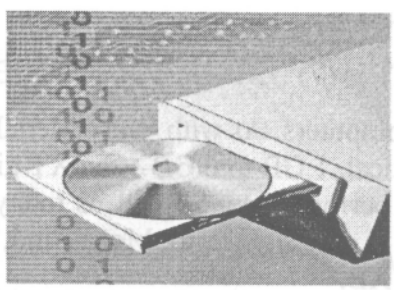
1 Most people prefers a color screen to a ..... chrome screen.
2 ..... script is a character or symbol written below and to the right of a number or letter, often used in science.
3 A ..... byte equals approximately one million bytes.
4 Once you finish your program, you will have to test it and ..... bug it to remove all mistakes.
5 The introduction of ..... conductor technology revolutionized the computer industry.
6 If a computer system has two or more central processors which are under common control, it is called a ..... processor system.
7 The ..... imal system is a number system with a base of 10.
8 When the user and the computer are in active communication on a graphics system, we refer to this as ..... active graphics.



A hard disk

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Topic 13: Optical breakthrough

Vocabulary

occupy (v)	chiếm
affect (v)	tác động, ảnh hưởng
stable (adj)	ổn định
metal detector (n)	thiết bị dò kim loại
optical drive (n)	đĩa quang
shareware (n)	phần mềm cổ đông
disadvantage (n)	nhược điểm
duplicate (v)	nhân bản, sao y
version (n)	phiên bản
limitation (n)	hạn chế
rewritable drive (n)	ổ ghi
erase (v)	tẩy, xóa

I. Warm-up

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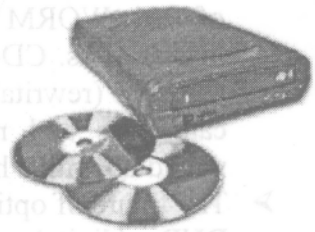
Before reading, try to answer these questions.

1 What is this a picture of?
2 What kind of technology is used by CD-ROM disks and drives?
3 What does 'CD-ROM' stand for?
4 How do you say these expressions in your language?

compact disk — CD-ROM disk drive
laser technology — erasable optical disk



II. Reading

A. What are the advantages and disadvantages of optical disks? Read the text to check your answer.

Optical disks and drives

Optical disks can store information at much higher densities than magnetic disks. *Thus*, they are ideal for multimedia applications where images, animation and sound occupy a lot of disk space. *Besides*, they are not affected by magnetic fields. This means that ***they*** are secure and stable, e.g. they can be transported through airport metal detectors without damaging the data. *However*, optical drives are slower than hard drives. While there are hard drives with an average access time of 8 ms, most CD-ROM drives have an access time of 150 to 200 ms.

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Lesson 3 Storage devices

There are various types of optical drives:

- **CD-ROM** systems offer everything, from shareware programs to dictionaries and encyclopedias, from multimedia databases to 3-D games. A lot of institutions have discovered that CD-ROM is the most economical way of sharing information. In fact, one CD-ROM disk (650 MB) can replace 300,000 pages of text (about 500 floppies), ***which*** represents lot of savings in distributing materials and corporate databases. *In addition*, CD-ROM drives can play music CDs while you work. *Yet* CD-ROM technology has one disadvantage: ***you*** cannot write anything onto a CD-ROM disk. You can only 'read' ***it***, like a book.
- CD-Recorders come in two different forms: **CD-R** and **CD-RW.** CD-R machines record on CD-R write-once) disks, allowing you to create and duplicate CDs. They are used to back up hard disks or to distribute and archive information. In fact, these systems are the modern version of old WORM (write once, read many) disks. CD-RW machines hold CD-RW (rewritable) disks ***that*** you can erase and re-use, just as you would do with a hard disk.
- The future of optical storage is called **DVD** (digital versatile disk). A DVD-ROM can hold 17 GB, about 25 times an ordinary CD-ROM. *For this reason*, it can store a large amount of multimedia software and complete Hollywood movies in different languages. They can also play music CDs and CD-ROMs. However, DVD-ROMs are 'read-only' devices. To avoid this limitation, companies also produce DVD rewritable drives.
- **Magneto-optical (MO) drives** use both a laser and an electromagnet to record information. Consequently, MO disks are rewritable, i.e. they can be written to, erased, and then written again. They usually come in two formats: (i) 5.25'' cartridges can hold more than 2 GB; (ii) 3.5'' floptical disks have capacity of 230 to 640 MB. They are ideal for back-up and portable mass storage.

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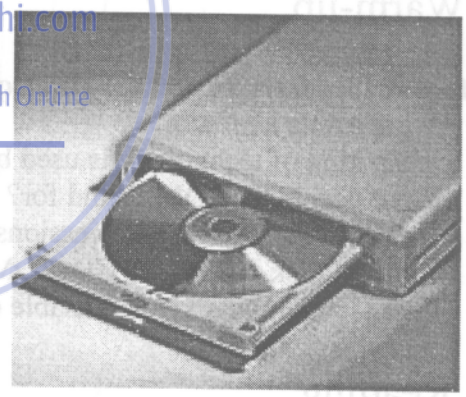

A DVD drive

B. Read the text again and summarize in the table the most relevant information.

	Technical specifications	*Use*
CD-ROM		
CD-Recorder		
DVD		
Magneto-optical		

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III. Discourse cohesion

A. Reference signals. Read these sentences and clauses and look back at the text in Task 2 to find out what the words in bold italics refer to.

1 ... ***they*** are secure and stable …
2 … ***which*** represents a lot of savings in distributing materials.
3 … ***you*** cannot write anything onto a CD-ROM disk.
4 You can only 'read' ***it***…
5 CD-RW (rewritable) disks ***that*** you can erase and re-use …

B. Connectors and modifiers. Look at the expressions in *italics* in these sentences and clauses.

1 *Thus,* they are ideal for multimedia applications.
2 *Besides,* they are not affected by magnetic fields.
3 *However,* optical drives are slower than hard drives.
4 *In addition,* CD-ROM drives can play music CDs while you work.
5 *Yet,* CD-ROM technology has one disadvantage: …
6 *For this reason,* it can store a large amount of multimedia software.

Put each expression (1 to 6) into the right category: a, b, or c.

a to show contrast
b to explain causes and results
c to add new ideas.

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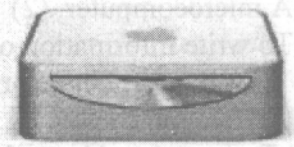
IV. Speaking

Which of the products in the following box would be most suitable for the purposes below? Discuss the pros and cons with a partner.



1 To store data and programs at home.
2 To hold large amounts of information in a big company.
3 To store an illustrated encyclopedia for children.
4 To hold historical records in the National Library.
5 To store high-quality audio and video, and hold several movies in different languages.

Useful expressions

For personal use, I would recommend... because...
In a big company, it would be a good idea to...
However, ... is good for an encyclopedia because...
I agree/disagree with you. CD-ROMs...
Besides, ...
Well, that depends on...

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Products available

Hard disk drive
Superfast 8 ms hard drive. Capacity ranges from 2 to 6 GB.
Iomegas's removable drives
The Zip series uses 100 MB and 250 MB disks. In the near future, it could replace the floppy disk as the portable storage medium.
The Jaz series can hold 2 GB cartridges. Ideal to back up hard disks.
CD-ROM drive
Each CD disk holds 650 MB.
CD-Recordable drive
Makes it possible to write data to CDs as well as read it.
Magneto-optical (MO) disk systems
Erasable optical-magnetic 5.25'' cartridges with 2.6 GB of storage capacity. Can be erased and written on like a hard disk.
Rewritable 3.5'' floptical disks with a storage capacity of 640 MB.
DAT Data tape drive
Digital audio tape drives to store computer data. Used for back-up purposes. Slow access. Huge amounts of information (about 10 GB).
Digital Video Disk-ROM drive
Each DVD-ROM disk has a capacity of up to 17 GB, and can hold various full-screen movies. The drive can also read your CD-ROMs.

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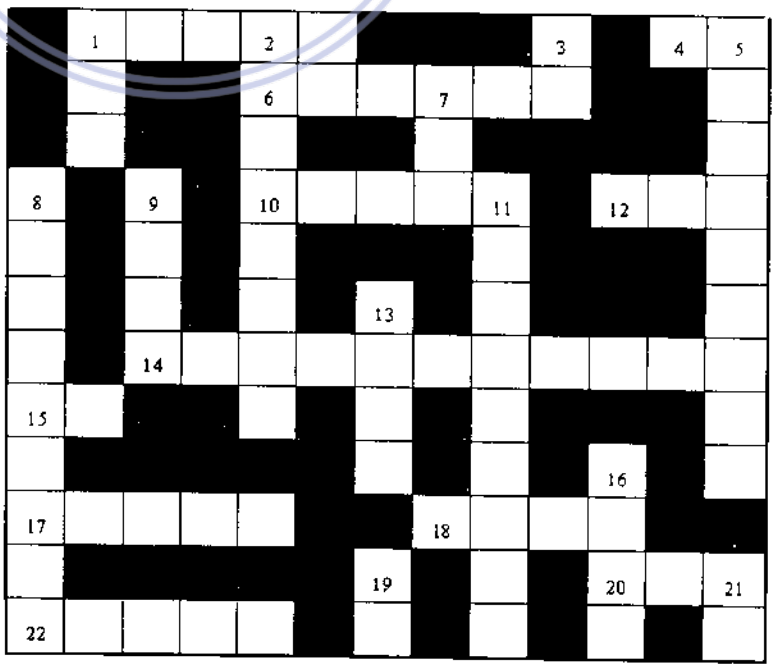
V. Crossword

Read the clues and complete the crossword.

Across

1 Acronym for 'light amplification by stimulated emission of radiation'. (5)
4 A microcomputer. (2)
6 To write information on a disk, magnetic tape or film. (6)
10 To record and keep for future use. (5)
12 Abbreviation of 'binary digit'.
14 Thousandth of a second. (11)
15 The type of computer with a 286 processor introduced by IBM in 1984. (2)



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17 Concentric rings marked on the surface of a disk when the disk is formatted.
18 Prefix meaning 'very large' or 'one thousand million'. (4)
20 Read only memory. (3)
22 The physical mechanism that accepts, reads, and writes data on a disk. (5)

Down

1 Acronym for 'local area network'. (3)
2 Opposite of 'indelible'. (8)
3 Abbreviation of 'high density' or 'hard disk' (2)
4 Way of storing a lot of information in a removable form. (9)
5 Abbreviation of 'optical character recognition'. (3)
6 All disks must be 'initialized' or ..... when used for the first time. (9)
7 Indelible optical storage device: 'write once, read many'. (4)
8 Not cheap. (9)
9 A flat, circular surface used to hold computer data. (4)
10 Opposite of 'soft'. (4)
11 Disk that holds music. (2)
12 A thousand kilobytes. (2)

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Basic software

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Learning objectives

In this lesson, you will learn how to:

- extract relevant information form texts about system software
- recognize the characteristics of a typical graphical user interface or GUI
- make a summary of a written text
- talk about word processors
- identify the function of different word-processing capabilities: search and replace, cut and paste, spell checkers, etc.
- understand the basic features of spreadsheets and databases
- acquire specific vocabulary related to Internet utilities.

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Topic 14: Operating system

Vocabulary

compatible (adj)	tương thích
clone (v)	nhái, bắt chước
directory (n)	thư mục
bootable (adj)	có thể khởi động
button (n)	nút
scroll-bar (n)	thanh cuộn
three-dimensional (adj)	(không gian) ba chiều
sequence of instructions (n)	dãy lệnh
conferencing software (n)	phần mềm hội thảo
routines (n)	chương trình con
multitasking (adj)	xử lý đa nhiệm
thread (n)	chuỗi, mạch, dòng
simultaneously (adv)	một cách đồng thời
numerous (adj)	vô số, nhiều
voice recognition technology (n)	công nghệ nhận dạng giọng nói
supercomputer (n)	siêu máy tính
general public license (n)	bản quyền dùng chung (mở)
open source (n)	nguồn mở
Java virtual machine (n)	máy ảo Java

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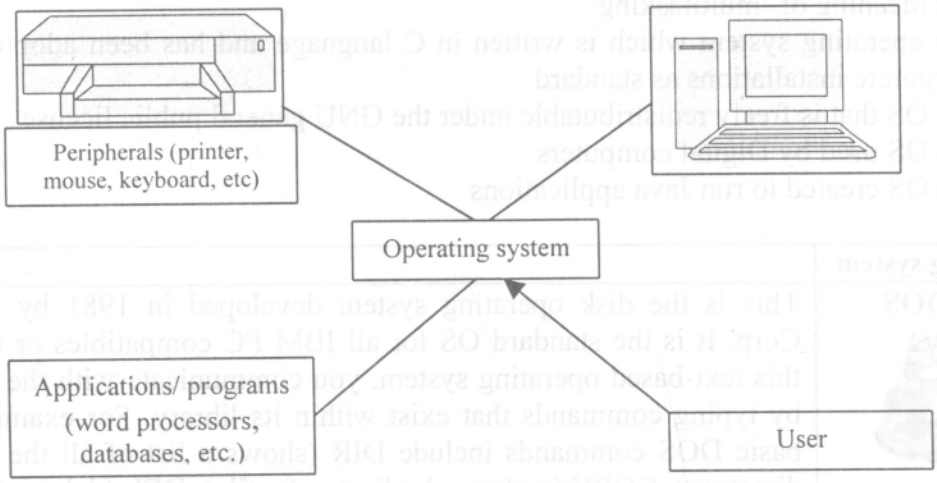
I. Warm-up

A. Look at the diagram. What is the function of the operating system?



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B. Read the text below and complete it with the phrases in the box.

applications software	operating system	software	system software

Information provided by programs and data is known as (1) ..... Programs are sets of instructions that make the computer execute operations and tasks. There are two main types of software:

- The (2) ..... refers to all the programs which control the basic functions of a computer. They include operating systems, system utilities (e.g. an anti-virus program, a back-up utility) and language translators (e.g. a compiler – the software that translates instructions into machine code).
- The (3) ..... refers to all those applications – such as word processors and spreadsheets – which are used for specific purposes. Applications are usually stored on disks loaded into the RAM memory when activated by the user.

The (4) ..... is the most important type of system software. It is usually supplied by the manufacturers and comprises a set of programs and files that control the hardware and software resources of a computer system. It controls all the elements that the user sees, and it communicates directly with the computer. In most configurations, the OS is automatically loaded into the RAM section when the computer is started up.

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II. Reading

Read the text and find:

1 the text-based operating system delivered with most PCs
2 the mail package included with Windows '98
3 the function of the Finder in Macintosh computers
4 the meaning of 'multitasking'
5 the operating system which is written in C language and has been adopted by many corporate installations as standard
6 the OS that is freely redistributable under the GNU general public license
7 the OS used by Digital computers
8 the OS created to run Java applications

Operating system	
MS-DOS 	This is the disk operating system developed in 1981 by Microsoft Corp. It is the standard OS for all IBM PC compatibles or clones. In this text-based operating system, you communicate with the computer by typing commands that exist within its library. For example, some basic DOS commands include DIR (shows a list of all the files in a directory), COPY (makes a duplicate of a file), DEL (deletes files)

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Windows '95, '98 	**Windows '95** is a bootable operating system in its own right. It has a graphical interface with many Macintosh-like features. It supports multimedia applications and comes with Internet software. The program manager is called Windows Explorer. Buttons and scroll-bars have an attractive, three-dimensional look. With **Windows '98,** Internet access becomes part of the user interface. Its active desktop lets you find information easily with the same view of content on your PC, network or the Web. The system includes Outlook Express for e-mail, NetMeeting conferencing software, a chat program, and a Web-page editor. It offers support for new technologies like DVD, and it also enables you to watch TV on your PC.
Windows 2000	This OS is an update to all Windows versions, including Windows NT.
Macintosh Apple 	Most of the Mac OS code is in the ROM chips .These contain hundred of routines (sequences of instructions) which perform such tasks as starting up the computer, transferring data from disks to peripherals, and controlling the RAM space. Large parts of the Mac OS are also inside the System file and the Finder, kept in the System folder. The content of the System file is loaded automatically at start-up and contains information which modifies the routines of the OS in the ROM chips. The Finder displays the Macintosh's desktop and enables the user to work with disks, programs, and files. It allows multitasking. It has an Internet set-up assistant, an e-mail program, and a Web browser.
OS/2 Warp (IBM) 	This is the PC world's most technically sophisticated operating system. It provides true multitasking, allowing a program to be divided into 'threads', many of which can be run at the same time. Thus, not only can numerous programs run simultaneously, but one program can perform numerous tasks at the same time. The IBM OS/2 Warp includes easy access to networks via modem, support for Java applications and voice recognition technology.
UNIX 	This operating system, designed by Bell Laboratories in the USA for minicomputers, has been widely adopted by many corporate installations. From the very first, it was designed to be a multitasking system. It is written in C language.

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Linux 	Protected under the GNU general public license, Linux is the open source, cooperatively-developed POSIX-based, multitasking operating system. Linux is used as a high value, fully-functional UNIX workstation for applications ranging from Internet Servers to reliable work group computing. Linux is available for Intel®, Alpha™, and Sun SPARC® platforms.
Open VMS 	The Open VMS operating system is Digital's popular general purpose OS for all VAX computers. It provides data and access security. Open VMS supports all types of Digital and multivendor networks.
Java OS 	This is designed to execute Java programs on Web-based PCs. It's written in Java, a programming language that allows Web pages to display animation, play music, etc. The central component of Java OS is known as the Java Virtual Machine.

III. Basic DOS commands

Match the DOS commands on the left with the explanations on the right. Some commands are abbreviations of English words.

1	FORMAT	a	erases files and programs from your disk
2	CD (or CHDIR)	b	copies all files from one floppy disk to another
3	DIR	c	changes your current directory
4	MD (or MKDIR)	d	initializes a floppy disk and prepares it for use
5	DISKCOPY	e	displays a list of the files of a disk or directory
6	BACKUP	f	changes names of your files
7	REN (RENAME)	g	creates a subdirectory
8	DEL	h	saves the contents of the hard disk on floppy disk for security purposes

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IV. Language work: Revision of the passive

A. The present simple passive

We form the present simple passive with *am/is/are + past participle*.
Example:

- This program **is written** in a special computer language.
- Programs and data **are** usually **stored** on disks.

Remember that the word data takes a singular verb (3rd person singular) when it refers to the information operated on in a computer program.

- The data **is** ready for processing.

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B. Fill in the blanks with the correct form of the verbs in brackets.

1 Various terminals (connect) ..... to this workstation.
2 Microcomputers (know) ..... as 'PCs'.
3 Magazines (typeset) ..... by computers.
4 When a particular program is run, the data (process) ..... by the computer very rapidly.
5 Hard disks (use) ..... for the permanent storage of information.
6 The drug-detecting test in the Tour de France (support) ..... by computers.
7 All the activities of the computer system (coordinate) ..... by the central processing unit.
8 In some modern systems information (hold) ..... in optical disks.

V. Quiz

Work with a partner. Try to answer as many questions as possible.
(Use the Glossary if you need to)

1 What name is given to the set of programs that interface between the user, the applications programs, and the computer?
2 What types of programs are designed for particular situations and specific purposes?
3 What does 'MS-DOS' stand for?
4 What is the basic DOS command for copying a file?
5 The Macintosh operating system is kept in various locations. Where exactly are these?
6 Can you give synonym for the term 'routine'?
7 What is the abbreviation for 'International Business Machines'?
8 Which company developed UNIX?
9 Which programming language allows you to play animations on the Web?
10 What are the effects of computer viruses?

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Topic 15: The graphical user interface

Vocabulary

pull-down menu (n)	menu thả xuống
icon (n)	biểu tượng
folder (n)	thư mục
user interface (n)	giao diện người dùng
procedure (n)	thủ tục
single prompt (n)	dấu nhắc đơn
user-friendly(adj)	thân thiện với người dùng
emphasis (n)	nhấn mạnh, tập trung
intuitive tool (n)	công cụ trực quan
facilitate (v)	làm cho dễ dàng, thuận tiện
pop-up menu (n)	bảng chọn bật ra
dialog box (n)	hộp thoại
consistency (n)	tính kiên định
innovative (adj)	cải tổ, tiến hoá
accessories (n)	phụ kiện
nested folder (n)	thư mục lồng nhau
launch (v)	khởi động, chạy
stimulate (v)	kích thích

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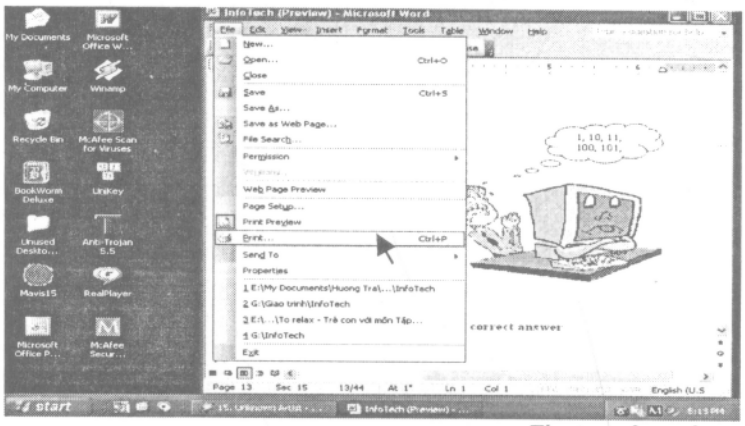
I. A user-friendly interface

The picture below illustrates a user interface based on graphics.
Read the definitions in the HELP box and then find the following interface elements in the picture:



The interface elements of the Windows XP

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HELP box

- **window**: a viewing area less than or equal to the screen size. By using different windows you can work on several documents or applications simultaneously.
- **pull-down menu**: a menu that the user 'pulls down' from a name in the menu bar at the top of the screen by selecting the name with the mouse.
- **the pointer**: an arrow, controlled by the mouse that allows you to move around the screen or to scroll up and down through the document or to give commands.
- **icons**: graphics images (or intuitive symbols) used to represent an object or task.
- **folders**: containers for documents and applications, similar to the subdirectories of a PC platform.

1 window boxes
2 scroll bars
3 menu bar
4 pull-down menu
5 pointer
6 icons

a documents
b applications
c wastebasket (*trash* in American English)
d disks: hard, floppy, removable, CD-ROM
e printer
f folders

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II. Reading

A. Read the article below and decide which of the expressions in the box best describe a graphical user interface (GUI).

user-friendly slow attractive text-based complex graphics-based

GUIs

The terms ***user-interface*** refers to the standard procedures the user follows to interact with a particular computer. A few years ago, the way in which users had access to a computer system was quite complex. They had to memorize and type a lot of ***commands*** just to see the content of a disk, to copy files or to respond to a single prompt. In fact, only experts used computers, so there was no need for a user-friendly interface. Now, however, computers are used by all kinds of people, and as a result, there is a growing emphasis on the user interface.

A good user interface is important because when you buy a program you want to use it easily. Moreover, a graphical user interface saves a lot of time: you don't need to memorize commands in order to execute an application; you only have to point and click so that its content appears on the screen.

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Macintosh computers – with a user interface based on graphics and intuitive ***tools*** – were designed with a single clear aim: to facilitate interaction with the computer. Their interface is called WIMP: **Window, Icon, Mouse**, and **Pointer**, and software products for the Macintosh have been designed to take full advantage of its features using this interface. In addition, the ROM chips of a Macintosh contain libraries that provide ***program developers*** with routines for generating windows, dialog boxes, icons, and pop-up menus. This ensures the creation of applications with a high level of consistency.

Today, the most innovative GUIs are the Macintosh, Microsoft Windows, and IBM OS/2 Warp. These three ***platforms*** include similar features: a ***desktop*** with icons, windows, and folders, a printer selector, a ***file finder***, a control panel and various desk accessories. Double clicking a folder opens a window which contains programs, documents, or further ***nested folders***. At any time within a folder, you can launch the desired program or document by double-clicking the icon or you can drag it to another location.

The three platforms differ in other areas such as device installation, network connectivity, or compatibility with application programs.

These interfaces have been so successful because they are extremely easy to use. It is well known that computers running under an attractive interface stimulate users to be more creative and produce high quality results, which has a major impact on the general public.

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B. Look at the text again and guess the meaning of the words in bold and italics in your own language.

C. Find answers to these questions.

1 What does the abbreviation 'GUI' stand for?
2 What is the contribution of Macintosh computers to the development of graphic environments?
3 What does the acronym 'WIMP' mean?
4 What computing environments based on graphics are mentioned in the text?
5 How do you run a program on a computer with a graphical interface?
6 Can you give two reasons for the importance of user-friendly interfaces?

III. Language work: Short relative clauses

We can join these sentences by using a relative clause.

1 Her house has a network.
2 It allows basic file-sharing and multi-player gaming.
1 + 2 Her house has a network which allows basic file-sharing and multi-player gaming.

Relative clauses with certain active verbs can be shortened by omitting the relative word and changing the verb to its '-ing' form. We can shorten the relative clause like this:

Her house has a network ***allowing basic file-sharing and multi-player gaming.***

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Note how these two sentences are joined by a relative clause.

3 The technology is here today.
4 The technology is needed to set up a home network.
3 + 4 The technology which is needed to set up a home network is here today.

Relative clauses like this with passive verbs can be shortened by omitting the relative word and the verb 'to be'.

The technology ***needed to set up a home network*** is here today.

Now link each group of sentences into one sentence using short relative clause.

1 a The technology is here today.
b It is needed to set up a home network.
2 a You only need one network printer.
b It is connected to the server.
3 a Her house has a network.
b It allows basic file-sharing and multi-player gaming.
4 a There is a line receiver in the living room.
b It delivers home entertainment audio to speakers.
5 a Eve has designed a site.
b It is dedicated to dance.
6 a She has built in links.
b They connect her site to other dance sites.
7 a She created the site using a program called Netscape Composer.
b It is contained in Netscape Communicator.
8 a At the centre of France Telecom's home of tomorrow is a network.
b It is accessed through a Palm Pilot-style control pad.
9 a The network can simulate the owner's presence.
b This makes sure vital tasks are carried out in her absence.
10 a The house has an electronic door-keeper.
b It is programmed to recognize you.
c This gives access to family only.

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Using short relative clauses is one way of reducing sentences. Other ways of reducing sentences are:

- taking out relative pronouns where possible
  - e.g. The software (that) we bought last year.
- omitting qualifying words (adjectives, or modifying adverbs)
  - e.g. (quite) complex/(very) similar
- taking out *that* in reported speech or thoughts
  - e.g. It is well known (*that*) computers…
  - I think (*that*) there's something wrong with this program.
- cutting out unnecessary phrases
  - e.g. Macintosh computers were designed with a clear aim: to facilitate the user's interaction with the computer.
    = Macintosh computers were designed to facilitate the user's interaction with the computer.

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IV. Writing

Summarize the text in Task 2 in 70 – 75 words. You may like to follow these steps.

1 Read through the whole text again and think of a suitable title for it.

2 Make sure you understand all the main points. Go through the text and **underline** the relevant information in each paragraph.

3 **Make notes** about the main points:

- omit repetitions and unnecessary phrases
- leave out details, such as examples

E.g. notes on the first paragraph: *In the past, only experts used computers. But now, emphasis on user-friendly interfaces.*

4 **Make sentences** from the notes and connect the sentences by using **linking** words (*and, but, also, because, that's why, in fact, therefore*, etc.) Write your **first draft.**

5 Improve your first draft by **reducing sentences.**

6 Check grammar, spelling, and punctuation. Write the **final version** of your summary.

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Topic 16: A walk through word processing

Vocabulary

alleviate (v)	làm giảm bớt, nhẹ bớt
tedium (adj)	nhạt nhẽo, chán ngắt
proof (v)	kiểm chứng
proof reading (n)	đọc sửa
Search and Replace	tìm kiếm và thay thế
view (n)	xem, quan sát
bold (adj)	tô đậm
italic (adj)	in nghiêng
underline (adj)	gạch chân
margin (n)	lề
indent (n)	sự thụt đầu dòng
super-scripted (adj)	chỉ số trên
sub-scripted (adj)	chỉ số dưới
layout application (n)	ứng dụng bố cục, trình bày
mail merge (v)	trộn thư
hyphenation (n)	sự tách từ dùng dấu gạch ngang
split (v)	chia, tách
fit (v)	vừa khít
polish (n)	bóng bẩy
professional (adj)	chuyên nghiệp
thesaurus (n)	từ điển chuyên biệt
spell checker (n)	chương trình kiểm tra lỗi chính tả
substitute (v)	thay thế
alert (n)	báo động

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I. Before you read

Try to answer these questions.

1 What is a word processor?

2 What makes word processors superior to traditional typewriters?

3 Make a list of the most important features offered by word processors.

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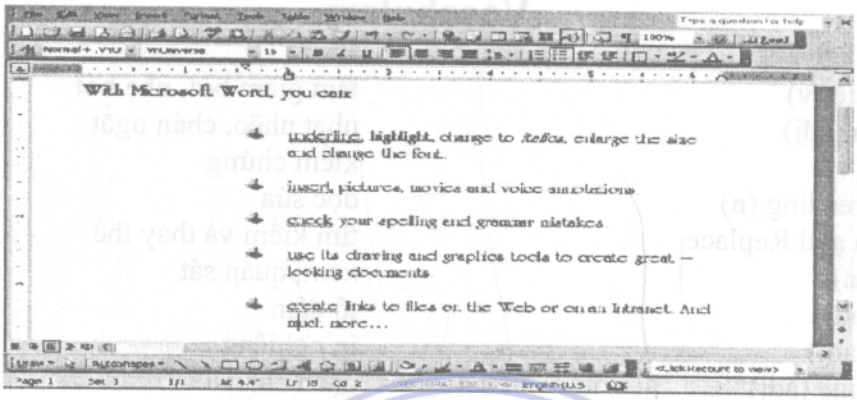
II. Reading

A. Read the text on the following page and underline any word-processing capabilities that you did not list in Task 1.



A screen from Microsoft Word for the Windows XP. Word for Windows works the same way. WordPerfect, AmiPro, and WordStar also have multiple typefaces, windows, pull-down menu and other graphical tools.

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Word-processing facilities

Writing letters, memos, or reports are the ways most people use computers. They manipulate words and text on a screen – primarily to print at some later time and store for safe keeping. Computers alleviate much of the tedium associated with typing, proofing, and manipulating words. Because computers can store and recall information so readily, documents need not be retyped from scratch just to make corrections or changes. The real strength of word processing lies in this ability to store, retrieve, and change information. Typing is still necessary (at least, for now) to put the information into the computer initially, but once in, the need to retype only applies to new information.

Word processing is more than just typing, however. Features such as **Search** and **Replace** allow users to find a particular phrase or word no matter where it is in a body of text. This becomes more useful as the amount of text grows.

Word processors usually include different ways to view the text. Some include a view that displays the text with editor's marks that show hidden characters or commands (spaces, returns, paragraph endings, applied styles, etc.). Many word processors include the ability to show exactly how the text will appear on paper when printed. This is called WYSIWYG (What You See Is What You Get, pronounced 'wizzywig'). WYSIWYG shows **bold**, *italics*, underline, and other type style characteristics on the screen so that the user can clearly see what he or she is typing. Another feature is the correct display of different typefaces and **format** characteristics (margins, indents, super- and sub-scripted characters, etc.). This allows the

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user to plan the document more accurately and reduces the frustration of printing something that doesn't look right.

Many word processors now have so many features that they approach the capabilities of **layout applications** for desktop publishing. They can import graphics, format multiple columns of text, run text around graphics, etc.

Two important features offered by word processors are automatic **hyphenation** and **mail merging.** Automatic **hyphenation** is the splitting of a word between two lines so that the text will fit better on the page. The word processor constantly monitors words typed and when it reaches the end of a line, if a word is too long to fit, it checks that word in a hyphenation dictionary. This dictionary contains a list of words with the preferred places to split it. If one of these cases fits part of the word at the end of the line, the word processors splits the word, adds a hyphen at the end, and places the rest on the next line. This happens extremely fast and gives text to a more polished and professional look.

Mail merge applications are largely responsible for the explosion of 'personalized' mail. Form letters with designated spaces for names and addresses are stored as documents with links to lists of names and addresses of potential buyers or clients. By designating what information goes into which blank space, a computer can process a huge amount of correspondence substituting the 'personal' information into a form letter. The final document appears to be typed specifically to the person addressed.

Many word processors can also generate tables of numbers or figures, sophisticated indexes and comprehensive tables of contents.

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B. Look at the words below and complete the following sentences with them. Use the information in the text or Glossary if necessary.

type style	WYSIWYG	format	indent
font menu	justification	mail merging	

1 ..... stands for 'What you see is what you get.' It means that your printout will precisely match what you see on the screen.

2 ..... refers to the process by which the space between the words in a line is divided evenly to make the text flush with both left and right margins.

3 You can change font by selecting the font name and point size from the.....

4 ..... refers to a distinguishing visual characteristic of a typeface; 'italic', for example is a ..... that may be used with a number of typefaces.

5 The ..... menu of a word processor allows you to set margins, page numbers, spaces between columns and paragraph justifications.

6 ..... enables you to combine two files, one containing names and addresses and the other containing a standard letter.

7 An ..... is the distance between the beginning of a line and the left margin, or the end of a line and the right margin. Indented text is usually narrower than text without.....

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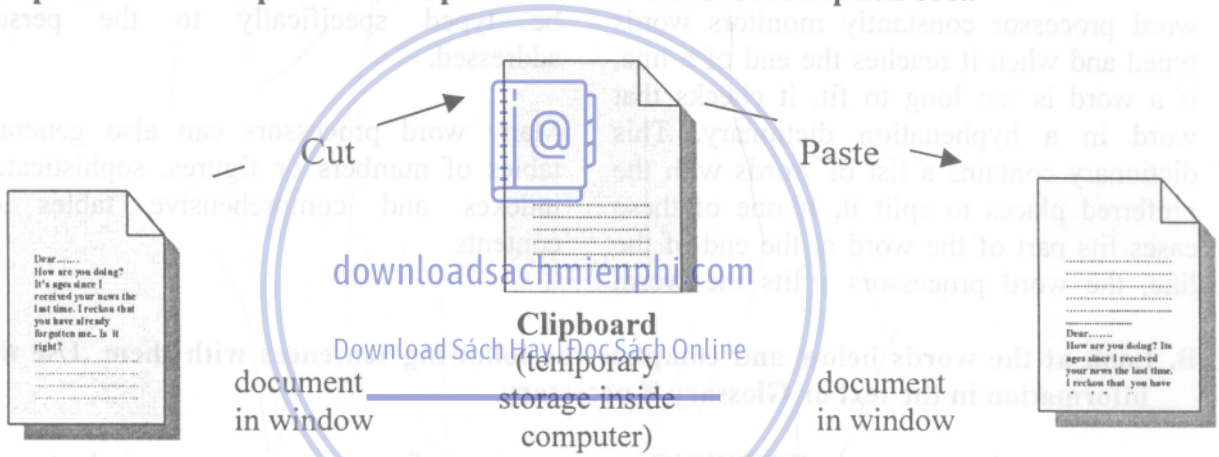
C. Match the words and expressions on the left with their explanations on the right.

1	retrieve	a	text printed in the top margin
2	typefaces	b	recover information from a computer system
3	header	c	letter, number or symbol that appears below the baseline of the row of type; commonly used in maths formulas
4	footer	d	text printed in the bottom margin
5	subscripted character	e	division of words into syllables by a short dash or hyphen
6	hyphenation	f	styles for a set of characters; sometimes called 'fonts'

III. Writing

Moving text is a process of cutting and pasting, as if you were using scissors and glue. The picture below represents this process. Write a short description of it.



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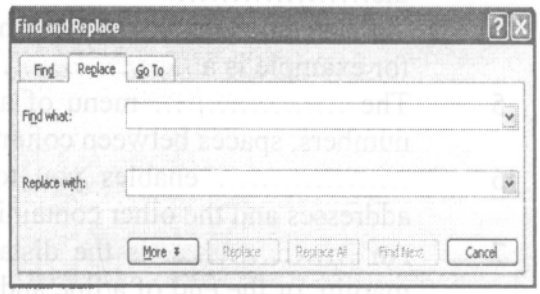
IV. Writing Tools

A. Three major features that word processors offer are spell checkers, online thesauruses, and grammar checkers. Read the descriptions of these features and match them with the windows or dialog boxes.

1 **Spell checkers** can be used to compare words in the program's dictionary to those used in the user's document. The spell checker points out any words it cannot match, notifies the user, and allows them to make any changes; it sometimes even suggests possible correct spellings.



a Like a conventional thesaurus, this database of words contains definitions and suggestions of words with similar and opposite meanings. A word may be spelled

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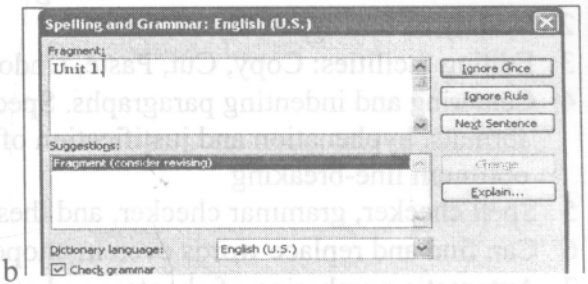
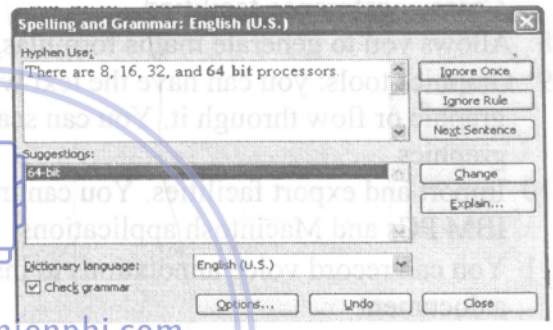
correctly, but still be wrong (*too* instead of *two,* for instance). This is a good first step at proofing a document because it can find many common errors, but users will still need to proofread documents to ensure complete accuracy.

2 Many word processors include an **online thesaurus** with which users can look up different words to use in similar instances. Their power comes not from knowing every grammatical rule, but from questioning the writer about certain parts of the text. Some even include information about pronunciation and histories of evolving meaning.



b

3 **Grammar checkers** are applications that attempt to check more than just spelling. They count words in sentences to flag possible run-on sentences. They look for words that show possible conflicts between verbs and subjects and they offer advice about corrections. Grammar checkers are a step beyond spell checkers, but they are still not a substitute for a human editor.



c

However, this does not mean that all of the words in the document are spelled correctly. This gives the writer another chance to think about what he or she has written; the computer can alert writers to problems that wouldn't be obvious to them otherwise.

B. Read through the descriptions again. There are three sentences which have been printed in the wrong position. Decide which the intruding sentences are and where they should go.

V. Speaking

Work in pairs. Read the table below which summarizes the most relevant features of two word-processing programs. The characteristics of each program are marked with a tick (√). Student A has *Printext* and Student B has *Publisher*. Explain to your partner why your program is better.

Example

A: With Printext, I can …
B: Yes, but you can't …
A: However, it is possible to … whereas with Publisher you can't …
B: Yes, but don't forget that with Publisher you can … Moreover, …
A: OK. I understand what you mean, but what about …?

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Characteristics	**Student A Printext**	**Student B Publisher**
1 Instantaneous WYSIWYG and editing	√	√
2 Variety of font types, styles, and size	√	√
3 Editing facilities: Copy, Cut, Paste, Undo, Select All	√	√
4 Centering and indenting paragraphs. Special column formats. hyphenation and justification of text with optimum line-breaking	√	√
5 Spell checker, grammar checker, and thesaurus	√	√
6 Can find and replace words even in unopened files	√	
7 Automatic numbering of chapters and sections. Automatic generation of indexes and tables of contents. Cross- reference facilities		√
8 Allows you to generate maths formulas, and diagrams		√
9 Graphics tools: you can have the text wrap around the graphic or flow through it. You can scale and rotate graphics	√	
10 Import and export facilities. You can transfer files to other IBM PCs and Macintosh applications	√	
11 You can record voice annotations to insert comments into a document		√
12 Includes Internet connection tools and allows you to create HTML pages for the Web		√

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Topic 17: Spreadsheets

Vocabulary

spreadsheet (n)	bảng tính
column (n)	cột
row (n)	hàng
cell (n)	ô
table (n)	bảng
formulae (n)	công thức
width (n)	độ rộng
pie chart (n)	biểu đồ hình tròn
intersect (v)	giao nhau
discount (n)	khấu trừ

I. Looking at a spreadsheet

Look at this spreadsheet and try to answer the questions.

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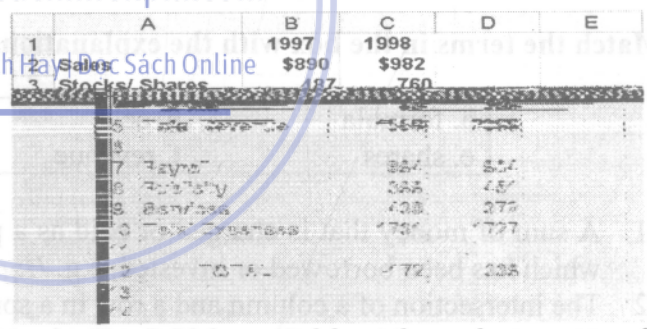
1 What is a spreadsheet? What is it used for?
2 In a spreadsheet, there are 'columns', 'rows', and 'cells'. Give an example of each from the sample spreadsheet.
3 What type of information can be keyed into a cell?
4 What will happen if you change the value of a cell?



This sample spreadsheet shows the income and expenses of a company. Amounts are given in $ millions.

II. Reading

Read the text below and decide whether these sentences are right (√) or wrong (X)

1 A spreadsheet program displays information in the form of a table, with a lot of columns and rows. ☐
2 In a spreadsheet, you can only enter numbers and formulas. ☐
3 In a spreadsheet you cannot change the width of the columns. ☐
4 Spreadsheet programs can produce visual representations in the form of pie charts. ☐
5 Spreadsheets cannot be used as databases. ☐

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A spreadsheet program is normally used in business for financial planning – to keep a record of accounts, to analyze budgets or to make specific calculations. It's like a large piece of paper divided into columns and rows. Each column is labeled with a letter and each row is labeled with a number. The point where a column and a row intersect is called a cell. For example, you can have cells A1, B6, C5, and so on.

A cell can hold three types of information: text, numbers and formulas. For example, in the sample spreadsheet, the word *sales* has been keyed into cell A2 and the values 890, 478 and 182 have been entered into cells B2, B3, and B4 respectively. So when the formula 'B2 + B3 + B4' is keyed into cell B5 the program automatically calculates and displays the result.

Formulas are functions or operations that add, subtract, multiply or divide existing values to produce new values. We can use them to calculate totals, percentages or discounts.

When you change the value of one cell, the values in other cells are automatically recalculated. You can also update the information in different worksheets by linking cells. This means that when you make a change in one worksheet the same change is made in the other worksheet.

The format menu in a spreadsheet usually includes several commands allowing you to choose the font, number alignment, borders, column width and so on.

Most spreadsheet programs can generate documents with graphic representations and some include three-dimensional options. The values of cells are shown in different ways such as line graphs, bar, or pie charts.

Some programs also have a database facility which transforms the values of the cells into a database. In this case, each column is a field and each row is a record.

III. Vocabulary

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Match the terms in the box with the explanations below.

a. formula	b. cell	c. sales	d. payroll
e. shares	f. revenue	g. interest	h. expenses

1 A sum of money that is charged or paid as a percentage of a larger sum of money which has been borrowed or invested, e.g. *High rates./ 7 percent ~ on a loan.* ☐
2 The intersection of a column and a row in a spreadsheet, e.g. *the ~ B2.* ☐
3 The quantity sold, e.g. *The ~ of PCs rose by 10 percent last year.* ☐
4 The income – or money – received by a company or organization, e.g. *The annual ~ of this multinational company is...* ☐
5 A ~ in a company is one of the equal parts into which the capital of the company is divided, entitling the holder of the ~ to a proportion of the benefits, e.g. *£10 ~s are now worth £11* ☐
6 Financial costs; amounts of money spent, e.g. *Travelling ~.* ☐
7 A function or operation that produces a new value as the result of adding, subtracting, multiplying, or dividing existing values, e.g. *If we enter the ~ B5-B10, the program calculates ...* ☐
8 **1** A list of people to be paid and the amount due to each. **2** Wages or salaries paid to employees, e.g. *He was on the company's ~.* ☐

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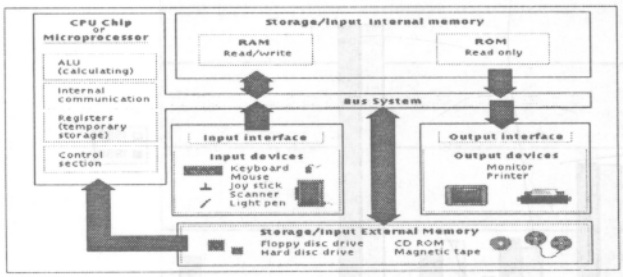
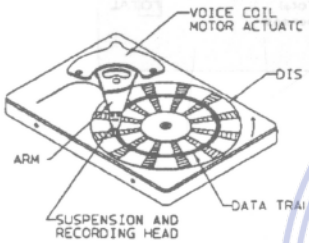
IV. Language work: Prepositions of place

A. Study these examples of prepositions of place.



1 Data moves *between* the CPU and RAM.
2 Data flows *from* ROM *to* the CPU.
3 A program is read *from* disk *into* memory.
4 Data is transferred *along* the data bus.



Hard disk

6 The hard disk drive is *inside* a sealed case.
7 Heads move *across* the disk.
8 Tracks are divided *into* sectors.

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B. Now complete each sentence using the correct preposition.

1 The CPU is a large chip ..... the computer
2 Data always flows ..... the CPU ..... the address bus.
3 The CPU can be divided ..... three parts.
4 Data flows ..... the CPU and memory.
5 Peripherals are devices ..... T he computer but linked ..... it.
6 The signal moves ..... the VDU screen ..... one side ..... the other.
7 The CPU puts the address ..... the address bus.
8 The CPU can fetch data ..... memory ..... the data bus.

V. Graphic representation

A. Look at the graph below and, with the help of a partner, check that it is an exact visual representation of the spreadsheet in Task 1.

B. Can you calculate the net profits of this firm during the period 1997-98?

C. What type of image is this: a pie chart, a bar chart, an area graph, or a line graph?

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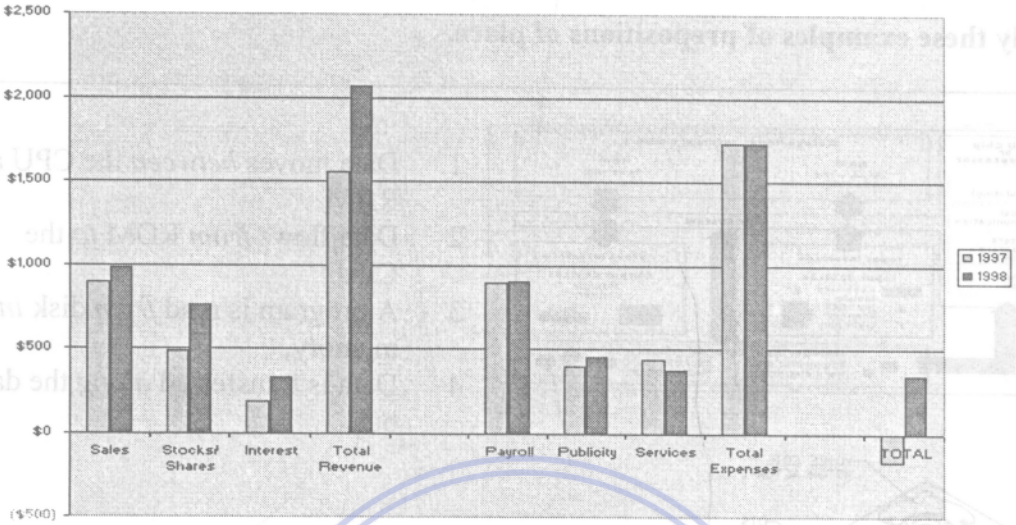
D. What is the advantage, if any, of displaying information as a graph, rather than as a spreadsheet?



VI. Extension

A. Spreadsheet programs are also used to make out invoices. Look at the invoice below and fill in the blanks with the right words from the box.

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Quantity	Description	Price	VAT (Value Added Tax)
Reference	TOTAL	Address	Company

Name:	**Redwood Comprehensive School**			
	Springbank Road, Easthill		**Invoice**	
Telephone:	436171		**Date:** 12 May 2003	
Ulysses Classic	64 MB of RAM, 9 GB HD	12	£ 1,050	£ 12,600
XGA Monitor	Colour 16"	9	225	2,025
Video Card	Millions of colours	5	316	1,580
Portable Ulysses	32 MB RAM, 2 GB HD	3	1,190	3,570
Laser SAT	PostScript	1	825	825
Scanner JUP	Flabed, includes OCR	2	675	1,350
			Subtotal	£ 21,950
			17,5%	3,841
Ulysesses Computer, Inc				£ 25,791

B. Have you got a spreadsheet program at work or school? If so, try to produce a similar invoice.

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Topic 18: Databases

Vocabulary

database (n)	cơ sở dữ liệu
index (n)	bảng chỉ mục
record (n)	bản ghi, mẩu tin
file (n)	tệp
updated (adj)	cập nhật
market trend (n)	xu hướng thị trường
look up (v)	tra cứu
dimension (n)	chiều
productivity (n)	năng suất
user-defined (adj)	(do) người dùng định nghĩa
password (n)	mật khẩu

I. Warm-up

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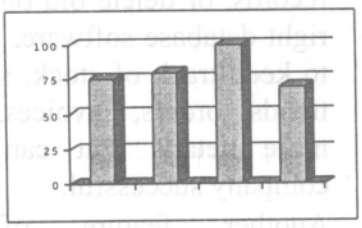
Companies often use databases to store information about customers, suppliers and their own personnel. Study the illustrations and then try to answer these questions.

1 What is a database?
2 Which tasks can be performed by using a database? Make a list of possible applications.
3 What do the terms mean in your language: **file, record, field**?



Name: James Powell
Address: 12, Back St.
Marital status: single

Identification 8994989
Job ENGINEER
SALARY £18,750

Home phone: 456367
Department: Data processing
Commission: £18,750

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A database file stores information in fields grouped on records

II. Reading

A. Here is a part of an article about databases. First, read all the way through and underline the basic features of a database.

Basic features of database programs

With a **database**, you can store, organize, and retrieve a large collection of related information on computer. If you like, it is the electronic equivalent of an indexed filing cabinet. Let us look at some features and applications.

- Information is entered on a database via **fields.** Each field holds a separate piece of information, and the fields are collected together into **records.** For example, a record about an employee might consist of several fields which give their name, address, telephone number, age, salary, and length of employment with the company. Records are grouped together into **files** which hold large amounts of information. Files can easily be updated: you can always change fields, add new records, or delete old ones. With the right database software, you are able to keep track of stock, sales, market trends, orders, invoices, and many more details that can make our company successful.
- Another feature of database programs is that you can automatically look up and find records containing particular information. You can also search on more than one field at a time. For example, if a managing director wanted to know all the customers

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that spend more than £7,000 per month, the program would search on the name field and the money field simultaneously.

A computer database is much faster to consult and update than a card index system. It occupies a lot less space, and records can be automatically sorted into numerical or alphabetical order using any field.

The best packages also include networking facilities, which add a new dimension of productivity to businesses. For example, managers of different departments can have direct access to a common database, which represents an enormous advantage. Thanks to security devices, you can share part of your files on a network and control who sees the information. Most aspects of the program can be protected by user-defined passwords. For example, if you wanted to share an employee's personal details, but not their commission, you could protect the commission field.

In short, a database manager helps you control the data you have at home, in the library or in your business.

B. Now make a list of the words you don't understand. Can you guess their meaning? Compare your ideas with other students.

C. Using the information in the text, complete these statements.

1 A database is used to .....
2 Information is entered on a database via .....
3 Each field holds .....
4 'Updating' a file means .....
5 The advantages of a database program over a manual filing system are .....
6 Access to a common database can be protected by using .....

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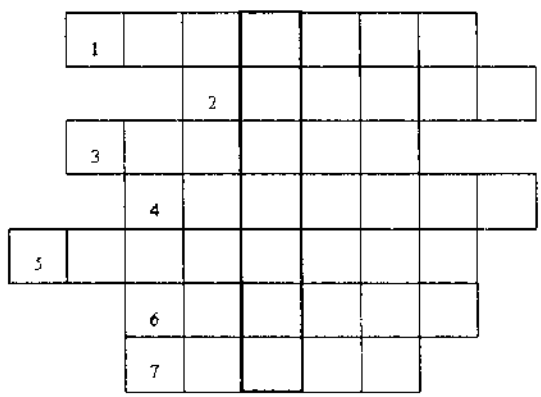
III. Puzzle

Complete the sentences by using a term from the list. Then write the words in the crossword to find the hidden message.

database field layout merging record sorted updated

1 In order to personalize a standard letter, you can use 'mail .....' (a technique which consists of combining a database with a document made with a word processor).
2 Records can be automatically ..... into any order.
3 You can decide how many fields you want to have on a .....
4 Files can easily be ..... by adding new information or deleting the old one.
5 A ..... program can be used to store, organize and retrieve information of any kind.
6 The ..... of the records can be designed by the user.
7 Each piece of information is given in a separate ..... .



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IV. Language work

Requirements: Need to, have to, must, be + essential, critical

Note how we describe requirements of particular jobs: 1 You *need* to be able to empathise with the person at the other end of the phone. 2 IT managers *have to* take responsibility for budgets. 3 You *must* be interested in your subject. 4 You *must have worked* for at least two years in systems analysis. 5 Experience with mainframes *is essential/ critical.* **We can describe things which are not requirements like this:** 6 You *don't need* to have a degree in computing science.	**We can also treat *need* as a modal verb and use the negative form needn't:** 7 You *needn't* have a degree in computing science. ***Have to* is an ordinary verb. Its negative form is made in the usual way:** 8 You *don't have to* be an expert in everything. ***Mustn't* has a quite different meaning. It means it is important not to do something. It is used for warning, rules, and strong advice. For example:** 9 You *mustn't* make unauthorized copies of software.

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A. Now fill in the blanks with the appropriate form of the verbs, *need to, have to, and must*, to make sensible statements. More than one answer is possible in some examples.

1 Technical qualifications …….. to be renewed at intervals to ensure they do not go out of date.
2 You …….. become an expert in too narrow a field.
3 You …….. to have good communication skills to become an IT Manager.
4 You …….. be an expert in hardware to become a programmer.
5 You …….. have worked with IBM mainframes for at least two years.
6 You …….. be able to show leadership.
7 You …….. have a degree but it …….. be in computing science.
8 You …….. to have experience in JavaScript
9 You …….. be able to use C++
10 These days you …….. study BASIC.

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B. Study these requirements for different jobs in computing advertised on the Internet. Then describe the requirements using the methods studied in this unit.

1 Systems Manager/ Programmer	**2 Support Analyst: IBM Mainframe MVS**	**3 Programmer**
• technical specialist • min. 2 yrs work in systems programming • plus exp. of Netview/ automation design & support	• IBM MVS support technician • 1 yr exp. of VTAM, NCP, SSP, NPM, IBM 3745-900 hardware • authorized to work in the EU	• 3 yrs exp. SAP Basic Technical Environment • team player with strong analytical and problem-solving skills • ability to communicate issues and solutions and manage time effectively
4 Webmaster	**5 Cisco Technician**	**6 IS Manager**
• strong Unix experience • able to use HTML, DHTML, and JavaScript • knowledge of Shell Scripts	• CCNA qualified • excellent skills in the surrounding technologies • Min. 2 yrs work in support	• knowledge of NT and Netware • experience of ERP systems implementation • very strong managerial skills

V. Writing

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Imagine that you are Barry Stephens, the sales manager of Sunrise Computer. Write a standard letter to your clients about 'New software products on the market', and offer them a free demonstration disk.

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Topic 19: Faces of the Internet

Vocabulary

transmission control protocol (n)	giao thức điều khiển truyền thông
Internet protocol (n)	giao thức Internet
point to point protocol (n)	giao thức điểm đến điểm
Internet service provider (n)	nhà cung cấp dịch vụ Internet
log-in name (n)	tên đăng nhập
account (n)	tài khoản
Web browser (n)	trình duyệt Web
hypertext (n)	siêu văn bản
online (adj)	trực tuyến
virtual (adj)	mang tính ảo
hypertext markup language (n)	ngôn ngữ soạn thảo siêu văn bản
Internet relay chat (n)	hội thảo trực tuyến
videoconferencing (n)	hội thảo video
collaborate (v)	cộng tác
accessible (adj)	có thể truy cập
utility (n)	tiện ích
newsgroup (n)	nhóm tin, nhóm hội thảo
recreation (n)	tái tạo

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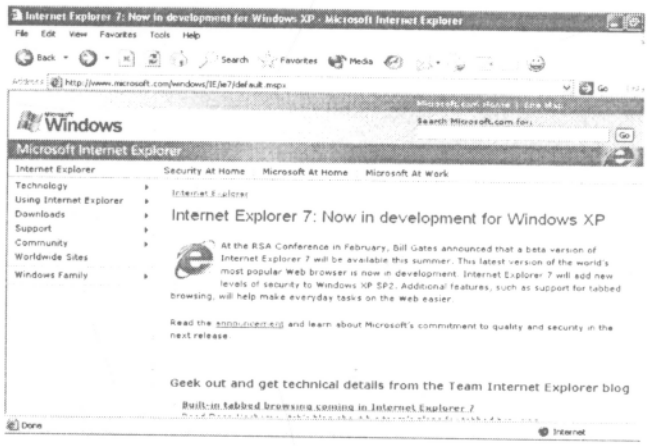
I. Warm-up:

Try to answer these questions:

1 What is the Internet?
2 What can you do on the Internet? Make a list of possible applications.



A program like Microsoft Internet Explorer allows you to search, view and manage information over the Web.
http://www.microsoft.com/ie

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II. Reading

A. Which Internet utility (1 to 7) would you use to do each of these tasks (a to g)? Read the text below to check your answers.

1	email	a	send a message to another person via the Internet
2	Web browser	b	transfer files from the Internet to your hard disk
3	Newsreader	c	have a live conversation (usually typed) on the Internet
4	IRC/chat program	d	connect to a remote computer by entering certain instructions and run programs on it.
5	FTP software	e	take part in public discussion areas, called newsgroups
6	Videoconferencing	f	fetch and view Web pages on the Internet
7	Telnet	g	participate in live conversations, using text, audio, and video

Internet Software

Getting connected

The language used for data transfer on the Internet is known as TCP/IP (transmission control protocol/Internet protocol). This is like the Internet operating system.

The first program you need is a PPP (point-to-point protocol) driver. This piece of software allows the TCP/IP system to work with your modem; it dials up your Internet service provider (ISP), transmits your password and log-in name and allows Internet programs to operate.

Email

Email is your personal connection to the Internet. It allows you to exchange messages with people all over the world. It can include text, pictures, and even audio and animation. When you set up an account with an ISP, you are given a unique address and anyone can send you email. The mail you receive is stored on the server of your ISP until you next connect and download it to your hard disk.

Web browsers

The Web is a hypertext-based system where you can find news, pictures, games, online shopping, virtual museums, and electronic magazines – any topic you can imagine.

You navigate through the Web using a program called a 'browser', which allows you to search and print Web pages. You can also click on keywords or buttons that take you to other destinations on the net. This is possible because browsers understand hypertext markup language (HTML), a set of commands that indicate how a Web page is formatted and displayed.

IRC, audio and video chatting

IRC – Internet relay chat – is a system for real-time (usually typed) conversation. It's easy to use. To start a chat session, you run an IRC program, which connects you to an IRC server – a computer dedicated to IRC. Then, you join a channel which connects you to a single chat area. Next, you type message, and the other participants can see it.

Internet telephone and video chatting are based on IRC protocols. Videoconferencing programs enable users to talk to and see each other, and collaborate. They are used in intranets – company networks that use Internet software but make their Web site accessible only to employees and authorized users.

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FTP and Telnet

With **FTP** software, you can copy programs, games, images, and sounds from the hard disk of a remote computer to your hard disk. Today, this utility is built into Web browsers.

A **Telnet** program is used to log directly into remote computer systems. This enables you to run programs kept on them and edit files directly.

Newsgroups

Newsgroups are the public discussion areas, which make up a system called 'Usenet.' The contents of the newsgroups are contributed by people who send articles (messages) or respond to articles. They are classified into categories: *comp* (computers), *misc* (miscellaneous), *news* (news), *rec* (recreation), *soc* (society), *sci* (science), *talk* and *alt* (alternative).

B. Read the text again and choose the right answer.

1 An Internet service provider (ISP) is
  a a program that connects you to the Internet.
  b a company that gives you access to the Internet.
2 HTML is
  a the software which allows you to fetch and see Web pages.
  b the codes used to create hypertext documents for the Web.
3 An IRC channel is
  a an IRC discussion area.
  b a computer system dedicated to IRC.
4 Usenet is
  a a big system of public discussion groups.
  b a newsgroup.
5 An intranet is
  a like small version of the Internet inside a company.
  b a commercial online service.

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III. A typical Web page

A. The picture below illustrates a typical Web page. Look at the HELP box and then find the following features in the picture.

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1 URL address 2 Basic functions of the toolbar: a go to the home page b retrace your steps c go forward one page d interrupt the current transfer e update a page f find words within a page g load and display the page's images 3 Clickable image link 4 Clickable hypertext link	**HELP box** • **URL:** uniform resource locator, the address of a file on the Internet. A URL looks like this: **http://www.netscape.com** - 'http://' means hypertext transfer protocol and tells the program to look for a Web page. - 'www' means World Wide Web - 'netscape.com' is the domain name and tells people that it is a commercial enterprise. • **navigation buttons:** buttons on the toolbar which allow you to go back or forward to other Web pages. You can also return to your start-up page or stop the transfer when circuits are busy. • **links:** shortcuts (underlined text, or image) that, when clicked, take you to other Web pages. • **security on the Web:** just a few Web sites are secure. When the page is not encrypted, the security lock is open.

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B. Have you ever surfed the Web? What are your favorite Web sites? Tell your partner about it.

C. Look at these tasks and choose the most suitable Web site from the cyber list.

1 Read about environmental problems	http://www.yahoo.com
2 Get news reports	http://www.greenpeace.org
3 Find out abut specific hardware and software	http://www.ibm.com
4 Make flight reservations	http://www.fly.virgin.com
5 Read about films and Hollywood awards	http://www.telegraph.co.uk
6 Search for Web addresses	http://www.oscars.org

IV. Writing

A. Study the format of the Internet address. Then read the header of the email below and identify the sender, the recipient, and the line that describes the content. Is there an attached file? How do you say 'attachment' in your language?

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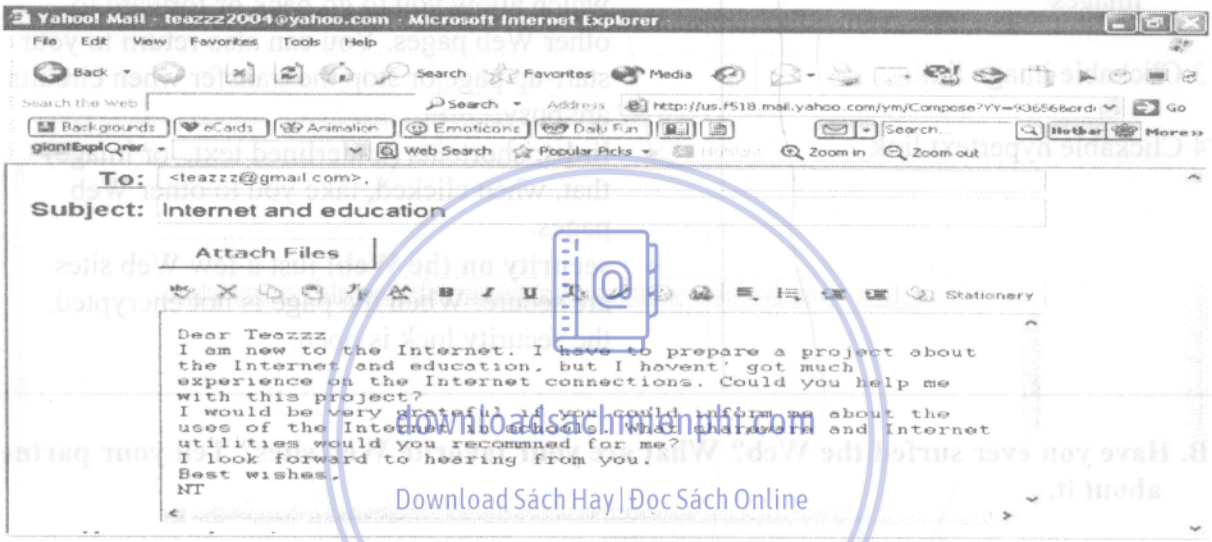
B. Write a reply to the email message.

The format of an email address:
teazzz2004@yahoo.co.uk

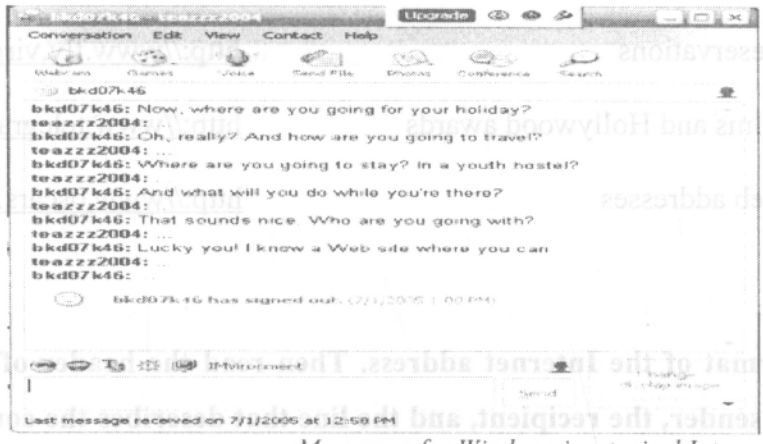
- User name or nick name
- The @ sign means 'at'
- The computer system where the user gets email. 'Yahoo' is an Internet service provider
- Tells people that the company is based in UK. Other countries include .fr for France, .nl for Holland, .es for Spain, etc



A sample screen from yahoo, a popular email program. Yahoo mail is available at http://www.yahoo.com

V. Speaking

Imagine you are taking part in an IRC session with a friend. Complete the dialogue. Then act out the conversation.



Messenger for Windows is a typical Internet relay chat program. You can get it at http://www.messenger.yahoo.co.uk

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5 Creative software

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Learning objectives

In this lesson, you will learn how to:

- identify the functions of different graphics tools
- understand specific aspects of desktop publishing and multimedia applications
- write a letter to a newspaper asking for information about the hardware and page-layout software used for its production
- cover the theory of different types of clauses
- acquire the basic vocabulary associated with graphical representations, desktop publishing and multimedia technology.

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Topic 20: Graphics and design

Vocabulary

interpret (v)	phiên dịch
formula (n)	công thức
desktop publishing (n)	chế bản điện tử
diagram (n)	lược đồ
three-dimensional graphics (n)	đồ họa 3 chiều
computer-aided engineering (CAE) (n)	kỹ nghệ dựa trên máy tính
visual (adj)	trực quan
geometric (adj)	thuộc hình học
arcs (n)	hình cung
polygon (n)	hình đa giác
primitive (adj)	nguyên thủy, ban sơ
pop-up (adj)	bật lên
rectangle (n)	hình chữ nhật

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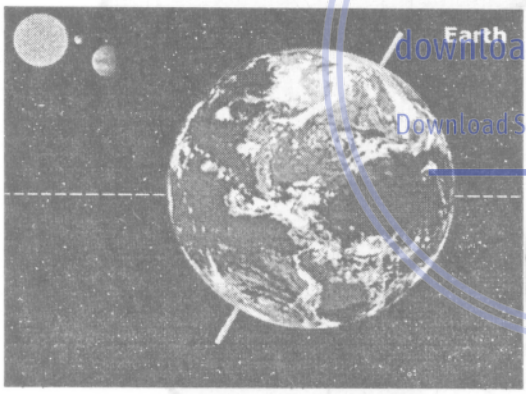

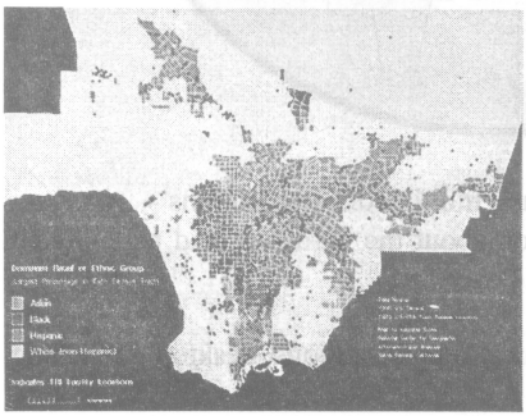

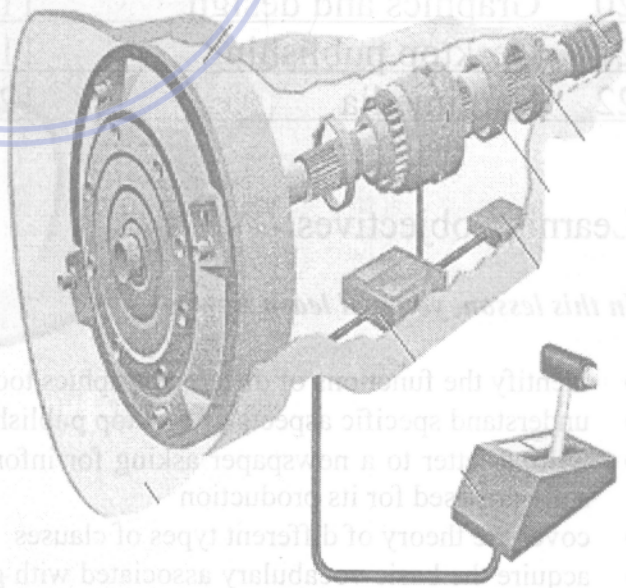

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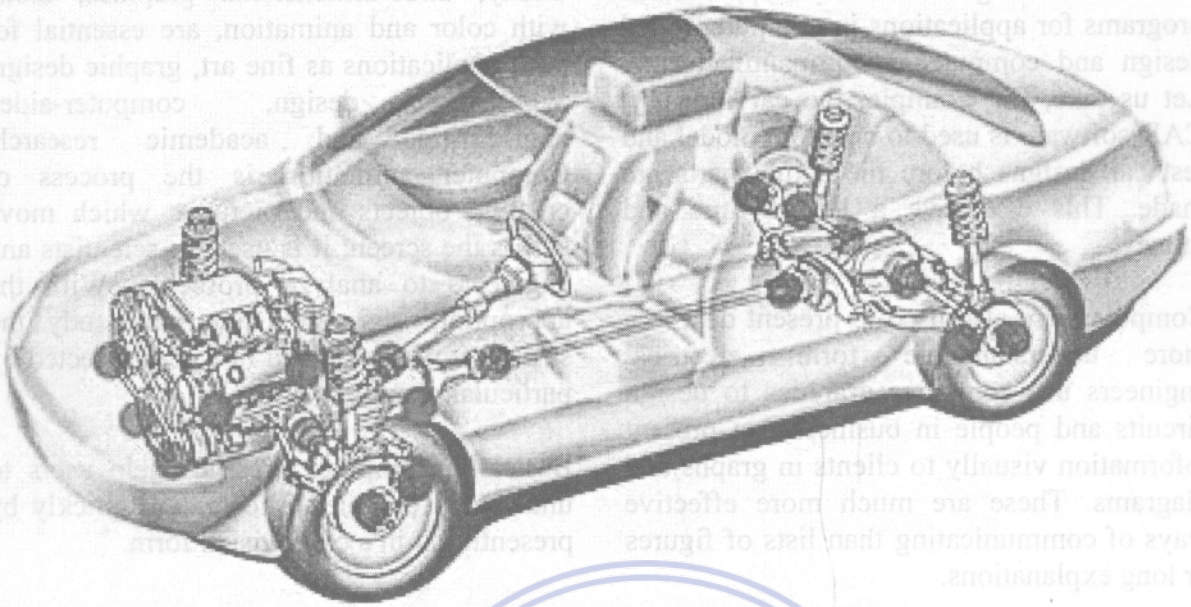

I. Warm-up

1 Look at the pictures above, which were all created on computer. Which ones are three-dimensional? What are the advantages of creating three- dimensional images?
2 From the pictures, can you suggest which people might use computer graphics professionally? What would they use them for?
3 Can you think of other professionals who use computer graphics? How do they use them?

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II. Reading

Read through the text and find the answers to these questions.

1 What are 'computer graphics'?
2 What do the acronyms 'CAD', 'CAE', and 'CAM' stand for?
3 What are the benefits of using computer graphics in the car industry?
4 W hat are the benefits of using graphics in business?
5 What is 'computer animation'?

Computer graphics

Computer graphics are pictures and drawings produced by computer. A graphics program interprets the input provided by the user and transforms it into images that can be displayed on the screen, printed on paper, or transferred to microfilm. In the process, the computer uses hundreds of mathematical formulas to convert the bits of data into precise shapes and colors. Graphics can be developed for a variety of uses including presentations, desktop publishing, illustrations, architectural designs, and detailed engineering drawings.

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Lesson 5 Creative software

Mechanical engineers use sophisticated programs for applications in computer-aided design and computer-aided manufacturing. Let us take, for example, the car industry. CAD software is used to develop, model and test car designs before the actual parts are made. This can save a lot of time and money.

Computers are also used to present data in a more understandable form: electrical engineers use computer graphics to design circuits and people in business can present information visually to clients in graphs and diagrams. These are much more effective ways of communicating than lists of figures or long explanations.

Today, three-dimensional graphics, along with color and animation, are essential for such applications as fine art, graphic design, Web-page design, computer-aided engineering, and academic research. Computer animation is the process of creating objects and pictures, which move across the screen; it is used by scientists and engineers to analyze problems. With the appropriate software, they can study the structure of objects and how it is affected by particular changes.

Basically, computer graphics help users to understand complex information quickly by presenting it in a clear visual form.

III. More about graphics

A. Graphics programs have several options that work in conjunction with the tools menu to enable the user to manipulate and change pictures.

Look at the facilities on the left and match them with the definitions on the right.

1	Patterns menu	a	Turning an image round.
2	Scaling	b	A tool which lets you scale the 'view' of a picture and edit a small portion of it as if you were working under a magnifying glass. It is very useful for doing detailed work as you can edit the pictures one dot at a time.
3	Rotating	c	Making the object larger or smaller in any of the horizontal, vertical, or depth directions.
4	Inverting	d	A shading technique where two different colors are placed next to each other; the human eye blends the colors to form a third one. It is also used to show shading in black and white.
5	Zoom	e	A palette from which you choose a design to fill in shapes.
6	Slanting	f	Reversing the color of the dots in the selected part of a picture, so that white dots become black and black dots become white.
7	Black-and-white dithering	g	Inclining an object to an oblique position.

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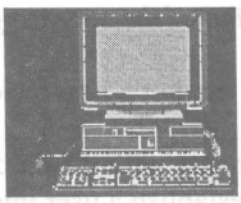
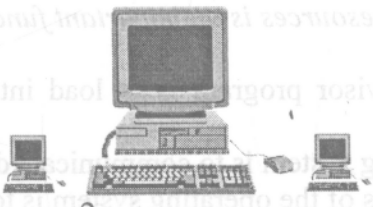
B. Look at the pictures and label them with the facility that has been used to change the original.

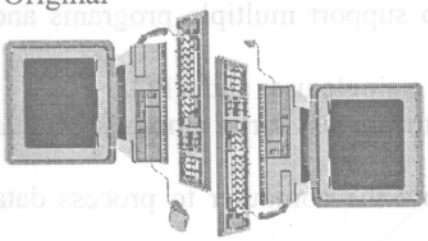


1 .....

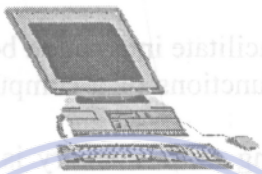


2 .....

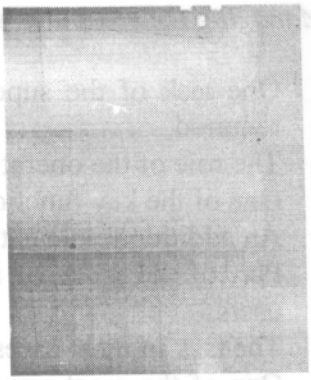
Original



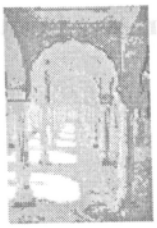
3 .....



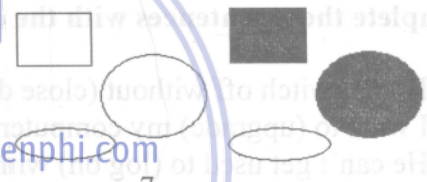
4 .....



5 .....



6 .



7 .....

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IV. Language work: Gerunds (*-ing* nouns)

A. Gerunds are nouns formed by adding *–ing* to verbs. A gerund usually functions as:

- the subject of a verb, e.g. Smoking is bad for your health.
- the object of a verb, e.g. She has never done any computing.
- the object of a preposition, e.g. CAD programs are very fast at performing drawing function.
- the complement of the subject, e.g. His favourite pastime is playing computer games.

Gerunds are also used after prepositions. This includes *to* when it is a preposition and not part of the infinitive. For example:

- *Without* the user *being* aware of the details, the operating system manages the computer's resources.
- We begin *by focusing* on the interaction between a user and a PC operating system.
- We look forward *to having* cheaper and faster computers.

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B. Rewrite each of these sentences like this:

An important function of the operating system is to manage the computer's resources.
Managing the computer's resources is an important function of the operating system.

1 One task of the supervisor program is to load into memory non-resident programs as required.
2 The role of the operating system is to communicate directly with the hardware.
3 One of the key functions of the operating system is to establish a user interface.
4 An additional role is to provide services for applications software.
5 Part of the work of mainframe operating systems is to support multiple programs and users.
6 The task in most cases is to facilitate interaction between a single user and a PC.
7 One of the most important functions of a computer is to process large amounts of data quickly.
8 The main reason for installing more memory is to allow the computer to process data faster.

C. Complete these sentences with the correct form of the verb: infinitive or *–ing* form.

1 Don't switch off without (close down) your PC.
2 I want to (upgrade) my computer.
3 He can't get used to (log on) with a password.
4 You can find information on the Internet by (use) a search engine.
5 He objected to (pay) expensive telephone calls for Internet access.
6 He tried to (hack into) the system without (know) the password.
7 You needn't learn how to (program) in HTML before (design) web pages.
8 I look forward to (input) data by voice instead of (use) a keyboard.

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V. Speaking

Work in pairs. Student A: turn to page 162 and Student B: turn to page 166.

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Topic 21: Desktop publishing

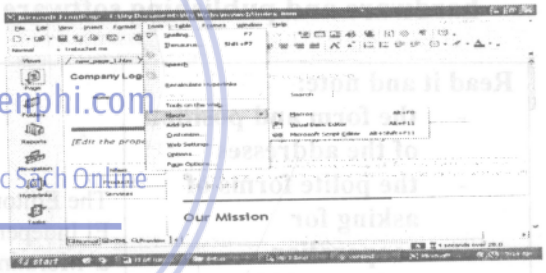
Vocabulary

implement (v)	thực hiện, chạy, thực thi
typeface (n)	kiểu chữ
imagesetter (n)	thiết bị tạo ảnh
service bureaux (n)	văn phòng phục vụ

I. Warm-up

Look at the illustration below and, with a partner, write down some answers to these questions.

1 What types of files are combined in desktop publishing?
2 What kinds of documents can be produced with desktop publishing software?



A screen form PageMaker, a leading DTP package. Another program often associated with DTP is QuarkXPress.

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II. Reading

A. Read the text and check your answers to Task 1

What is 'desktop publishing'?

'Desktop publishing' refers to the use of personal computers to design, implement, and publish books, newsletters, magazines and other printed pieces. Desktop publishing is really a combination of a few different processes including word processors, graphic design, information design, output and prepress technologies, and sometimes image manipulation. There are also many applications that support these processes, including font creation applications (that allow users to design and create their own typefaces, called font) and type manipulation applications (that allow users to modify text in visually creative ways).

Desktop publishing centres around a **layout application.** A layout application is used to import text from word processing applications, graphics from paint and drawing applications and images from scanning or image manipulation applications, and to combine and arrange them all on a page. They typically can bring in or import many different types of files. It is this ability to manipulate so many

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different items and control how they are used that makes layout software so popular and useful. This software is usually the last stop before a document is printed. Once composed and designed, these files can be printed onto film by high quality devices, called **imagesetters**, and printed on a traditional printing press.

Because imagesetters are expensive devices, most people cannot afford to buy their own. There are, however, companies called **service bureaux** that specialize in printing other people's files on imagesetters, just like copy stores make copiers available to others. Service bureaux can offer imageset output, laser printer output, color laser printer output, and even slide or film recorder output. In addition, some have color-scanning equipment.

B. Read the text again and complete these sentences.

1 A page layout application can import and combine.....
2 Font creation software enables users to .....
3 Imagesetters are used to .....
4 Service bureaux offer services such as .....

III. Computers for newspapers

A. The letter below is from a group of students asking for information about the hardware and publishing software used by the newspaper *El Independiente*.

Read it and note:

- **the form and position of the addresses**
- **the polite forms of asking for cooperation.**
  + We would be very grateful if you could ...
  + Could you also ...
- **the ways in which the letter begins and ends.**

B. Work in pairs. Student A: turn to page 163 - 164 and student B: turn to page 167 - 168.

C. Write a letter to the Morning News asking for information about the hardware and page-layout software used in its production. Use the letter on the right to help you.

Rhondda
Comprehensive School
31 Prospect Place, Trearchy, Wales

The Editor
El Independiente
c/ Moratin, 7
28006 Madrid
Spain

28th October 2003

Dear Sir/ Madam

We are writing to ask if you can help us with our school project. We are doing a survey of the major newspapers in the European Union to find out which computer systems and desktop publishing programs they use.

We would be very grateful if you could tell us which hardware and software you use at *El Independiente*. Could you also tell us whether you have a Web edition published on the Internet? Thank you very much.

We look forward to hearing from you.

Yours faithfully,

Katherine Powell
Student representative

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	Your address ....
The Editor **Morning News** **14 Pennington Street** **London EC1 6XJ**	Date .....

IV. Language work: Time clauses

What is the relationship between each of these pairs of actions? 1 a You click on URL b Your browser sends it to a DNS server. 2 a The packets are passed from router to router b They reach the Web server. 3 a The packets may travel by different routes b They reach the Web server. 4 a The individual packets reach the Web server. b They are put back together again. **Each pair of actions is linked in time. We can show how actions are linked in time by using time clauses. For example:** **We can use *when* to show that one action happens immediately after another action:** 1 *When* you click on a URL, your browser sends it to a DNS server.	**We can use *once* in place of *when* to emphasize the completion of the first action. It often occurs with the Present perfect. For example:** *Once* the DNS server has found the IP address, it sends the address back to the browser. **We can use *until* to link an action and the limit of that action:** 2 The packets are passed from router to router *until* they reach the Web server. **We can use *before* to show that one action precedes another:** 3 The packets may travel by different routes *before* they reach the Web server. **If the subjects are the same in both actions, we can use a participle:** The packets may travel by different routes *before* reaching the Web server. **We can use *as* to link two connected actions happening at the same time:** 4 *As* the individual packets reach the Web server, they are put back together again.

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Lesson 5 Creative software

Now link each pair of actions using a time clause.

1 a You use a search engine
  b It provides a set of links related to your search.
2 a With POP3, email is stored on the server.
  b You check your email account.
3 a You have clicked on a hyperlink.
  b You have to wait for the webpage to be copied to your computer.
4 a You listen to the first part of a streamed audio file.
  b The next part is downloading.
5 a The graphics can be displayed gradually.
  b The webpage is downloaded.
6 a You receive an email message.
  b You can forward it to another address.
7 a You click on a hyperlink.
  b The browser checks to see if the linked webpage is stored in the cache.
8 a You can bookmark a webpage to make it easier to find in the future.
  b You find a webpage you like.
9 a You type in a Web address.
  b You should press the Enter key
10 a You click on the Home button.
  b The browser displays your starting webpage.

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V. Word building

A. Word formation

New words are formed in three main ways in English:

1 Affixation
  - adding a prefix to the base: print → *re*print
  - adding a suffix to the base: print → print*er*

2 Conversion, i.e assigning one class to another: print (v) → *print* (n)

3 Compounding, i.e. adding one base to another: finger + print → *fingerprint*

B. Now look at these words and decide:

- which process of word formation has been applied
- what part of speech each word is
- where the stress falls in each word. Underline the stressed syllable(s).

1 upgrade
2 imprint
3 printed
4 print-out
5 interactive
6 printing press
7 pre-press
8 creative
9 manipulation
10 publishing
11 publisher
12 newsletter
13 visually
14 typeface
15 professional
16 imagesetter

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Topic 22: Multimedia

Vocabulary

presentation package (n)	gói phần mềm thuyết trình
multimedia (n)	đa phương tiện
built-in (adj)	gắn liền
stereo synthesizer (n)	bộ tổng hợp âm
audio amplifier (n)	bộ khuếch đại âm thanh

I. Multimedia is here!

Look at the cover for Encarta '05. What types of data are integrated in multimedia applications?

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II. Reading

A. Read the texts and match them with the headings in the box below.

Sound, Music, MIDI	CD-ROM titles full of pictures, action and sound!
The potential of using multimedia	CD-ROM is more than just heavy metal

Multimedia magic!

1 .....

Until now, multimedia applications have been used mainly in the fields of information, training, and entertainment. For example, some museums, banks, and estate agents have information kiosks that use multimedia. Several companies produce training programs on optical disks, and marketing managers use presentation packages (like Microsoft PowerPoint or Lotus Freelance Graphics for Windows) to make business presentations. They have all found that moving images, sound, and music involve viewers emotionally as well as inform them, and make their message more memorable.

2 .....

Sound is an important component of the multimedia approach. The effective use of sound can be used to grab the attention of the participant, set the mood, or underscore a point. The most popular way of delivering

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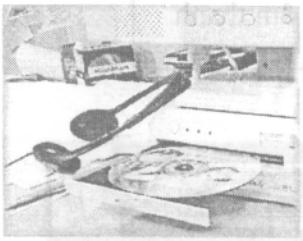
sound is the hardware soundboard. Such boards offer two important capabilities. The first of these is a built-in stereo synthesizer complete with a built-in audio amplifier. Just connect a set of speakers and you've got instant sound, music and speech capabilities. The second capability is the musical instrument digital interface, or MIDI. This is a specialized serial interface that allows an electronic musical instrument to communicate with other MIDI-equipped instruments or PCs.



CD-ROM is popular

3 .....

Between 80 and 90 percent of all multimedia applications are distributed on CD-ROM, some just on CD, some on several media (as with Autodesk's Multimedia Explorer, which comes with both a CD-ROM and diskettes). The reason for CD-ROM's popularity in multimedia is simple – a single CD can contain 650 MB of data. That's over 500 floppy disks' worth of programs, sound, and graphics. The newest CD-ROM standard, CD-ROM XA (for eXtended Architecture) uses data compression to fit even more on these shiny discs. Many XA drives are also compatible with Kodak's PhotoCD technology, which digitizes photographs and places them on a CD-ROM. *in multimedia.*

4 .....

Electronic encyclopedias integrate text, pictures, and sound, and usually have a video section with a full motion video window. The *Compton's Encyclopedia* enables you to read about whales, look at photos of whales, listen to whale songs, and view an animated sequence showing whale movements through the ocean. Similarly, the *Grolier Encyclopedia* lets you read about birds, view pictures of birds, and listen to recordings of their songs.

Other CD-ROMs include dictionaries, guides, and courses about history, science, the human body, cinema, literature, foreign languages, etc. For example, *Cinemania* from Microsoft has information on thousands of films and photographs, reviews, biographies and dialogues from films.

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(*Section 2 and 3 adapted from* 'Updating to multimedia' *in PC Upgrade, June 1993)*

B. Read the texts again and correct these statements. There is a technical mistake in each of them.

1 Multimedia applications do not use huge amounts of data.

2 You don't need to have a soundboard on your PC to hear speech and music.

3 Most multimedia software is distributed on magnetic disks.

4 Kodak's PhotoCD technology is not compatible with many CD-ROM drives.

5 There are no language courses available on CD-ROM

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C. Match these terms in the box with the explanations.

a. Computer animation b. Video computing c. MIDI interface
d. CD-ROM player e. Multimedia control panels

1 Small programs inside the OS designed to work with audio and video files. ☐
2 A code for the exchange of information between PCs and musical instruments. ☐
3 A drive used to handle CD-Rom disks. ☐
4 Manipulating and showing moving images recorded with a video camera or captured from a TV or video recorder. ☐
5 Images which move on the screen. ☐

III. Language work: If – clauses

A. Conditional clauses

When you want to talk about a possible situation and its consequences, you use a conditional sentence. Here, we examine two types of conditionals.

- **First conditional** (possible situation)
  If A happens, B will happen.
  (present + simple), (will + verb)
  E.g. If you **click** on the speaker icon, you**'ll get** a piece of dialogue from the movie.
  In the main clause, we can also have modal (can), an imperative, or a present tense verb.
- **Second conditional** (unlikely situation)
  If A happened, B would happen.
  (past simple), (would + verb)
  E.g. If I **had** the money, I **would** (I'd) **invest** in a multimedia upgrade kit.
  Other modals (could, should, might) may appear in the main clause.

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Read these sentences, then identify the tenses used in the if-clause and in the main clause.

1 If you upgrade your PC, you'll be able to run multimedia applications.
2 If the marketing manager had a multimedia system, she could make more effective presentations.

B. Put the verbs in brackets into the correct form.

1 If I (get) ..... a sound card, I'll be able to create my own music with a MIDI.
2 If the system (have) ..... a SuperVGA card, we would obtain a better resolution.
3 You won't be able to play CD-ROM disks if you (not have) ..... a CD-ROM drive.
4 If you (come) ..... to the annual computer exhibition, you could see the new Macs.
5 If I could afford it, I (buy) ..... a Multimedia PC.

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C. Match the sentences in Column A with appropriate sentences from Column B. Then join each action and effect using an *if-sentence.*

Column A	Column B
1 you press Print Screen	a you can drag it across the screen
2 you press Ctrl + Alt + Del in Windows 98	b it would speed up the computer
3 you added more memory	c you may lose data
4 you installed a modem	d you would have more space at your desk
5 you used a better search engine	e you would be able to connect to a telephone line
6 you forget to save regularly	f you can make a copy of the screen
7 you hold down the mouse button over an icon	g you would find more relevant results
8 you used an LCD display	h it displays a list of active programs

D. Describe the consequences of these actions using an *if-sentence.*

1 you don't virus-check floppies
2 there was a power cut while you were using your computer
3 you install a faster processor
4 you forgot your password
5 you press the delete key
6 you use search engine
7 you double-click on an icon
8 you use power-saving options

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IV. Multimedia on the Web

Read the text and find:

1 the function of the extension that is usually added to a file name.
2 the language used to create the majority of text files on the Web.
3 the graphics interchange format created by CompuServe to compress images.
4 the small program (plug-in) that lets you hear audio recordings on the net.
5 the most popular video formats.
6 the format created by the Moving Picture Experts' Group to capture, store and play back movies.
7 the extension for the files that can be decompressed with a program like *Winzip.*

Recognizing file formats

Web pages can contain different multimedia elements: text, graphics, sounds, video and animation. To identify the format or type of file, an extension (a three-letter suffix) is usually added to the file name when it's saved on disk.

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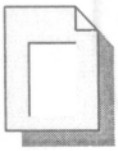
Text

The most common text extensions are **.txt**, **.pdf**, **.doc** and **.htm** (or **.html**). Most of the text files that you find on the Web have the extension .htm, created with the hypertext markup language.

Graphics



Graphics on the Web can include pictures, photos, paintings, image-maps and buttons. The most common formats are **.gif** (a standard image format developed by CompuServe) and **.jpg** or **.jpeg** (created by the Joint Photographic Expert's Group).

Sounds

The Internet is a great place to find and hear hit songs, movie soundtracks, and recorded interviews. The most common formats are these:

- **.wav**: wave files can be played with Sound Recorder included with Windows.
- **.ra** or **.ram**: files generated by RealAudio, a plug-in you can download from the Web.

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Video and animation

You can see cartoons and movie clips on the Web, but you need the appropriate software. Video files are usually stored in: **.avi**, **.mov** and **.mpg** (or **.mpeg**) formats.

To view MPEG videos, you just need Video for Windows. However, to create high-quality movie clips, you need a dedicated MPEG expansion card. You can also find animation and 3-D worlds. The two standard tools to manipulate animated worlds are VRML and Java. To view a virtual animation, you need a program like QuickTime VR.

Compressed files

When you download files, they're probably compressed. Windows files have a **.zip** extension. Macintosh files usually have a **.sit** extension and are opened with *StuffIt*.

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Programming

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Learning objectives

In this lesson, you will learn how to:

- understand basic concepts in programming, and acquire vocabulary connected with it
- recognize acronyms and abbreviations associated with programming
- ask and answer questions about computer languages
- discuss the professional skills and personal qualities required for the jobs of senior programmer and DTP operator
- write a letter applying for a job.

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Topic 23: Program design

Vocabulary

machine code (n)	mã máy
assembly language (n)	hợp ngữ
assembler (n)	bộ dịch hợp ngữ
problem-oriented (adj)	hướng vấn đề
source program (n)	chương trình nguồn
compiler (n)	trình biên dịch
object program (n)	chương trình đích
high-level language (n)	ngôn ngữ lập trình bậc cao

I. Warm-up

A. In pairs, try to think of an answer for the question.

What is programming?

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Look at the definition in the Glossary. Is it similar to yours?

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B. Complete the following definitions with the words and phrases in the box.

the various parts of the program	may occur in programs	language
binary numbers	a given problem	

1. **algorithm**
   The step-by-step specification of how to reach the solution to .....
2. **flow chart**
   A diagram representing the logical sequence between .....
3. **coding**
   The translation of the logical steps into a programming .....
4. **machine code**
   The basic instructions understood by computers. The processor operates on codes which consist of .....
5. **debugging**
   The techniques of detecting, diagnosing and correcting errors (or 'bugs) which.....

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II. Reading

Read the text and find answers to these questions.

1. Do computers understand human languages?
2. What are the differences between low-level and high-level languages?
3. What is an assembler?
4. What is the function of compilers?
5. What do you understand by the terms **source program** and **object program**?
6. In the future, could computers be programmed in Spanish, French, or Japanese?

Programming languages

Unfortunately, computers cannot understand ordinary spoken English or any other natural language. The only language they can understand directly is called **machine code**. This consists of the 1s and 0s (binary code) that are processed by the CPU.

However, machine code as a means of communication is very difficult to write. For this reason, we use symbolic languages that are easier to understand. Then, by using a special program, these languages can be translated into machine code. For example, the so-called **assembly languages** use abbreviations such as ADD, SUB, MPY to represent instructions. These mnemonic codes are like labels easily associated with the items to which they refer.

Basic languages, where the program is similar to the machine code version, are known as **low-level languages**. In these languages, each instruction is equivalent to a single machine code instruction, and the program is converted into machine code by a special program called an **assembler**. These languages are still quite complex and restricted to particular machines.

To make the programs easier to write and to overcome the problem of intercommunication between different types of machines, higher-level languages were designed such as BASIC, COBOL, FORTRAN, or Pascal. These are all problem-oriented rather than machine-oriented. Programs written in one of these languages (known as **source programs**) are converted into a lower-level language by means of a compiler (generating the **object program**). On compilation, each statement in a **high-level language** is generally translated into many machine code instructions.

People communicate instructions to the computer in symbolic languages and the easier this communication can be made, the wider the application of computers will be. Scientists are already working on Artificial Intelligence and the next generation of computers may be able to understand human languages.

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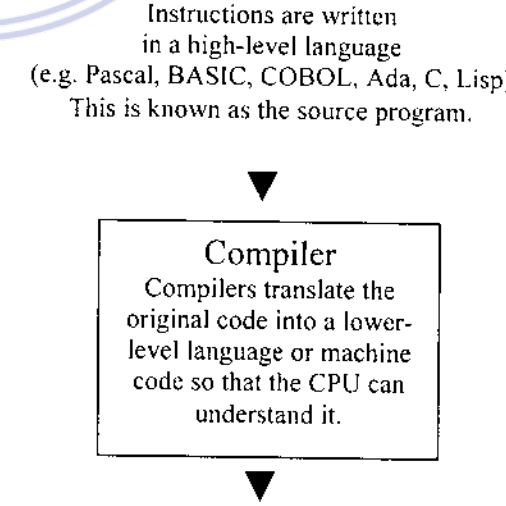

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III. Language work: Infinitive constructions

A. The infinitive is used:

- after adjectives
- It is **difficult to use** machine code.
- after modal verbs with *to*: *ought to, used to*
- I **ought to make** a back-up copy.
- Using a computer is much easier than it **used to be.**
- after modal and auxiliary verbs without *to*: *can, could, may, might, shall, should, will, would, would rather, would sooner*
- Unfortunately, computers **can't understand** English.
- I**'d rather buy** a game than a spreadsheet.

B. Make sentences as in the example.

Example

Not easy/write instructions in Pascal
It is not easy to write instructions in Pascal.

1 advisable/test the program under different conditions.
2 expensive/set up a data-processing area.
3 unusual for a program/work correctly the first time it is tested.
4 difficult for students/learn FORTRAN.
5 important/consider the capabilities of the programming language.
6 quite easy/write instructions in BASIC.

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C. Now look again at the reading passage in Task 2. Underline the infinitive constructions after modal verbs.

Example:

Unfortunately, computers <u>cannot understand</u> ordinary spoken English…

D. Look at these pairs of examples and decide where there is an 'important' change in meaning.

1 a I remember shutting down the computer before I left the room.
  b Please, remember to buy the new program.
2 a They stopped to look at the flowchart.
  b They stopped looking at the flowchart.
3 a I like studying C language.
  b I like to study C language in the evenings.
4 a It has started to rain.
  b It has started raining.
5 a He needs to work harder.
  b This hard disk needs repairing.

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Topic 24: Languages

Vocabulary

applet (n)	chương trình ứng dụng của Java
source language statements (n)	câu lệnh bằng ngôn ngữ nguồn
system command (n)	lệnh hệ thống
logical sequence of statements (n)	trật tự logic của các lệnh

I. Warm-up

A. Make a list of as many computer languages as you can think of.
B. Study this table about Java and answer the questions below.

Language	*Date*	*Characteristics*	*Uses*
Java Invented by Sun Microsystems.	1995	Cross-platform language that can run on any machine. Small Java programs called 'applets', let you watch animated characters, play music and interact with information.	Designed to create Internet applications. When you see a Web page containing Java links, a Java program is executed automatically.

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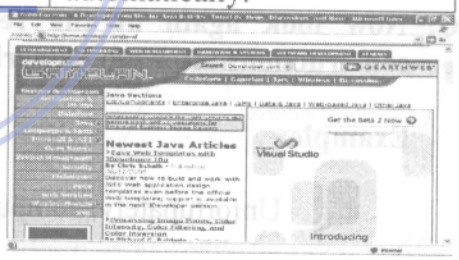
1. Who invented Java?
2. When was Java developed?
3. Can Java run on any computer (Mac, PC, or UNIX workstation)?
4. What are Java's small programs called? What can you do with them?



II. Language work: Would, Revision of time clauses

A. The use of 'would'

We use 'would' in conditional sentences. For example:
If you spilled coffee on the keyboard, you would damage it.
Often the condition is implied, not stated. For example:
(If I had time) I'd like to build in new links.
(If I had to make a choice) my favorite site would have to be the Internet Movie Database.
What is the implied condition in this extract?
I would look at other sites too for good ideas.

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B. Complete the gaps in this dialogue with 'will' or 'would' or the reduced forms ''ll' and ''d' where appropriate.

A What ……..[1] you do when you finish your diploma?
B I ……..[2] like to take a course in multimedia.
A How long ……..[3] that take?
B If I choose the certificate, it ……..[4] take 6 months but if I chose the master's, it ……..[5] take a full year.
A What ……..[6] be the advantage of the master's?
B I guess I ……..[7] have better job prospects.
A When ……..[8] you decide?
B It depends on my finals. If I do well, I ……..[9] go for the master's.

C. Link these statements using an appropriate time clause.

1 a You click the mouse pointer on the file
b It is highlighted.
2 a You cannot save a file.
b You name it.
3 a The files are transferred.
b The transfer is graphically displayed.
4 a Remove any floppies.
b You close down the computer.
5 a The OK button is clicked.
b The copying process begins.
6 a The percentage of file transferred is displayed.
b Your browser downloads from the Internet.
7 a The virus is not activated.
b You open the infected file.
8 a You repair a PC.
b Ensure the machine is disconnected.
9 a Don't open an email attachment.
b You have virus-checked it.
10 a You add memory.
b Change the BIOS settings.

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III. Speaking

Work in pairs. Student A: turn to page 165 and Student B: turn to page 169.

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IV. A short description of BASIC

Read the passage and complete it with verbs in brackets in the correct form.

BASIC is a general purpose high-level programming language, originally designed (develop) .....[1] program in conversational mode. The name BASIC (stand) .....[2] for Beginner's All-purpose Symbolic Instruction Code. This language is (find) .....[3] on most microcomputers because it (be) .....[4] user-friendly and easy to learn.

BASIC (consist) .....[5] of two main parts: the source language statements – the instructions which form the program – and the system commands which (allow) .....[6] us to control and edit a program.

BASIC enables the user (interact) .....[7] with the program while it is being (execute) .....[8], which means that data can be (input) .....[9] while the program is running. Each instruction is (give) .....[10] a line number which defines the logical sequence of statements within the program. Some well-known system commands in BASIC are: RUN, which executes a program (hold) .....[11] in a BASIC file; LIST, which prints a listing of a program on the screen; and DELETE, which (remove) .....[12] a program from a file.

A large number of PC manufacturers adopted BASIC. At present, however, there (be) .....[13] so many versions and extensions that programs written for one type of PC are not directly portable to another.

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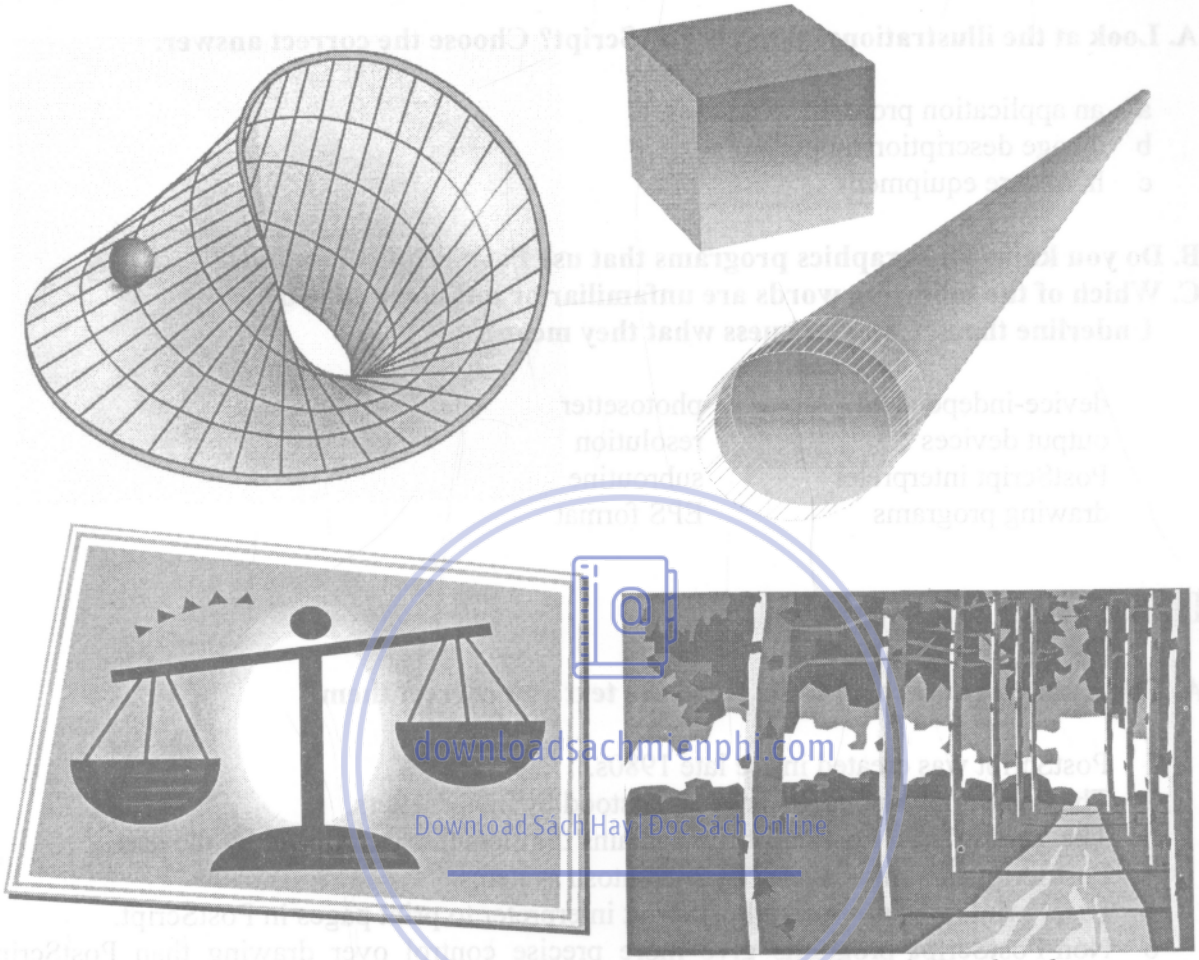
Topic 25: The PostScript revolution



These pictures were made with Freehand, a program that produces pictures drawn directly in PostScript.

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Vocabulary

PostScript (n)	ngôn ngữ đặc tả văn bản
vectorial format (n)	định dạng vectơ
equation (n)	phương trình
subroutine (n)	chương trình con
parameter (n)	tham số
device-independent (adj)	tính độc lập thiết bị
adjust (v)	điều chỉnh
page layout (n)	trình bày trang (mi trang)
halftone (n)	ảnh bản sắc

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Lesson 6 Programming

I. Warm-up

A. Look at the illustrations. What is PostScript? Choose the correct answer.

a an application program
b a page description language
c hardware equipment

B. Do you know any graphics programs that use PostScript commands?
C. Which of the following words are unfamiliar or unknown to you? Underline them. Can you guess what they mean?

device-independent	photosetter
output devices	resolution
PostScript interpreter	subroutine
drawing programs	EPS format

II. Reading

A. These statements are all false. Read the text and correct them.

1 PostScript was created in the late 1980s.
2 The PostScript language is not understood by imagesetters.
3 The 'prolog' of a PostScript file contains the elements introduced by the user.
4 PostScript can only be used by Macintosh systems.
5 Laser printers don't need a PostScript interpreter to print pages in PostScript.
6 Non-PostScript programs give more precise control over drawing than PostScript programs.
7 PostScript pictures can't be exported.

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What is PostScript?

In the past ten years, the world of computers has witnessed the 'PostScript' revolution. PostScript was developed by Adobe Systems, Inc. in 1982 as a page description language for printers like Apple LaserWriter and Allied Linotronic photosetters. Today, it is used in most laser printers and is becoming a standard for high-quality type and graphics.

PostScript is mainly used to describe the appearance of text, graphics, and images on the printed page. It works in 'vectorial format' which means that it stores graphics not as images made up of dots but as geometric descriptions in equation form. This allows text fonts and graphics to be enlarged or reduced with no loss of quality in the output.

A PostScript file consists of two main parts: the 'prolog' which contains a set of subroutines used to form different graphic elements (rectangles, curves, etc.), and the

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'script', which contains elements introduced by the user. The script calls up the subroutines stored in the prolog and adds the parameters: for example, if you have drawn a square of 10 x 5 cm, the script calls up the subroutine Square and specifies the values 10 x 5.

All the features of PostScript can be used with Macintosh, Windows or OS/2 environments. PostScript is device-independent, which means that it can speak to different output devices (printers, film recorders, imagesetters) and adjust the quality of the final output to the highest capabilities of the output devices. You only need a PC able to send a file to an output device containing a PostScript interpreter. Each PostScript-based printer has a microprocessor, at least 2 MB of RAM, and an operating system that interprets the PostScript code. In the case of imagesetters, the hardware that interprets the code is called a Raster Image Processor.

Some drawing programs can produce pictures drawn in PostScript directly. These programs, such as Illustrator, Freehand, or CorelDraw, can often give more precise control over drawing than non-PostScript packages. Pictures created in PostScript and saved as separate files (known as Encapsulated PostScript (EPS) files) can be imported into a document generated by page-layout applications like Adobe PageMaker or QuarkXPress.

PostScript is an indispensable tool for illustrators, graphic designers, and DTP professionals. It has support for sound, video, and other formats: you can rotate portions of the page, mix scanned images, specify halftone screens, and introduce any number of effects. In fact, the only barrier is your imagination.

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B. Read the text again and deduce the meaning of the words you did not know in Task 1. Refer to the Glossary if you need to.

III. Language work:

Revision: Past simple questions

A. Study these examples of questions about the past.

Asking about quantity How many days a week did you study? How much programming did you do?	**Asking about things:** What made you choose computing support? What did you like most?
Asking about people: Who taught you maths? Whose classes did you most enjoy?	**Asking about actions:** What did you do on Fridays? What happened on Monday mornings?
Asking about time: When did you study Communication?	

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B. Study this description of a student's first term. What questions might the interviewer have asked to obtain the information in italics?

In her first term Pauline studied 6 *subjects* [1]. She had *classes* on *four days* [2] each week. On Monday morning, *she had IT and Information Systems* [3]. *Tuesday* [4] was a free day for home study. On Wednesday, she had *Systems Analysis* in Room 324 [5]. She studied *Computer Architecture* [6] on Thursdays. *Programming* [7] happened on Friday mornings. *Communication* took place *once a week* [8] on Friday afternoons. She like *Mr Blunt's classes* [9] most. She had a 15-minute coffee break each day and a lunch break *from 12.00 to 1.00* [10]

IV. Word study: *up-* and *-up* verbs.

Complete each gap in these sentences with the appropriate form of the correct verb from this list:

back up	*build up*	*catch up*
free up	*keep up*	*set up*
start up	*update*	*upgrade*
upload	*free up*	

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1 To avoid losing data, you should ..... your files regularly.
2 You can ..... your PC by adding a new motherboard.
3 Delete some files to ..... space on your hard disk.
4 Data is ..... from regional PCs to the company's mainframe each night.
5 The operating system boots when you ..... your computer.
6 She's taking a course to ..... her knowledge of computing.
7 The computer checks the memory when it .....
8 He ..... a website to advertise his travel company.
9 You can ..... with developments by reading PC magazines.
10 If you miss a class, you can study the hand-outs to ..... .
11 The image in a digital camera is ..... from a red, green, and blue image.

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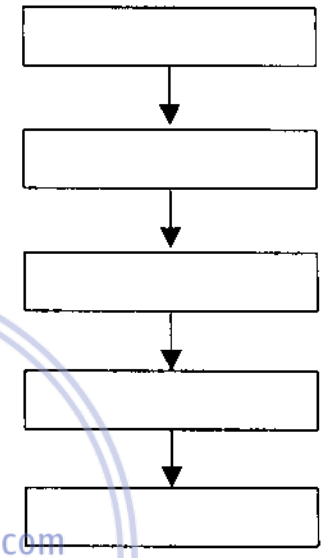
IV. Your experience with computers

A. Complete the chart below with notes about the different stages in your 'computer history'. For example: 1985: First used computer at school. Add more boxes to the chart if you want to.

Possible stages:

- first computer game
- first computer lesson at school/college
- first programming language learnt
- first software used
- first computer course/qualification
- first job involving computers
- first steps on the Internet



B. Ask a partner about their computer history.

For example:

'When did you first…?'
'How long ago did you…?'
'How old were you when you…?'

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C. Tell the rest of the class about your partner. Do most people in your group have similar computer histories?

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Topic 26: Jobs in computing

Vocabulary

proficient (adj)	thành thạo
specialize (v)	chuyên về

I. Reading

A. Look carefully at the job advertisements and discuss with another student what personal qualities and professional abilities you would need for each job. Tick (√) the most important qualities in the list. Then add some more of your own.

logical reasoning	☐	ability to lead a team	☐
imagination	☐	patience and tenacity	☐
physical fitness	☐	ability to draw well	☐
efficiency	☐	being good with figures	☐
self-discipline	☐	willingness to take on responsibility	☐

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SENIOR PROGRAMMER
required by DIGITUM, a leading supplier of business systems to the insurance industry.

You will be able to work on the full range of development activities – analysis, design, coding, testing and implementation. At least two years' experience of COBOL is necessary.

As we are active in Europe, fluency in French, Italian, or another European language is desirable.

Don't miss this opportunity to learn new skills and develop your career.

Send your curriculum vitae to
CHRIS SCOTT, PERSONNEL MANAGER,
DIGITUM, 75 PARKHILL STREET, LONDON SW 3DE

You can visit our Web site at:
http://www.digitum.com

DTP Operator

required for a leading financial magazine. We are looking for a bright, competent QuarkXPress operator with at least three years' experience in design and layout. Skill in Photoshop, Freehand, or Illustrator an advantage. Ability to work in a team and to tight deadlines is vital.

Please apply in writing, with CV and samples of your work, to Tom Parker, Production Manager, Financial Monthly, Stockton Street, London EC1 4WW.

B. Would you like to apply for one of these jobs? Why?

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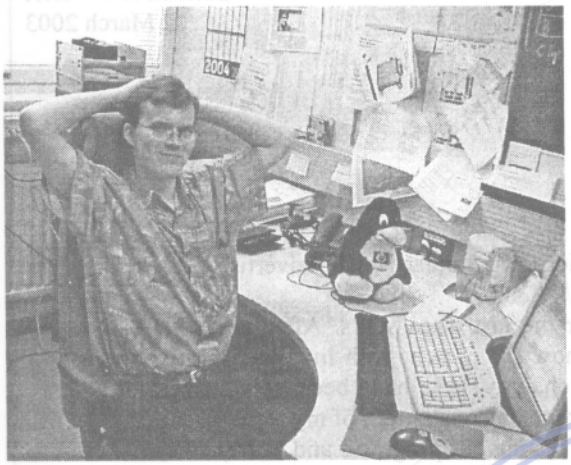
C. Study the personal profile of Charles Graham. Which is the most suitable job for him?

Charles Graham



- 28 years old. Married.
- Education: 3 A-levels.
- In-depth knowledge of Apple Macintosh equipment.
- Course in graphic design and page-layout applications from Highland Art School.
- Proficient in Adobe PageMaker and SuperPaint.
- Diploma in word processing. Wide experience in MS Word and WordPerfect.
- Present job: Computer operator for PromoPrint, a company specializing in publishing catalogues and promotional material.

II. Language work: Past simple and Present perfect

What is the difference in meaning between these two sentences?

1 My PC has crashed. Can you advise me what to do?
2 My PC crashed. I had to replace the hard disk.

We use the Present perfect to describe past actions with present relevance.
We use the Past simple to describe completed actions in the past. It is often used with time expressions such as: *last year, ago, in 1998, before PCs were introduced,* etc.
When we talk about how long an existing situation has lasted, we use the Present perfect. We use the Past simple for situation that existed for a period of time in the past.
For example:

3 I've worked for a year as a senior programmer.
4 I worked for a year as a senior programmer.

A. Now put the tenses in this dialogue in the correct form: Past simple or Present perfect.

1 A What (do) today?
2 B I (work) on my project. I (search) the Web for sites on digital cameras.
3 A (find) any good ones?
4 B I (find) several company sites – Sony, Canon … but I (want) one which (compare) all the models.
5 A Which search engine (use)
6 B Dogpile mostly. (ever use) it?
7 A Yes, I (try) it, but I (have) more luck with Ask Jeeves. Why don't you try it?
8 B I (have) enough for one night. I (spend) hours on that project.
9 A I (not start) on mine yet.
10 B Yeh? I bet you (do) it all.

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B. Sarah Brown is one of the applicants for the job of Senior Programmer advertised in Task 1. Read her letter of application and put the verbs in brackets into the correct tense.

19 Sandford Street
London NW7 4HH
2 March 2003

Mr. Scott
Personnel Manager
Digitum
75 Parkhill Street
London SW2 3DE

Dear Mr. Scott,

I am writing to (apply) ..... [1] for the position of Senior Programmer which (advertise) ..... [2] on 28 February in *The Times*.

I (work) ..... [3] as a computer programmer for the last three years. After graduation, I (work) ..... [4] for a year with NCR and (be) ..... [5] now ..... with Intelligent Software for two years. I design systems in COBOL for use in large retail chains. These have been very successful and we (win) ..... [6] several new contracts in the UK and Europe on the strength of my team's success.

Last year I (spend) ..... [7] three months in Spain testing our programs and also (make) ..... [8] several short visits to Italy so I have a basic knowledge of Spanish and Italian. I now feel ready for more responsibility and more challenging work and would welcome the opportunity to learn about a new industry.

I enclose my curriculum vitae and look forward to hearing from you.

Yours sincerely,
Sarah Brown
Sarah Brown

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III. Writing

Helena Davies, from Spain, is interested in the job of computer operator as advertised below. Use her notes to write a letter applying for the job.
You can start like this: *I'm writing to apply for...*

International Mercury COMPUTERS

requires Computer Operators

We have vacancies for experienced operators to work on their own initiative in a busy company. You will be responsible for the day-to-day running of our data-processing equipment. You must be highly communicative and have good problem-solving skills. We can offer an excellent salary, training and good promotional prospects to the right candidate.

Send your CV and a covering letter to James Taylor, International Mercury Computers.

Notes for the Curriculum Vitae

- *Cambridge Certificate of Proficiency in English*
- *Computer Sciences degree from Zaragoza University, Spain*
- *Knowledge of both Macintosh and Windows environments*
- *Two years' experience working on 'Linea Derecta', a local magazine for computer users.*
- *Present job: Computer operator for Graphic Color SL. This involves data control and editing data preparation, and computer operating.*
- *Reason for applying: develop operating skills and move into management.*

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Computers tomorrow

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Learning objectives

In this lesson, you will learn how to:

- talk about different kinds of data communication systems: teletext, fax, local bulletin boards and the Internet
- describe the components and functions of a computer network, in oral and written form
- understand and discuss basic ideas about security and privacy on the Internet
- talk and write about new technologies
- understand predictions about the impact of computers on our lifestyle.

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Topic 27: Electronic communication

Vocabulary

fax (n)	máy fax
teletext (n)	truyền văn bản từ xa
local bulletin board (n)	bảng tin cục bộ
commercial online service (n)	dịch vụ thương mại trực tuyến
satellite (n)	vệ tinh
fibre-optic cable (n)	cáp quang
analogue signal (n)	tín hiệu tương tự
bulletin board system (BBS) (n)	hệ thống bảng tin
administer (v)	quản trị
upload (v)/download	đăng tải/ tải xuống

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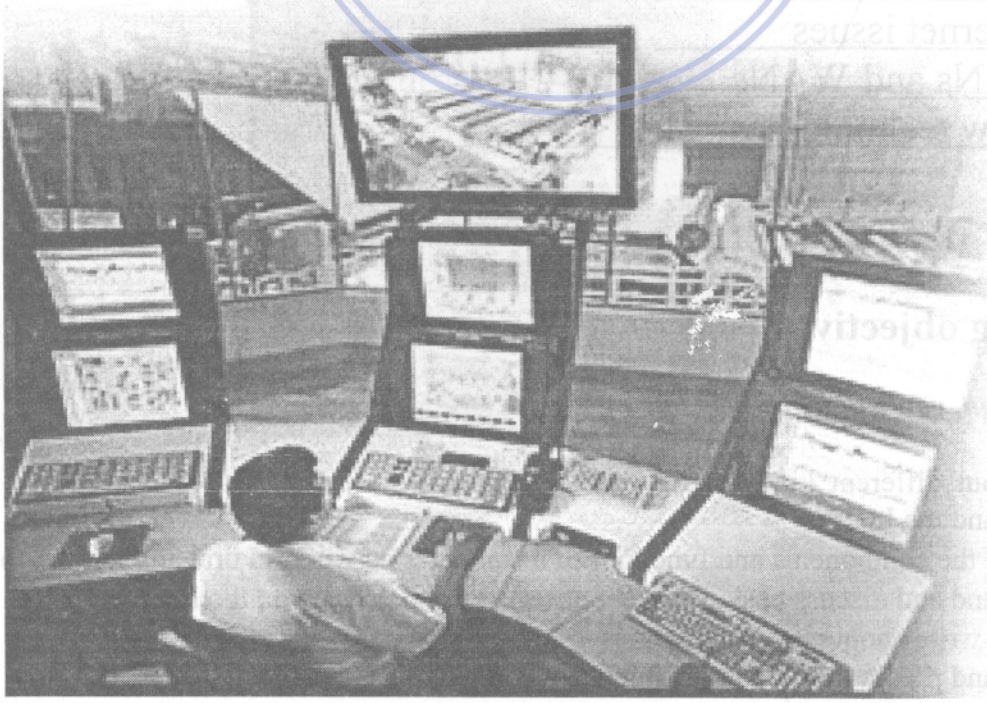
I. Before you read

Try to answer these questions.

1. How can a PC be connected to another computer?
2. What data communication systems can you think of? Make a list.



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II. Reading

A. Match the data communication services on the left with the requirements on the right. Then read the passage and check your answers.

1	fax	a	To send a personal message to a friend who is at a different workstation.
2	electronic mail (e-mail)	b	To send a copy of a paper document – for instance, a scientific article – from Trento University to Cambridge University.
3	teletext	c	To access massive databases containing all kinds of information, or to be connected with an airline reservations service.
4	local bulletin board system (BBS)	d	To receive shareware and public domain programs from a user group.
5	commercial online service	e	To find out weather forecasts and sports information from the television.

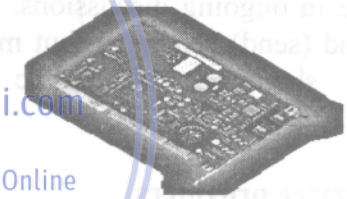
Channels of communication

What are 'telecommunications'?

This term refers to the transmission of information over long distances using the telephone system, radio, TV, satellite, or computer links. Examples are two people speaking on the phone, a sales department sending a fax to a client, or someone reading the teletext pages on TV. But in the modern world, telecommunications mainly means transferring information from one PC to another via modem and phone lines (or fibre-optic cables)

What can you do with a modem?

A modem is your computer's link to the external world. With a modem, you can exchange email and files with friends and colleagues; you can access the Web and search for information about the stock market, current affairs, entertainment, etc.; you can participate in newsgroups and live conversations; you can make bank transactions and buy things from the comfort of your home. You can also access your office from your computer at home or your laptop in a hotel room.



Modems

Your PC is a digital device (it works with strings of 1s and 0s). However, the telephone system is an analogue device, designed to transmit the sounds and tones of the human voice. That's why we need a modem – a bridge between digital and analogue signals. The word 'modem' is an abbreviation of MOdulator/DEModulator. When a modem modulates, it sends very rapid on/off pulses. The computer on the other end translates (demodulates) those signals into intelligible text or graphics. Modem transmission speeds are measured in kilobits per second. Typical speeds are 28.8, 33.6 and 56 kbps.

Today, a lot of companies find it more efficient to have some employees doing their work at home. Using a modem, they transfer their work into the office where it is printed and distributed. The list of applications is endless.

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What do you need to telecommunicate?
You just need a PC (or a terminal), a modem connected to the computer and the telephone line, and communication software. Once you have installed and configured your modem, you can communicate with people through bulletin boards and online services.

Local bulletin boards
Bulletin board systems (BBS) are frequently free because they are run by enthusiasts and sponsored by user groups or small businesses. The first time you make a BBS connection you are required to register your name, address, phone number, and other information such as the kind of computer and modem you are using. The person who administers the BBS is called *sysop* (system operator). You can use a BBS to download artwork, games, and programs, or you can participate in ongoing discussions. You can also upload (send) programs, but make sure they are shareware or public domain programs.

Online service providers
To gain access to the Internet, you must first open an account with an Internet service provider (ISP) or a commercial online service provider. Both offer Internet access, but the latter provides exclusive services.

- **Internet service providers** usually offer access to the Web and newsgroups, an email address, a program to download files from FTP sites, and IRC software so that you can have live chats with other users. Most ISPs charge a flat monthly or annually fee that gives you unlimited access to the Internet.
- The main **commercial online services** are America Online, CompuServe, Prodigy, and the Microsoft Network. They differ from dedicated ISPs in two ways: (1) they use a smooth, easy-to-use interface, and (2) they have extra services for members only (but they charge higher prices). For example, they offer airline reservations, professional forums, online shopping, and stories for children. They also let you search their online encyclopedias and special databases.

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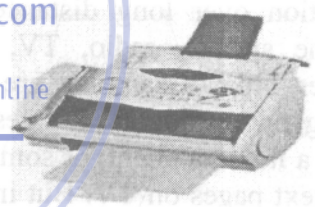
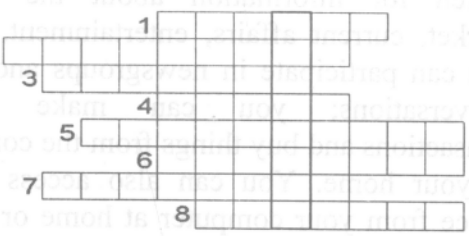


A fax machine *sends and receives copies of original documents via a phone line.*

B. Complete the sentences by using a term from the list. Then write the words in the crossword.

modem	network	online	download
newsgroups	services	account	telephone

1. When you are connected to the Internet, you are described as being .....
2. To communicate via the Internet, you need a PC, modem, and a .....
3. To have access to the Internet, you must first open an .....
4. You need a ..... to convert computer data into a form that can be transmitted over the phone lines.



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5. The public discussion areas on the Internet are called .....
6. You can use a BBS to ..... clip-art, games, and shareware to your PC.
7. CompuServe and America Online offer exclusive ..... to their customers.
8. The Internet is a global ..... of computer networks.

C. Match and link the pairs of expressions that have the same meaning.

file of structured data	BBS	facsimile
kilobits per second	system operator	Internet relay chat
phone network	bulletin board system fax	database
telephone wires sysop	modulator/demodulator	file transfer protocol
kbps	IRC	FTP
modem		

III. Language work: Making predictions

A prediction is a statement about a particular subject in which we say what we think will happen in the future. Predictions are not always absolute, but can be expressed with different levels of certainty, according to the context in which they are made.

a. Certainty can be expressed by:

will (definitely, certainly)
certain, sure
without a doubt, without question

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b. Probability can be expressed by:

probable, probably, likely
most/highly probable, most probably
most/ highly likely

c. Possibility can be expressed by:

may (not), might (not), can, could
possible, possibly, perhaps

d. Improbability can be expressed by:

improbable, unlikely
doubtful, questionable
probably not
most/ highly improbable/ unlikely
most/ highly doubtful/ questionable
most probably not

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e. Impossibility can be expressed by:

present or future	*past*
cannot, could not	could not
not possible, impossible	not possible, impossible

A. These expressions are used in sentences in different ways. For examples:

1 *Notebook computers **will definitely** be cheaper next year.*
2 *It is **(highly) probable/ likely that** notebook computers will be cheaper next year.*
3 *Notebook computers **may/ might** be cheaper next year.*
4 *Perhaps notebook computers **will** be cheaper next year.*
5 ***It is unlikely/ doubtful that** notebook computers will be cheaper next year.*
6 *Notebook computers **will most probably not** be cheaper next year.*
7 *Notebook computers **will definitely not** be cheaper next year.*
8 ***It is impossible that** notebook computers will be cheaper next year.*

B. Match the if-clauses (1 to 6) to the main clauses (a to f) to make complete sentences.

1	If you never read computer magazines…	a	…you would be able to access our bulletin board.
2	If you never back up your hard disk…	b	…it is unlikely that you will have a problem with computer viruses.
3	If you had a modem…	c	…we would have a bigger range of typefaces and fonts to choose from.
4	If you don't copy pirated software…	d	…you will miss important new products.
5	If I knew more programming languages…	e	…I would get a better job.
6	If we bought a better printer…	f	…you will probably lose some important files.

C. Complete the sentences with the words in the box. Are the sentences first (F) or second (S) conditionals?

would not post	will be	look at	will get	will be reduced
grows	wanted	leave	would need	installed

1 If you …….. your VDU in direct sunlight, it …….. damaged ☐
2 If you …….. your screen for too long, you…….. a headache. ☐
3 If you …….. to link your PCs with a mainframe, you …….. to install a network. ☐
4 If the market for portable computers ……., prices …….. even more next year. ☐
5 If we …….. a fax machine and email facility, we …….. so many letters each day. ☐

D. Now make up three first conditional and three second conditional sentences of your own.

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Topic 28: Internet issues

Vocabulary

server (n)	máy chủ
firewall (n)	bức tường lửa
infiltrate (v)	xâm nhập
hacker (n)	tin tặc, hắc khách
online transaction (n)	giao dịch trực tuyến
propagate (v)	lan truyền, truyền bá
email privacy (n)	tính riêng tư của thư tín
unscrupulous (adj)	không đắn đo
encode (v)/ decode	mã hóa/ giải mã
encryption (n)/decryption (n)	mật mã/ giải mật
network security (n)	an ninh mạng
crucial data (n)	dữ liệu quan trọng
attachment (n)	(file) đính kèm'
anti-virus software (n)	phần mềm chống virut
celebrity (n)	danh nhân
notoriety (n)	sự mang tiếng, tiếng xấu

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I. Warm-up

A. Try to answer these questions.

1 Is it technically possible for computer criminals to infiltrate into the Internet and steal sensitive information?
2 What is a hacker?
3 Can viruses enter your PC from the Internet?

B. Match these texts with the correct pictures.

1. Web browsers warn you if the connection is not secure; they display a message when you try to send personal information to a server.
2. Private networks use a software and hardware mechanism, called a 'firewall', to block unauthorized traffic from the Internet.
3. You have to type your user name and password to access a locked computer system or network
4. An open padlock in Netscape Communicator indicates the page is not secure; a closed padlock indicates the page is encrypted.

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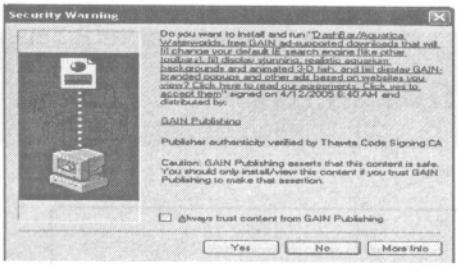
a



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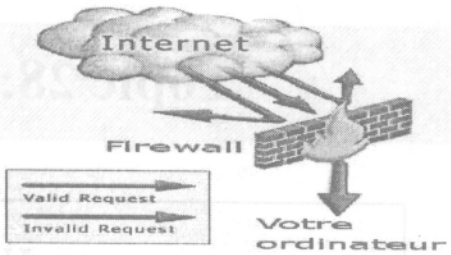

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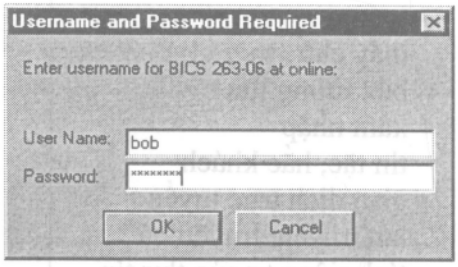

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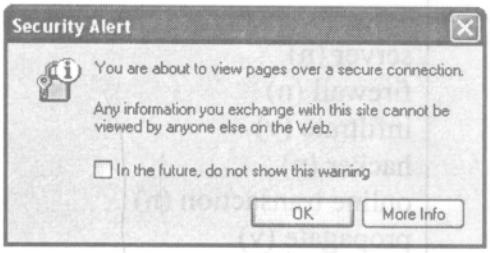

II. Reading

A. Read the text on the following page and find answers to these questions.

1 Why is security so important on the Internet?
2 What security features are offered by Netscape Communicator and Internet Explorer?
3 What security standard is used by most banks to make online transactions secure?
4 How can we protect and keep our email private?
5 What methods are used by companies to make internal networks secure?
6 Which ways can a virus enter a computer system?

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Security and privacy on the Internet

There are a lot of benefits from an open system, like the Internet, but we are also exposed to hackers who break into computer systems just for fun, as well as to steal information or propagate viruses. So how do you go about making online transactions secure?

Security on the Web

The question of security is crucial when sending confidential information such as credit card numbers. For example, consider the process of buying a book on the Web. You have to type your credit card number into an order form which passes from computer to computer on its way to the online bookstore. If one of the intermediary computers is infiltrated by hackers, your data can be copied. It is difficult to say how often this happens, but it's technically possible.

To avoid risks, you should set all security alerts to high on your Web browser, Netscape Communicator, and Internet Explorer display a lock when the Web page is secure and allow you to disable or delete 'cookies'.

If you use online bank services, make sure your bank uses digital certificates. A popular security standard is SET (secure electronic transactions).

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Email privacy

Similarly, as your email message travels across the net, it is copied temporarily on many computers in between. This means it can be read by unscrupulous people who illegally enter computer systems.

The only way to protect a message is to put it in a sort of 'envelope', that is, to encode it with some form of encryption. A system designed to send email privately is *Pretty Good Privacy,* a freeware program written by Phil Zimmerman.

Network security

Private networks connected to the Internet can be attacked by intruders who attempt to take valuable information such as Social Security numbers, bank accounts, or research and business reports.

To protect crucial data, companies hire security consultants who analyze the risks and provide security solutions. The most common methods of protection are passwords for access control, encryption and decryption systems, and firewalls.

Virus protection

Viruses can enter a PC through files from disks, the Internet, or bulletin board systems. If you want to protect your system, don't open email attachments for strangers and take care when downloading files from the Web. (Plain text email alone can't pass a virus)

Remember also to update your anti-virus software as often as possible, since new viruses are being created all the time.

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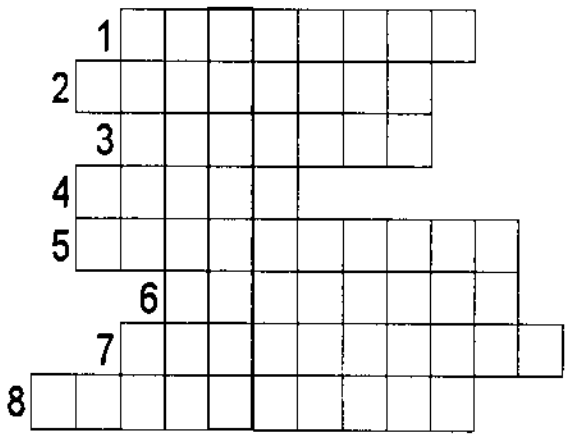
HELP box

- **hacker:** a person who obtains unauthorized access to computer data
- **cookies:** small files used by Web servers to know if you have visited their site before
- **certificates:** files that identify users and Web servers on the net, like digital identification
- **encryption:** the process of encoding data so that unauthorized users can't read it
- **decryption:** the process of decoding encrypted data transmitted to you.

B. Complete these sentences by using a term from the text. Then write the words in the puzzle.

1 Users have to enter a p..... to gain access to a network.
2 You can download a lot of f..... or public domain programs from the net.
3 Hundreds of h..... break into computer systems every year.
4 A computer v..... can infect your files and corrupt your hard disk.
5 The process of encoding data so that unauthorized users can't read the data is known as e.....
6 A f..... is a device which allows limited access to an internal network from the Internet.
7 You can include an a..... as part of your email message.
8 This company uses d..... techniques to decode (or decipher) secret data.



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III. Hackers!

Read the text in order to answer these questions.

1 Which hacking case inspired the film *War Games*?
2 Why was Nicholas Whitely arrested in 1988?
3 How old was the hacker that cracked the US defense computer in October 1989?
4 Who was known as 'Dark Dante' on the networks? What was he accused of?
5 Which computer club showed on TV a way to attack bank accounts?

Sept '70 John Draper, also known as Captain Crunch, discovers that the penny whistle offered in boxes of Cap'n Crunch breakfast cereal perfectly generates the 2,600 cycles per second (Hz) signal that AT&T used to control its phone network at the time. He starts to make free calls.

Aug '74 Kevin Mitnick, a legend among hackers, begins his career, hacking into banking networks and destroying data, altering credit reports of his enemies, and disconnecting the phone lines of celebrities. His most famous exploit – hacking into the North American Defense Command in Colorado Springs – inspired *War Games*, the 1983 movie.

Jul '81 Ian Murphy, a 23-year-old known as Captain Zap on the networks, gains instant notoriety when he hacks into the White House and the Pentagon.

Dec '87 IBM international network is paralyzed by hacker's Christmas message.

Jul '88 Union Bank of Switzerland 'almost' loses 32 million to hacker-criminals. Nicholas Whitely is arrested in connection with virus propagation.

Oct '89 Fifteen-year-old hacker cracks US defense computer.

Nov '90 Hong Kong introduces anti-hacking legislation.

Aug '91 Israelis arrest 18-year-old for hacking foreign banking and credit card networks.

Jul '92 In New York, five teenagers are charged with breaking into computer systems at several regional phone companies, large firms and universities.

Dec '92 Kevin Paulson, known as 'Dark Dante' on the networks, is charged with stealing tasking orders relating to an Air Force military exercise. He is accused of theft of US national secrets and faces up to 10 years in jail.

Feb '97 German Chaos Computer Club shows on TV the way to electronically obtain money from bank accounts using a special program on the Web.

May '98 Computer criminals propagate a lot of viruses through the Internet.

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IV. Language work: The past simple (revision)

Look at the text in Task 3 again and put the verbs into the past.

Example

*In September 1970, John Draper discover**ed** that the penny whistle ... generat**ed** ... He start**ed** to make free calls.*

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Topic 29: LANs and WANs

Vocabulary

node (n)	nút
protocol (n)	giao thức, nghi thức
transceiver (n)	máy thu phát
adapter (n)	bộ điều hợp, bộ thích ứng
token (n)	mã thông báo
network architecture (n)	kiến trúc mạng
gateway (n)	cổng kết nối
local area network (LAN) (n)	mạng cục bộ
physical structure (n)	kết cấu vật thể
bandwidth (n)	băng thông
pulse (n)	xung
aerial (n)/ antenna	ăngten chảo
telephone line (n)	đường dây điện thoại
wide area network (WAN)	mạng toàn cầu
academics (n)	học thuật, hàn lâm

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I. Warm-up

Try to answer these questions.

1. What is a computer network?
2. What are the benefits of connecting computers and peripherals in a network?

II. Reading

Read the text below, then match the technical terms on the left with the explanations on the right.

Network configurations

A **network** is a group of devices (PCs, printers, etc.) or 'nodes' connected by communications circuits so that users can share data, programs and hardware resources. A network has two main elements: the **physical structure** that links the equipment and the **software** that allows communication.

The physical distribution of nodes and their circuits is known as network 'topology' or 'architecture'. The software consists of the **protocols**, i.e. the rules which determine the

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formats by which information may be exchanged between different systems. We could say that cables and transceivers (the architecture) allow computers to 'hear' one another, while the software is the 'language' that they use to 'talk' to one another over the network.

As *regards* the cables, they consist essentially of the transceiver – the hardware that sends and receives network signals. At present, the most widely used transceivers are Token Ring, Ethernet and Local Talk. Token Ring is the most common method of connecting PCs and IBM mainframes. Most Token Ring adapters transmit data at a speed of 16 megabits per second. With Ethernet, data is transmitted at 100 Mbits/sec. Ethernet provides a very robust, trouble-free architecture with good levels of performance. *In this regard*, Ethernet is the best solution for fast and intensive activity.

LocalTalk transceivers are the cheapest of all because they are directly included in each Macintosh. However, they're a bit slow, which is why most Macs come with built-in Ethernet.

As for protocols, these are rules which describe things like transmission speed and physical interfaces. The Token Ring protocol avoids the possibility of collisions. To transmit data, a workstation needs a **token**, and as there is only one token per network, holding one guarantees sole use of the network. With Ethernet, there are other options, of which TCP/IP (Transmission Control Protocol/Internet Protocol) is perhaps the most useful since it allows different operating systems to communicate with each other. *With regard* to Local Talk networks, they use AppleTalk protocols. The Macintosh operating system includes the AppleTalk manager and a set of drivers that let programs on different Macs exchange information.

LANs can be interconnected by gateways. These devices help manage communications and control traffic on large networks. They change the data to make it compatible with the protocols of different networks.

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1	LAN	a	the hardware that emits and receives signals in a computer network.
2	network	b	a network contained in a relatively small area.
	architecture	c	the arrangement of nodes in a communication system (i.e. the
3	nodes		distribution of elements in a network)
4	protocol	d	a device that translates protocols between different types of
5	transceiver		networks (e.g. it can link networks of PCs and Macs to mainframes
6	token		and minicomputer.)
7	gateway	e	a special unit of data which acts as a key on a Token Ring network; only the machine in possession of this piece of software can transmit on the network.
		f	a set of rules that allows the exchange of information over a network.
		g	computer devices interconnected in a network.

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III. Language work: Prepositional phrase of 'reference'

In the sentence *As for protocols, these are rules* ..., the expression *as for* marks the theme of the sentence.

Look at the words in the box below and combine them to make nine similar phrases of reference meaning 'concerning'. You can use words more than once. Look back at the text to find some of them.

with regard	to this	in regards	for matter	as reference	on respect	the of

IV. WANs and worldwide communications

Try to answer these questions.

1 What is a WAN?
2 How can computers be linked up over a long distance?
3 What are the advantages of optical-fibre cables over telephone lines?
4 What is the function of communications satellites?

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Now read the passage and find out if your answers were correct.

For long-distance or worldwide communications, computers and LANs are usually connected into a wide area network (WAN) to form a single, integrated network. Two good examples of wide area networks are Internet and Arpanet. They transfer data and email for university researchers and academics, commercial groups, military installations and ordinary people.

Networks can be linked together by either **telephone lines** or **fibre-optic cables.** For example, ISDN (integrated services digital network) is an international standard for transmitting digital text, sound, voice and video data over telephone lines. On the other hand, FDDI (fibre distributed data interface) is an optical-fibre network. This new standard transmits data at great speed – 100 megabits per second.

Modern telecommunications use fibre-optic cables because data can be transmitted at a very high speed through the extremely wide bandwidths of glass fibres. The fibre system operates by transmitting light pulses at high frequencies along the glass fibre. This offers considerable advantages: (i) the cables require little physical space; (ii) they are safe because they don't carry electricity; (iii) they avoid electromagnetic interference.

Networks on different continents can also be connected via **satellite.** Computers are connected by a modem either to ordinary telephone wires or fibre-optic cables, which are linked to a dish aerial. This aerial has a large concave reflector for the reception and sending of signals. Then, when signals are received by the satellite, they are amplified and sent onto workstations in another part of the world.

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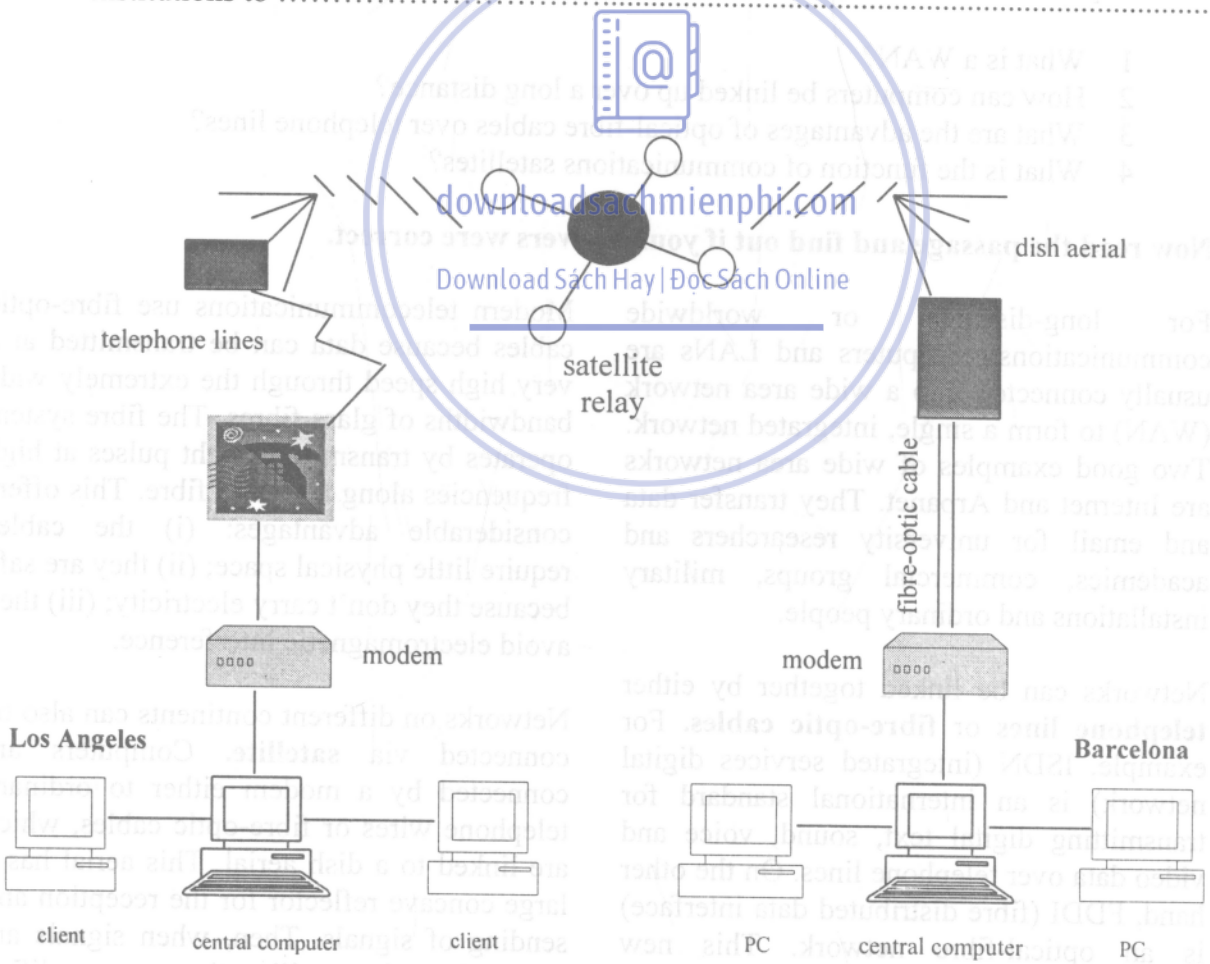
V. Speaking

In small groups, study and discuss the illustration below. Then prepare a description and give an oral report to the class.

- This diagram represents a wide area network or WAN. Two networks are linked via satellite. One network is in ..... And consists of ..... The other LAN is in ..... and contains .....
- In Los Angeles, the computers are connected to the telephone lines by ..... However, in Barcelona .....
- The satellite receives signals from ..... Then the signals are retransmitted to .....
- The purpose of this integrated network may be ..... It allows large companies and institutions to .....



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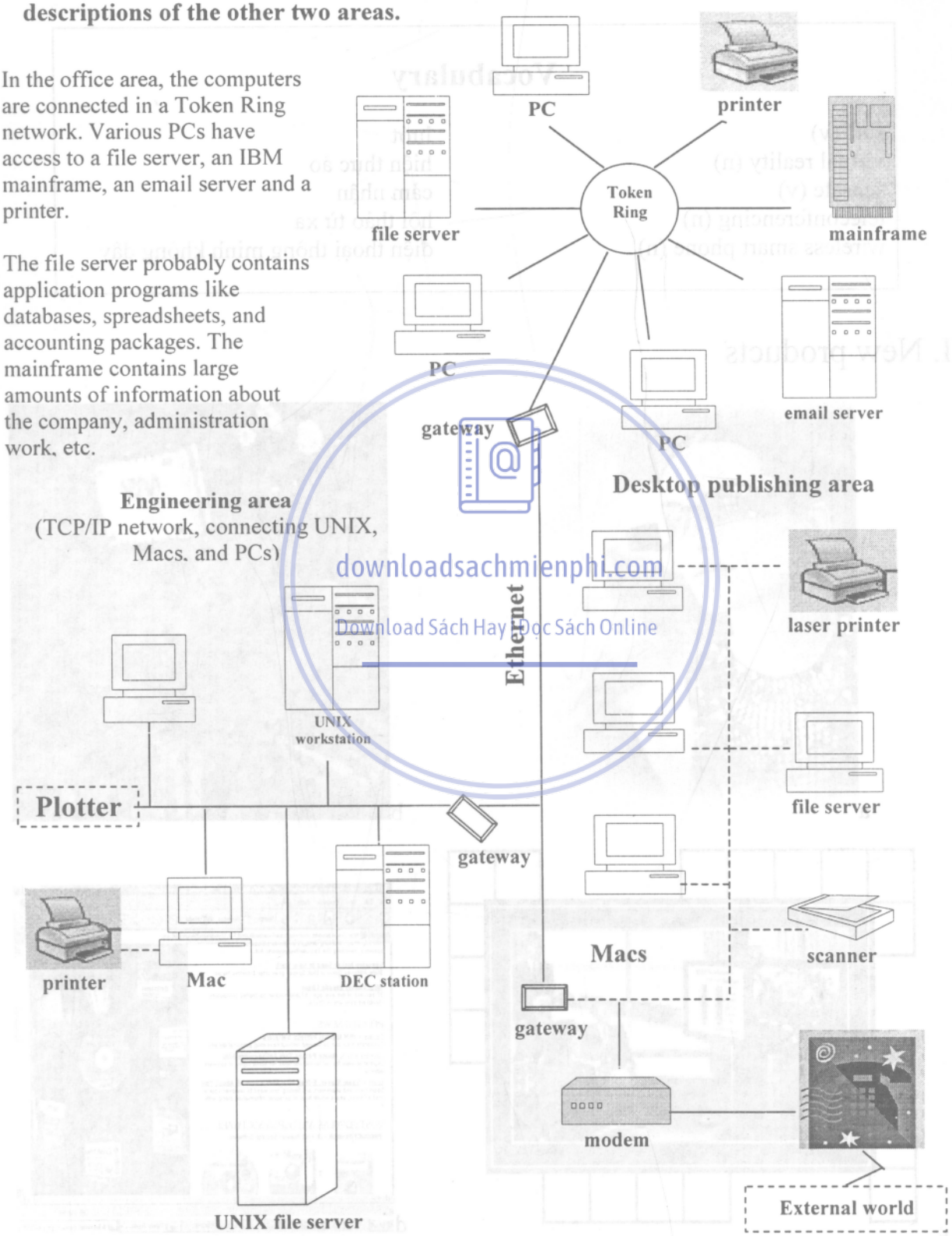
VI. Writing

The diagram below illustrates the computer connections in three areas of a large company. Read the description of the office area network. Then write similar descriptions of the other two areas.

In the office area, the computers are connected in a Token Ring network. Various PCs have access to a file server, an IBM mainframe, an email server and a printer.

The file server probably contains application programs like databases, spreadsheets, and accounting packages. The mainframe contains large amounts of information about the company, administration work, etc.



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Topic 30: New technologies

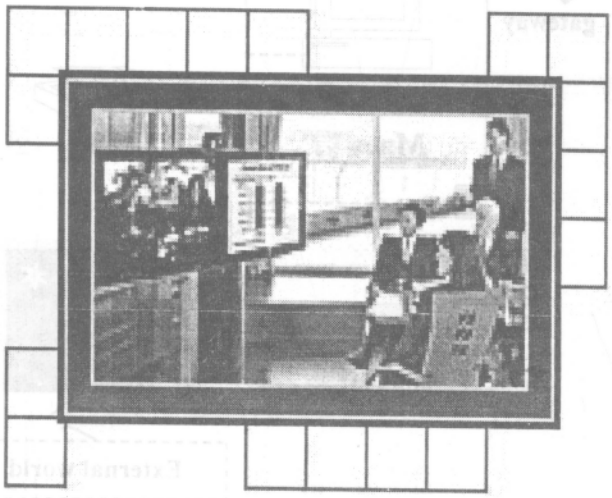
Vocabulary

surf (v)	lướt
virtual reality (n)	hiện thực ảo
sensate (v)	cảm nhận
teleconferencing (n)	hội thảo từ xa
wireless smart phone (n)	điện thoại thông minh không dây

I. New products

a

b



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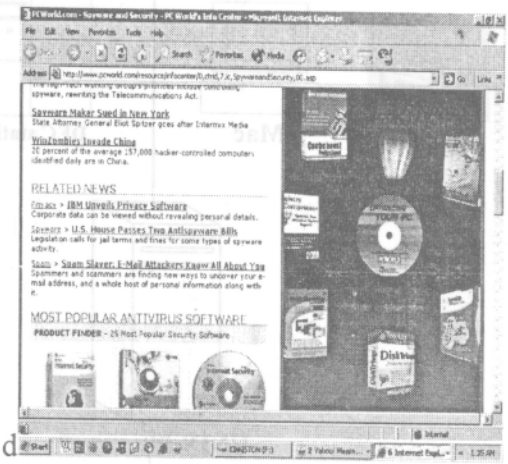

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A. Look at the pictures above and match them with texts 1 to 4.

1 Smart phones for sending and receiving voice, email, and Internet data are already available. One example is *Mobile*Access, the wireless phone from Mitsubishi. The software from Unwired Planet connects you to a server, displaying a directory of databases and information services.

You can connect *Mobile*Access to your laptop and use its modem to access the Internet. The technology is based on the cellular digital packet data (CDPD) protocol.

2 Internet TV sets allow you to surf the Web and have email while you are watching TV, or vice versa. Imagine watching a film on TV and simultaneously accessing a Web site where you get information on the actors in the film. This is ideal for people who are reluctant to use PCs but are interested in the Internet.

Web TV was the first company which brought Internet services to viewers through a set-top computer box. Another option is WorldGate's technology, which offers the Internet through cable TV.

The model built by OEM Metec integrates a complete Windows PC in a TV set. The next generation of Internet-enabled televisions will incorporate a smart-card for home shopping, banking, and other interactive services.

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3 Virtual reality lets people interact with artificial objects and environments through three-dimensional computer simulation. In a VR system, you are hooked to a computer through a controlling device, such as a glove, and head-mounted displays give you the feeling of being propelled into an artificial three-dimensional world. The computer brings to life events in a distant, virtual world using databases or real-time objects and sounds. Your senses are immersed in an illusionary, yet sensate world.
VR can be applied to anything from video games, testing a motor vehicle, visiting a virtual exhibition, to checking out imaginary kitchen designs.

4 Video teleconferencing is a new technology that allows organizations to create 'virtual' meetings with participants in multiple locations.

A video teleconferencing system combines data, voice, and video. Participants see color images of each other, accompanied by audio, and they can exchange textual and graphical information.

In video teleconferencing, images are captured by computer-mounted cameras. Video processors digitize and compress the images, which are transmitted over a network bidirectionally. Data and sound travel via telephone lines.

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B. Write a suitable caption under each picture.

C. Match the terms on the left with the explanations on the right.

1	Internet-enabled TV	a	location on the Internet where a company puts Web pages.
2	Web site	b	technology that integrates data, sound, and video; participants in different/distant virtual places hold a meeting as if they were face to face.
3	virtual reality	c	to squeeze data into smaller files by coding it into specific formats that take less space.
4	to compress files	d	TV set used as an Internet device.
5	video teleconferencing	e	technology that allows users to see a computer-simulated world in which they can move.
6	wireless smart phone	f	device that can send and receive voice or data without the use of wire.

II. Discussion

Look at the picture below and read the text. Then discuss these questions in small groups, and prepare a short report for the class.

1 What are the most important differences between hand-held computers (e.g. palmtop, PDA, etc.) and traditional computers?
2 What are the advantages and limitations of hand-held computers?
3 Should students be allowed to use hand-held computers in class?
4 Do you agree with this statement: 'Soon, hand-held PCs will combine the functions of traditional PCs, cellular phones, and pocket-size organizers?

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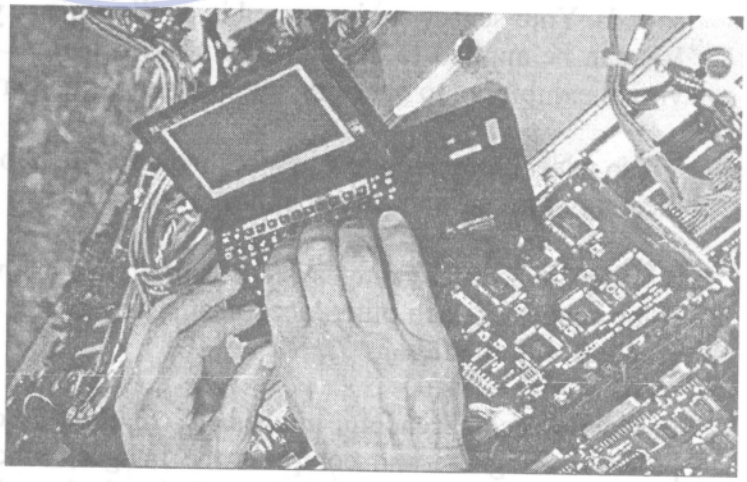
Psion Series 5 hand-held computers have a keyboard and a touch-sensitive screen. Although very light weight, they have a 35 hour battery capacity, 8 MB of RAM, a windowing OS, a microphone for sound recording, and a full range of applications. PsiMail Internet software lets you send email and browse the Web. It has a fast serial port interface to computers, modems, and printers.



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III. Language work: Making predictions (revision)

A. Study these ways of making predictions

- using the Future simple with *will/shall*
  A computer program will be the world chess champion.
- using the Future continuous (will be + present participle)
  In twenty years' time, some people will be living in space, inside a computerized colony.
- using the Future perfect (will have + past participle)
  By 2020, new technology will have revolutionized communications.
- using special structures
  - Possibility (*may/might/could)*
    Scientists may discover new electronic components.
  - Probability (*likely to)*
    Talking machines are likely to be built.
  - Certainty (*certainly, definitely, certain to)*
    Working hours will definitely become shorter with the help of computers. Prices are certain to go up.

B. Now expand these sentences using the future perfect tense.

1 In ten years' time/a lot of people /connect their television to the telephone line.
2 Portable computers/replace/desktop computers/in a few years' time.
3 With the help of computers/doctors/find/cure/AIDS and cancer/by the year 2010.
4 By this time next year/software manufacturers/make/hundreds of new programs.
5 By 2020/post offices and bookshops/disappear
6 By this time next year/I/buy/pen computer.

C. Here are some predictions made by an intelligent supercomputer.
In small groups, write your own predictions.

- Work/Jobs
  e.g. *By the year 2030, human labor in industry will have been replaced by robots.*
  Yours:
  .....
- Homes
  e.g. *Families will have robots to do the housework.*
  Yours:
  .....
- Education/Schools
  e.g. *By the end of the next century, every student in every school in the world will have a PC.*
  Yours:
  .....
- Money/Holidays
  e.g. *Most families will have videotext system, with which they can shop and make financial transactions. Cash will disappear.*
  Yours:
  .....

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Notes for Student A

Topic 6 Task 2 Speaking

Read these notes about two input devices. Then describe them to your partner. They have to guess what you are describing.

1

- scans text and pictures
- sends digitized image to computer

2

- allows you to control computer vocally
- spoken commands do what is normally done with keyboard/mouse

Topic 20 Task 5 Speaking

Look at the graph below and describe it to your partner. Then answer your partner's questions.

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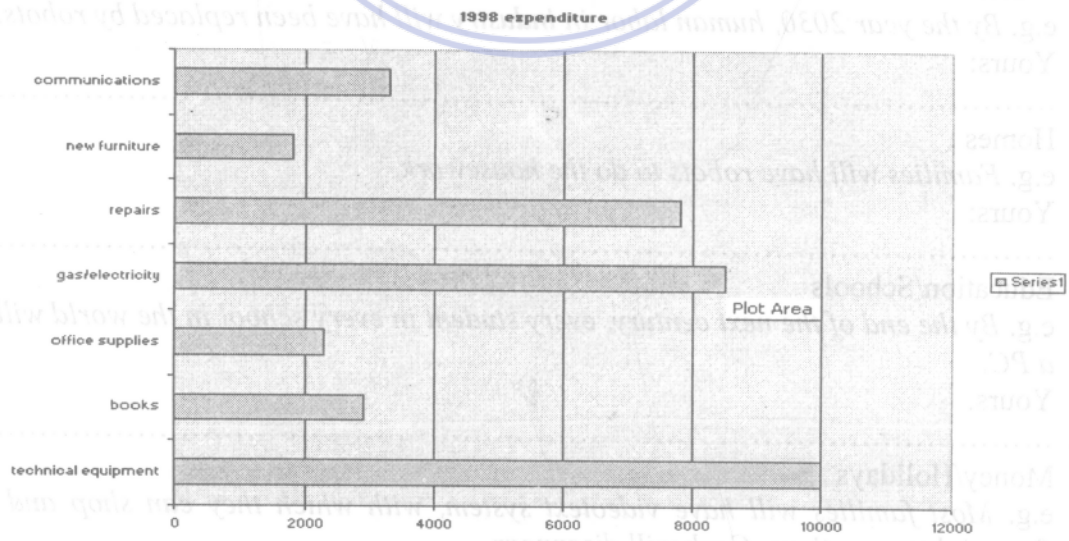
Useful constructions

This is a two-/three-dimensional representation of ...
In 1998, they paid £ ... for ...
They spent £ ... on ...
As for ..., that cost them ...



Graph 1: The 1998 expenditure of Lancashire College expressed in pounds

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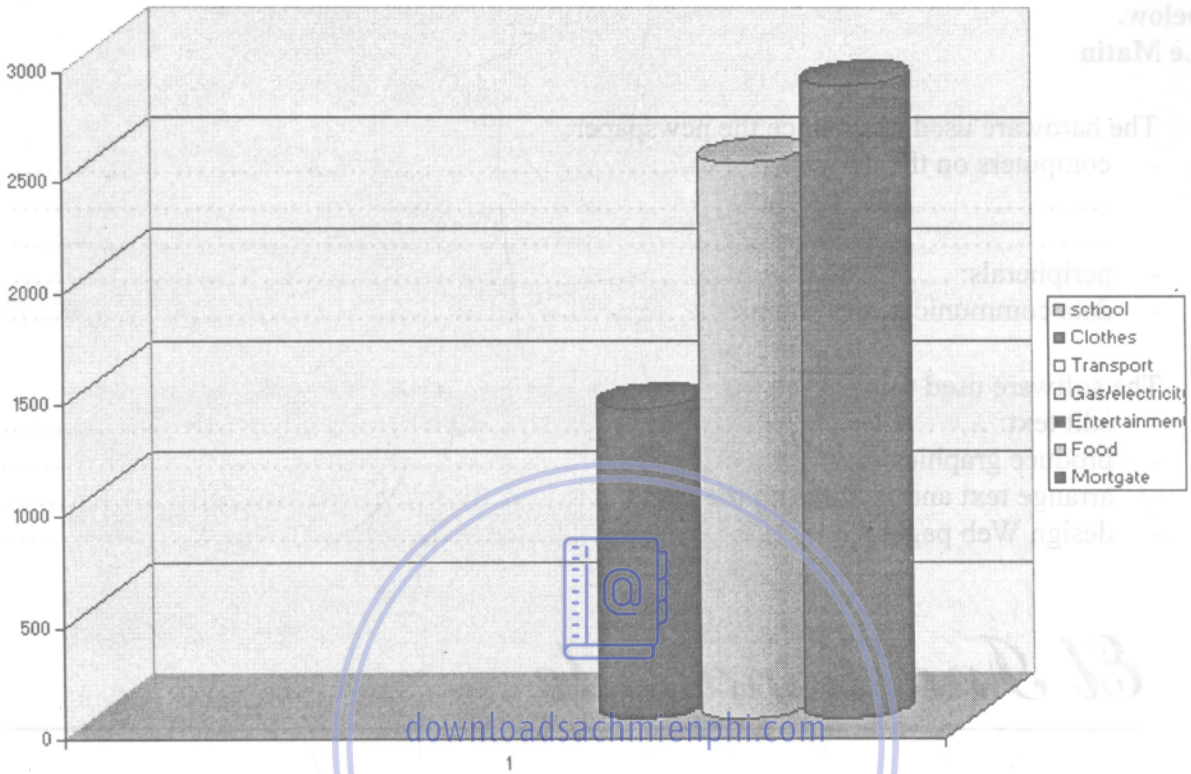
Now, look at this graph and listen to your partner's description of it. Ask questions so that you can complete the graph.



Graph 2: The 1998 expenditure of the Brown family expressed in pounds.

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Topic 21 Task 3 Computers for newspapers

Read the information on the next page which Katherine Powell received from *El Independient* and tell your partner about:

- the hardware used to produce the newspaper:
  - computers on the network
  - printers
  - data communication systems
- the software used to:
  - edit text
  - create illustrations
  - manipulate photographs
  - design the pages

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Notes for Student A

Your partner has the information which another newspaper – Le Matin – sent to Katherine Powel. Listen to your partner telling you about it and complete the fact file below.

Le Matin

- The hardware used to produce the newspaper:
  - computers on the network: .....
    .....
    .....
  - peripherals: .....
  - data communication systems: .....

- The software used to:
  - edit text: .....
  - produce graphics: .....
  - arrange text and pictures on the page: .....
  - design Web pages: .....

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El Independiente

- Hardware:
  - The newspaper is written and edited on PCs and Macintosh computers.
  - Several Micro VAX servers (with 128 MB of RAM and 6 GB hard disk) are dedicated to managing communications on the network and storing common files.
  - Black-and-white proofs are printed by Epson ink-jet and laser printers. The final product is printed by photosetters (imagesetters)
  - Different data communications systems … fax machines, email, etc. … are used to communicate with newspaper correspondents. There is a Web edition published on the Internet.
- Software:
  - The text is typed and edited with compatible word processors.
  - The illustrations (diagrams, charts, etc.) are created with Freehand and Illustrator.
  - The photographs are corrected with Adobe Photoshop (image manipulation software).
  - The page-layout is designed with QuarkXPress. The text is imported and flowed into columns. The artwork and graphics are imported, resized, cropped and placed in the layout.
  - The files are converted into HTML code and displayed on the Web.

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Topic 24 Task 4 Speaking

Complete the table on the next page by asking for information, like this:

- What does 'COBOL' mean?
- 'COBOL' stands for …
- When was it developed?
- In …
- What's it used for?
- It's used for …
- What features has it got?
- It is easy to use and it's written in English. It can handle very large data files.

Answer your partner's questions too.

Computer language	*Date*	*Characteristics*	*Uses*
COBOL (**CO**mmon **B**usiness **O**riented **L**anguage)	1958 – 59	Easy to read. Able to handle very large files. Written in English.	Mainly used for business applications.
BASIC …… ……	……	…… …… …… ……	General purpose language. Used to teach programming.
Pascal (named after …… ……)	1970 – 73	Structured language with algorithmic features designed for fast execution of the object program. A fast compiler called TurboPascal was created in 1982 – very popular.	…… …… …… ……
LOGO	1969	…… …… …… …… ……	Designed for use in schools to encourage children to experiment with programming.
HTML (…… ……)	1990	HTML codes control the use of fonts and images on a Web page and specify the links to other Internet sites. HTML files are viewed with a client program called a 'browser'.	…… …… …… ……

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Notes for Student B

Topic 6 Task 2 Speaking

Listen to your partner and guess which input devices they are describing. Now use thes notes to describe two input devices to Student A

- stationary device
- controls the cursor and selects items on the screen
- works like upside-down mouse
- ball on top turned round with fingers

2

- graphics tool
- lets you interact with computer
- you move pressure-stylus across the surface of a table
- creates graphics

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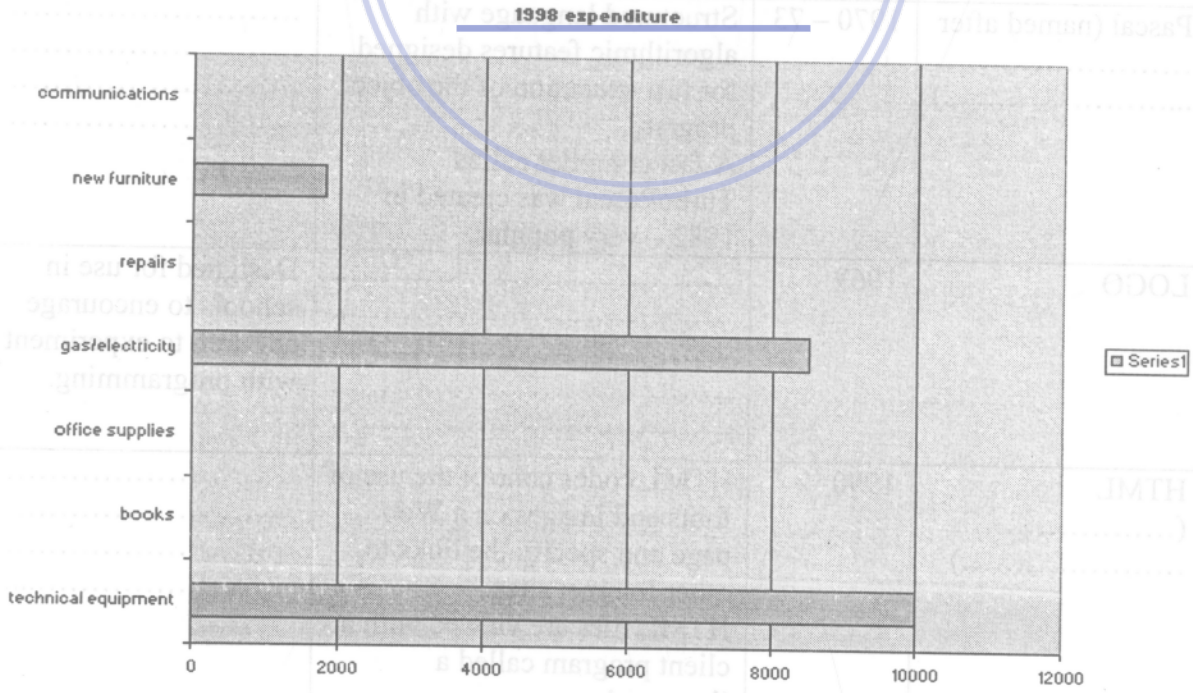
Topic 20 Task 5 Speaking

Look at this graph and listen to your partner's description of it. Ask questions so that you can complete the graph.



Graph 1: The 1998 expenditure of Lancashire College expressed in pounds

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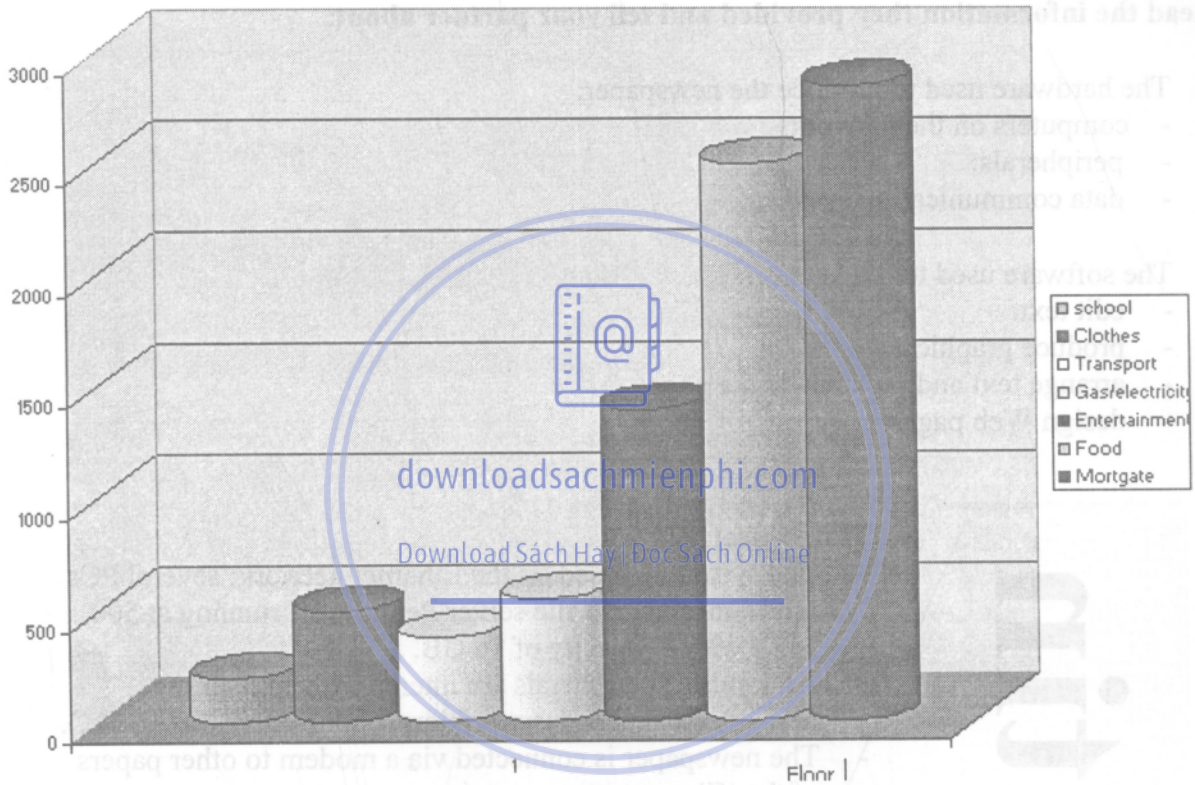
Look at the graph below and describe it to your partner. Then answer your partner's questions.

Useful constructions

This is a two-/three-dimensional representation of ...
In 1998, they paid £... for ...
They spent £ ... on ...
As for ..., that cost them ...



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Graph 2: The 1998 expenditure of the Brown family expressed in pounds.

Topic 21 Task 3 Computer for newspapers

Your partner has the information which *El Independiente* sent to Katherine Powell. Listen to your partner tell you about it and complete the fact file below:

El Independiente

- the hardware used to produce the newspaper:
  - computers on the network: .....
    .....

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Notes for Student B

- printers: .....
- data communication systems: .....

- the software used to:
  - edit text: .....
  - create illustrations: .....
  - manipulate photographs: .....
  - design the pages: .....

Katherine Powell also sent a similar letter to Le Matin.
Read the information they provided and tell your partner about:

- The hardware used to produce the newspaper:
  - computers on the network:
  - peripherals:
  - data communication systems:

- The software used to:
  - edit text:
  - produce graphics:
  - arrange text and pictures on the page:
  - design Web pages:

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Le Matin

- **Hardware:**
  - The system is based on the Ethernet network: several PCs are connected to a file server Pentium III running at 500 MHz with a capacity of 16 GB.
  - All kinds of peripherals are interconnected over the network (scanners, laser printers, photosetters, faxes, etc.).
  - The newspaper is connected via a modem to other papers of the 'Z' group.
  - Photographs are received via satellite.
  - There is a Web edition on our Internet site.

- **Software:**
  - The text is written and edited with WordPerfect word-processing software.
  - The graphics are produced on Macintosh computers with commercial packages such as Adobe Illustrator and Canvas from Deneba Systems.
  - Words, pictures, graphs and tables are imported and arranged on the page by Ventura Publisher, a DTP package.
  - The Web pages are designed with FrontPage, an HTML editor.

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Topic 24 Task 4 Speaking

Complete the table on the next page by asking for information, like this:

- What does 'COBOL' mean?
- 'COBOL' stands for …
- When was it developed?
- In …
- What's it used for?
- It's used for …
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- It is easy to use and it's written in English. It can handle very large data files.

Answer your partner's questions too.

Computer language	*Date*	*Characteristics*	*Uses*
COBOL (**COmmon Business Oriented Language**)	1958 – 59	Easy to read. Able to handle very large files. Written in English.	Mainly used for business applications.
…….. (**B**eginner's **A**ll-purposes **S**ymbolic **I**nstruction **C**ode)	1964 – 65	High-level programming language. Interactive. Easy to learn. Displays error messages that help users to correct mistakes. Has a large number of dialects.	…….. …….. …….. …….. ……..
Pascal (named after the famous scientist Blaise Pascal)	1970 – 73	…….. …….. …….. ……..	General purposes. Often used in colleges and universities to each programming.
LOGO	……	Easy to learn. Flexible – it can do maths, make lists, construct graphs, etc. Its drawing capabilities allow children to construct simple graphics programs.	…….. …….. …….. …….. ……..
…….. (**H**yper**T**ext **M**arkup **L**anguage)	1990	…….. …….. …….. …….. …….. …….. ……..	Used to crate hypertext documents that can be displayed on the Web.

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Answer key

Topic 1

I. Match the pictures

A

1. b 2. d 3. a 4. c

B

Using an automatic cash dispenser: a
In education, computers can make all the difference: b
Organizing a race demands the use of computer technology: d
Controlling plane: c

C

1. noun	2. noun	3. verb	4. adjective	5. noun or verb
6. adjective	7. noun or verb	8. verb	9. noun	10. adjective

a. 2 b. 3 c. 6 d. 7 e. 10 f. 8 g. 4 h. 5 i. 1 j. 9

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II. Language work

A

1	are registered	5	is contacted
2	is evaluated	6	is arranged
3	is allocated	7	are dealt with
4	is required	8	be supplied

B

1	is called	5	are transformed
2	is used	6	are performed
3	are passed on	7	is opened
4	is stored	8	is stored/ is generated/ is written

C

1	was founded	5	were set up
2	was developed	6	was built
3	were made	7	were launched
4	were sold	8	was reversed/was taken

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III. Reading

Computer uses and applications mentioned in the text include:

- computer-aided design of buildings
- magazine production
- preparation of bills
- operation of telephone network
- making a flight reservation
- making a bank transaction
- calculators
- car's electronic ignition
- timer in microwave
- programmer in TV
- management of large collections of data
- computer games.

IV. Other applications

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Possible answers

- *Formula 1:* Computers are used to design and construct racing cars. Computers help engineers to design the car body and the mechanical parts. During races, a lot of microprocessors control the electronic components of the car and monitor the engine speed, temperature, and other vital information.

- *Entertainment:* People use computers to play all kinds of computer games: chess, adventure games, simulation games, etc. Fortunately, entertainment software means more than just computer games. There are specialized programs for composing and playing music. PCs can combine sound, text, and animated images. Multimedia applications allow users to produce slide shows, retouch photographs, etc. Optical disks make encyclopedias and books available on computer.

- *Factories:* Computers are used to control machinery, robots, production lines, lists of products, etc. By using computer-aided manufacturing software, engineers can simulate and test designs before parts are actually produced.

- *Hospitals:* Database programs are used to keep records of patients and medical personnel. Computers, monitors, and scanners help doctors diagnose cancer and other illnesses. Electronic instruments and robots are used in surgery.

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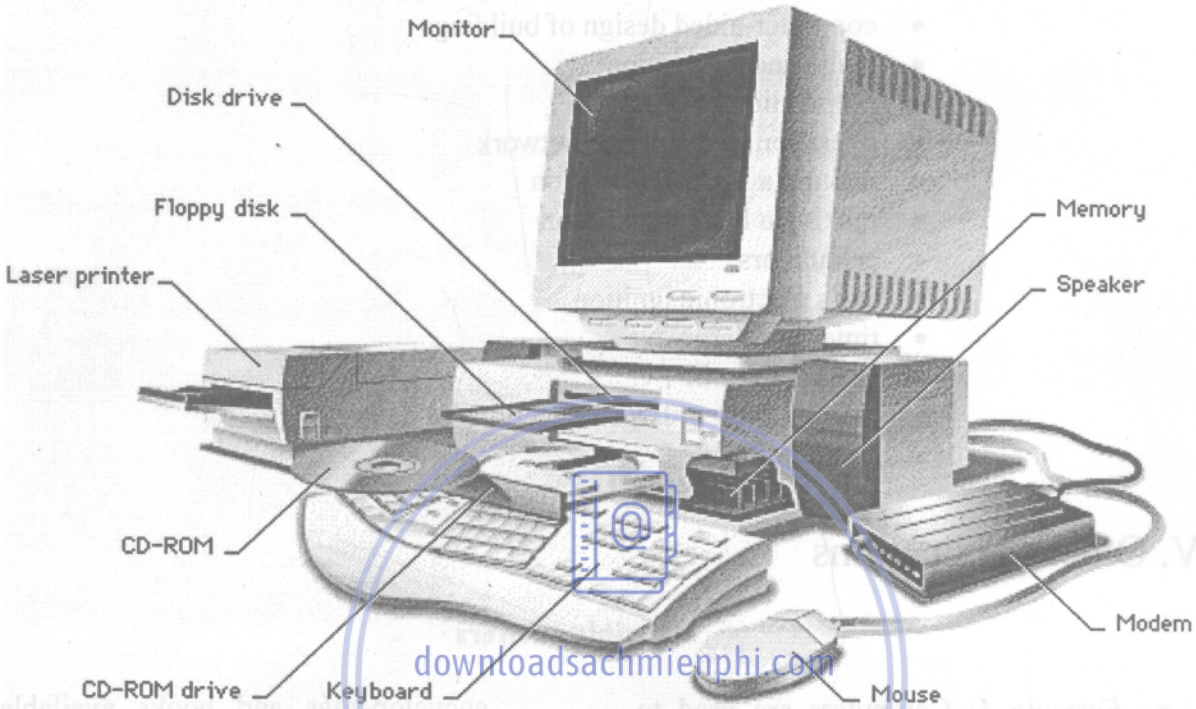
Topic 2

I. Warm-up



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II. Reading

1. i 2. e 3. a 4. f 5. h
6. b 7. c 8. d 9. g

III. Language work

Modern accounting firms use spreadsheet software to do complicated calculations. They can provide their clients with an up-to-date report whenever it is needed. This software has many functions and can be integrated with other software. The spreadsheet's basic component is a cell. This may contain a formula which performs a mathematical operation. It could also contain a label or data. The former describes the information on the worksheet. The latter is the information itself.

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The worksheet is the basic work area of a spreadsheet program. It is made up of cells arranged in rows and columns. The number of these varies depending on the software you are using. You can change the width and format of cells. Such parameters are usually quite easy to change with just a few keystrokes.

IV. Read and guess

1. mouse 2. monitor 3. hard disk
4. CPU 5. printer

V. Follow-up: Minis and Micros

1. desktop 2. task 3. terminals
4. systems 5. memory 6. applications 7. CAD

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Topic 3

I. Warm-up

B

1 The main function of the microprocessor is to process the instructions provided by the software. It also coordinates the activities of the other units.
2 The megahertz. One MHz is equivalent to one million cycles per second.
3 'RAM' stands for 'random access memory'.

II. Reading

A

1. T 2. T 3. F 4. T 5. F 6. T 7. F 8. T

3. 64-bit processors can handle more information than 32-bit processors.
5. RAM and ROM are types of internal memory. (Secondary storage is a type of memory which holds information permanently (e.g. disks). Perhaps the confusion is due to the fact that internal memory and secondary storage are both measured in megabytes).
7. Ram (random access memory) is temporary i.e. its information is lost when the computer is switched off.
(Permanent storage is provided by tapes, magnetic, and optical disks.)

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Answer key

B. Contextual reference

1 ***which*** refers to 'a single microprocessor chip – an integrated circuit –'
2 ***that*** refers to the 'the instruction'
3 ***they*** refers to 'microprocessors'
4 ***it*** refers to 'an application'
5 ***its*** refers to the 'RAM'
6 ***that*** refers to 'expansion slots'

III. Language work

B. Link these sentences.

1 The microprocessor coordinates the activities **which/that** take place in the computer system.
2 Last night, I met someone **who/that** works for GM as a computer programmer.
3 A co-processor is a silicon chip **which/that** carries out mathematical operation at a very high speed.
4 A megahertz is a unit of frequency **which/that** is used to measure processor speed.
5 A password is a secret word **which/that** must be entered before access is given to a computer system.
6 A gateway is a device **which/that** is used to interconnect different types of networks.
7 Here's the floppy disk **which/that** you lent me or: Here's the floppy disk you lent me. (The relative pronoun can be omitted.)
8 A USB port is a gateway **which/that** is used to connect all kinds of external devices to your computer.
9 Virus is a destructive software **which/that** causes damage to the data, the information or the hardware of the computer.

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IV. Reading

A

The missing phrases should be inserted in this order.

1 b
2 a
3 d
4 c

B

1 RAM
2 secondary storage
3 RAM
4 ROM
5 RAM
6 ROM
7 secondary storage

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V. Vocabulary quiz

1 The control unit (CU), the arithmetic logic unit (ALU) and the registers
2 Random access memory
3 ROM
4 The information contained in the RAM section
5 Megabyte, Mega, or MB
6 Single In-line Memory Module
7 A megahertz is equivalent to one million cycles per second. It is the unit used to measure the processor speed.
8 The arithmetic logic unit. It performs mathematical calculations and logical operations.
9 Bit
10 We use magnetic disks (floppies or hard disks), optical disks, etc.

Technical help

The CPU, the heart of the computer

The CPU, or central processing unit, is just a tiny microprocessor chip, about the size of a postage stamp, but it holds more than one million transistors and functions as the nerve centre of the entire computer.

The CPU is the part of the computer that processes data and instructions. Its key components are: a control unit, an arithmetic logic unit, a clock, and some memory registers.

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The two main manufacturers of microprocessor chips are Intel and Motorola.

1. The Intel 80x86 chips were used in the first IBM PCs and compatibles. In 1993, Intel Corp. introduced the Pentium processor, which was 150 times faster than the speediest 8086. Now most PCs have Pentium III with MMX technology, delivering high performance for multimedia, Internet communications and 3-D applications.

2. The Motorola 680x0 chips were used in the first Macintosh, Atari ST and Amiga computers. In 1993, the alliance of IBM, Apple, and Motorola created the PowerPC, a new 64-bit processor that could handle more information than 32-bit processors. Today, Macs have a PowerPC G3 or G4 processor, with high-performance multimedia extensions and faster clock speeds.

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Topic 4

I. Reading

A

1 A binary system uses two digits (0 and 1). Switches inside a computer can only be in one of two possible states: OFF or ON. To represent these two conditions we use binary notation: 0 means OFF and 1 means ON. Each 0 or 1 is called a **binary digit**, or **bit**.
2 In binary notation, numbers are represented by two digits: 0 and 1. In the decimal system, we use ten digits. For example: the binary number 10 represents 2 in the decimal system.
3 A byte
4 1 megabyte = 1,024 kilobytes;1 gigabyte = 1,024 megabytes
5 'ASCII' stands for 'American Standard Code for Information Interchange'. The purpose of this code is to provide a standard system for the representation of characters.

C

1 byte 2 kilobyte 3 megabyte 4 gigabyte

II. Language work: Work-formation – Prefixes

B

1 **in**expensive (not), **re**usable (do again)
2 **mal**function (bad), **inter**face (between, among)
3 **multi**plexor (many), **dis**connected (opposite action)
4 **im**proper (not), **anti**glare (against), **im**possible (not)
5 **re**format (do again)
6 **max**imize (large), **bi**lingual (two), **tri**lingual (three)
7 **in**put, **out**put
8 **retro**active (backward), **bi**annual (two)
9 **oct**al (eight), **hex**adecimal (six), **bi**nary (two)
10 **ir**regular (not), **re**written (do again)

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III. Bits for pictures

B

1 e 2 d 3 a 4 c 5 b

C

Calculations

- Bits can be either 1 or 0 (2 positions)
- There are 3 primary colors.
- We have 8 bits per color
  This gives a palette of $(2^3)^8$ = 16.7 million colors

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Technical help

Binary code

A computer can only manipulate 1s and 0s in order to process information. A 1 is represented by current flowing through a wire and a 0 by no current flowing through the wire. Sometimes 1 is referred to as a high voltage and 0 is referred as a low voltage. Everything about computers is based upon this binary process.

$$2^7 = 128$$

b7 b6 b5	0 0 0	0 0 1	0 1 0	0 1 1	1 0 0	1 0 1	1 1 0	1 1 1
BITS b4 b3 b2 b1	Control special characters		Symbols Numbers		UPPER CASE characters		Lower case characters	
0 0 0 0	NUL 0	DLE 16	SP 32	0 48	@ 64	P 80	96	p 112
0 0 0 1	SOH 1	DC1 17	! 33	1 49	A 65	Q 81	a 97	q 113
0 0 1 0	STX 2	DC2 18	" 34	2 50	B 66	R 82	b 98	r 114
0 0 1 1	ETX 3	DC3 19	# 35	3 51	C 67	S 83	c 99	s 115
0 1 0 0	EOT 4	DC4 20	$ 36	4 52	D 68	T 84	d 100	t 116
0 1 0 1	ENQ 5	NAK 21	% 37	5 53	E 69	U 85	e 101	u 117
0 1 1 0	ACK 6	SYN 22	& 38	6 54	F 70	V 86	f 102	v 118
0 1 1 1	BEL 7	ETB 23	' 39	7 55	G 71	W 87	g 103	w 119
1 0 0 0	BS 8	CAN 24	(40	8 56	H 72	X 88	h 104	x 120
1 0 0 1	HT 9	EM 25	) 41	9 57	I 73	Y 89	i 105	y 121
1 0 1 0	LF 10	SUB 26	* 42	: 58	J 74	Z 90	j 106	z 122
1 0 1 1	VT 11	ESC 27	+ 43	; 59	K 75	[91	k 107	{ 123
1 1 0 0	FF 12	FS 28	, 44	< 60	L 76	\ 92	l 108	| 124
1 1 0 1	CR 13	GS 29	- 45	= 61	M 77	] 93	m 109	} 125
1 1 1 0	SO 14	RS 30	. 46	> 62	N 78	^ 94	n 110	~ 126
1 1 1 1	SI 15	US 31	/ 47	? 63	O 79	_ 95	o 111	DEL 127

Key

binary

binary character decimal

ASCII code chart

Each digit -1 or 0- is called a **bit**. Eight bits together are called a **byte**. The ASCII code is just a standard system to represent characters as bytes of binary signals.

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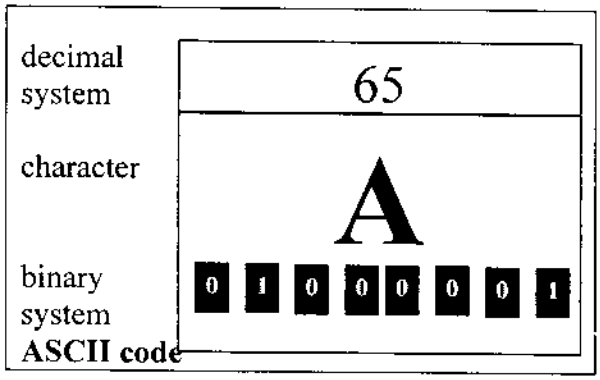

ASCII, which stands for 'American Standard Code for Information Interchange', permits computers from different manufacturers to exchange data. ASCII uses 7-digit binary numbers to represent the letters of the alphabet, the numbers 0 to 9, various punctuation marks and symbols, and some special functions such as the carriage return. Seven digits in binary imply that ASCII has room for 128 characters or symbols (with seven places to arrange 1s and 0s, we can make 128 possible code combinations). The eighth, or left-most bit of each byte, is often used to make sure the other seven bits are sent and received correctly (see the illustration above). Some programs use this bit for specific purposes.

When you press a key on the computer keyboard, your program translates that key press into an ASCII code. This code can represent a character, or a function to be performed.

Notations

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ASCII codes are conventionally expressed in decimal notation because decimal numbers are more convenient for people to recognize and interpret than binary numbers.

Octal and hexadecimal notations arose from the need to handle data in 8-bit and 16-bit microprocessors

Binary	Octal	Decimal	Hexadecimal
0000000	000	000	00
0000001	001	001	01
0000010	002	002	02
0000011	003	003	03
0000100	004	004	04
0000101	005	005	05
0000110	006	006	06
0000111	007	007	07
0001000	010	008	08
0001001	011	009	09
0001010	012	010	0A
0001101	013	011	0B
0001100	014	012	0C
0001101	015	013	0D
0001110	016	014	0E
0001111	017	015	0F
0010000	020	016	10

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In programming, it is also common to represent binary codes by means of hexadecimal or octal notations. In hexadecimal notation, 16 is the base or radix. The ten digits 0 to 9 are used, and in addition six more digits, usually A, B, C, D, E, and F, to represent 10, 11, 12, 13, 14, and 15 as single characters. Octal notation uses eight digits: 0, 1, 2, 3, 4, 5, 6, and 7.

These notations are used to write software, as a shorthand way of representing long strings of bits. Thus the string 01000001 can be represented as octal 101, decimal 65 and hexadecimal 41.

Topic 5

I. Language work: **Word formation – suffixes**

B. Note that the endings *–ed,* and *–ing* are not marked as suffixes when the word they belong to is being used as a verb or part of a verb.
Answers

1 A programmer designs, writes, and tests programs for performing various tasks on a computer.
2 A systems analyst studies organizational (adj) systems and decides what action (n) needs to be taken to maximize (v) efficiency (n).
3 Laser printers (n) are preferable (adj) to other types of printing (adj) devices because of their speed and quietness (n).
4 The microcomputer (n) we have purchased does not have a FORTRAN compiler (n). It is programmable (adj) in BASIC only.
5 We have found that operators (n) who have the freedom (n) to take short breaks during the day greatly (adj) improve their performance (n).
6 The number of shipments (n) will increase over the coming (adj) months.
7 We decided to computerize (v) the entire plant to give each division (n) more independence (n).
8 Spooling (n) is a way of storing data temporarily (adv) on disk or tape until it can be processed by another part of the system.
9 Turning (gerund) your office into a paperless (adj) environment (n) may be expensive (adj) at the beginning (n) but can produce big savings (n) in the long run.
10 Software developers (n) are producing increasingly (adv) sophisticated (adj) applications (n) for a growing (adj) global (adj) market.

III. Read and talk

1 Daniel: the HP Vectra
2 Sarah: the Power Macintosh
3 Andy: the Digital Alpha workstation
4 Tanya: the Compaq notebook.

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Topic 6

I. Interacting with your computer

1 lightpen
2 joystick
3 scanner
4 mouse
5 keyboard
6 graphics tablet
7 trackball
8 voice recognition device

II. Speaking

Student A
1 scanner
2 voice recognition device

Student B
1 trackball
2 graphics tablet

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III. About the keyboard

A

1 Alphanumeric keys, (Note: The layout of alphanumeric keys is known as QWERTY because the first six letters at the top left of the keyboard are the letters Q, W, E, R, T and Y.)
2 Function keys: these are labeled F1 – F12
3 Numeric keypad: this is on the right
4 Editing keys: these are the arrow keys (↑ ↓ → ←), Pg Up, Pg Down, Home, End, Ins, Del
5 Special keys: Ctrl, Alt, Alt Gr, Esc, Enter (Return), Tab, Caps Lock, Shift, Print Screen, Scroll Lock

B

1 Space bar
2 Return
3 Escape
4 Alt
5 Backspace
6 Shift
7 Caps Lock
8 Tab
9 Arrow keys

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Position on the keyboard

1 [ ]

2 [Return]

3 [Alt]

4 [Option]

5 [←]

6 [Shift]

7 [Caps Lock]

8 [Backtab Tab]

9 [↑ ← ↓ →]

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C

1 slash: /
2 not equal to: ≠
3 plus and minus: ±
4 trademark: ™
5 Yen sign: ¥
6 Copyright: ©
7 number: #
8 registered trademark: ®

IV. Reading

A

1 A cable or wire extends from the mouse to a connection on the back of the computer. (The mouse is plugged into a port on the rear panel of the computer.)
2 The mouse pointer looks like an arrow or I-bar.
3 The mouse buttons are used to select and move items on the screen, such as text, icons, pictures, etc.

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Answer key

4 A computer system is easier to use if you have a computer mouse.
The mouse is a very quick way to move around on a screen. Making the same movements with the arrow keys (on the keyboard) takes much longer. The mouse also issues instructions to the computer very quickly. (You just point and click to choose options, select items on the screen, load a program, etc.)
Mice are so widely used in graphics applications because they can do things that are difficult, if not impossible, to do with keyboard keys, such as moving or changing images. Most graphics programs require a mouse.

B

1. b 2. c 3. a

V. Language work: Describing function

This task provides practice in these structures. It is two-stage: Ss must first find the correct match, then link object and function. They can do this individually.

A Item	B Function
1 RAM	g. holds data read or written to it by the processor.
2 processor	j. controls all the operations in a computer.
3 mouse	a. controls the cursor.
4 clock	i. controls the timing of signals in the computer.
5 3.5'' floppy drive	e. reads and writes to removable magnetic disks.
6 monitor	c. displays the output from a computer on a screen.
7 keyboard	b. inputs data through keys like a typewriter.
8 DVD-ROM drive	d. reads DVD-ROM.
9 cache	h. provides extremely fast access for sections of a program and its data.
10 ROM	f. holds instructions which are needed to start up the computer.

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Sample answer:

1. RAM holds data read or written to it by the processor.
The function of RAM is to hold data read or written to it by the processor.

Topic 7

I. Scanners: the eyes of your computer

Possible answers

1 A scanner is a machine that takes a picture of a piece of paper – containing text or illustrations – and displays the image on the computer screen for editing.

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2 A color scanner operates by using rotating lamps which have red, green, and blue filters. The software combines the separate images into a single color. Scanners can be a real help in reading information from forms, manuscripts, and other documents and converting them into data that can then be edited. They are also useful for producing images for reports, leaflets, presentations, etc.

II. Facts and opinions

A

	ColorScan XR	**ScanPress 800**
Facts	Flatbed scanner 600 dpi of resolution 9'' x 15'' of scanning area. You can enter data and graphic images directly into word processors or databases. Comes with its own image-capture software which allows for color and grey retouching. £646	Self-calibrating flatbed scanner 800 dpi of resolution. You can scan black and white and color images. Includes JPEG technology to compress and decompress images. Comes with OCR software and Adobe Photoshop £1,037
Opinions	You can get crisp, clean scans... ... it's easy to use. It couldn't be cheaper. ... a clear winner.	... the highest technology ... the best scans with the least effort. ... images with high color definition and sharpness. This is a fantastic machine you will love working with. ... only £1,037 ... ... an excellent investment.

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B

Possible answers

1 The one for ScanPress 800

2 Both texts give a similar amount of objective information.

III. Language work: Making comparisons

C

2 superlative: the most sophisticated

3 equivalence: similar

4 non-equivalence: faster than

5 superlative: One of the most important

6 non-equivalence: unlike

IV. Further reading

1 easy-to-use

2 affordable

3 excellent

4 wide

5 stunning

6 complete

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Topic 8

II. Reading

B

1 Pixel resolution – or density – affects the quality of the image. The same screen with more pixels produces a better picture.
2 The hertz, or Hz
3 Because a low refresh rate produces a flickering, unsteady screen.
4 Phosphor
5 VGA (video graphics array). (A standard developed by IBM)
6 'LCD' stands for 'liquid-crystal display'. This kind of display is used in portable computers.

III. Writing

B

The details of Monitor B could be expanded into descriptive sentences like this:

1 It has a 19-inch color monitor. (Note: 19-inch to 21-inch displays are appropriate for those applications that require detail, like electrical or mechanical CAD, 3-D modelling and industrial design. Similarly, magazine publishers require large monitors because they need to see two facing pages simultaneously.)
2 This display system has a resolution of 1,024 x 768 pixels. (Note: This is enough for WYSIWYG 'what you see is what you get'.)
3 It displays many colors simultaneously.
4 The scan rate is 75 hertz, which means that this monitor will produce a steady, flicker-free picture.
5 The words 'tilt-and-swivel' mean that you can change the orientation of the monitor.
6 It includes a video card. (Note: A video card is required to get a high resolution in multimedia applications.)

IV. Language work: Instructions and advice

1 You shouldn't/ought not to stare at the screen for long periods of time.
2 You should/ought to avoid placing the monitor so that it reflects a source of bright light, such as a window.
3 You should/ought to keep the screen clean to prevent distorting shadows.
4 If you work in an office with a large number of computers, you shouldn't/ought not to sit too close to the sides or backs of the monitors.
5 You should/ought to buy a protective filter that cuts down the ELF (extremely low frequency) emissions.

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Topic 9

I. Reading

A

Possible list of printers

Dot-matrix, ink-jet, bubble-jet, laser, color thermal printer, photosetter (imagesetter), plotter

B

1 dot-matrix printer
2 ink-jet printer
3 laser printer
4 photosetter (imagesetter)
5 plotter

C

Type of printer	Technical specifications and other features
Dot-matrix	Uses pins to print low-resolution output; quality depends on the number of pins (9 or 24)
Ink-jet	Non-impact printer; projects ink droplets onto paper; some ink-jets produce high quality results; quite fast, silent
Laser	Scans the image with a laser beam, uses special ink powder; very high resolution; fast; scalable fonts and other advantages
Thermal	Uses heat, a special kind of paper and electrosensitive methods; silent; some color models emulate HP plotters
Photosetter	Prints on photographic paper or microfilm; the highest resolution; very fast
Plotter	Uses ink and fine pens to draw detailed designs on paper

II. Discourse cohesion

A Reference signals

That refers to 'printing' (anaphoric reference)
one refers to which 'type of printer'
such qualifies the noun 'factors' specified by the following words 'noise or compatibility'
They refers to 'dot-matrix printers'
them refers to 'dot-matrix printers'

B Linking devices

Indicating addition	Contrasting	Sequencing	Reason/cause
and in addition	however while but nevertheless although	to begin with finally	since because

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III. Scan reading: Quiz

1 There are three laser printers.

2 Yes, the Color Ink-Jet.

3 The Crystal Laser Printer II.

4 The Color PostScript Printer (thermal method)

5 The Micro Laser XT or the Stylus Dot-matrix Printer.

6 The Crystal Laser Printer II.

7 Adobe PostScript and Hewlett Packard PCL.

8 One bi-directional parallel port, one LocalTalk port and one Ethernet port for networks.

9 dpi, cps, ppm, SCSI, LCD

IV. Language work: Revision of comparison

A

1 *cheaper than* … Comparative; one-syllable adjective

2 *the fastest* … Superlative; one-syllable adjective

3 *more expensive than* … Comparative; polysyllabic adjective

4 *the most reliable of all*. Superlative; polysyllabic adjective

5 *cost less than … also weigh less and require less space*. **Less** is a comparative adverb

6 *more resident fonts than* .. Comparative adjective; **more** + noun + **than**

7 *at a lower* … Comparative; one-syllable adjective

8 *operate faster than* … Comparative; one-syllable adverb

9 *too slow*. Special case: too + adj

10 *not quick enough*. Special case: adj + *enough*

B
(examples only)

1 Dot-matrix printers are slower than other printers.

2 Solid-ink printers are more expensive than dot-matrix printers.

3 Laser printers give better text quality than most other printers.

4 Thermal transfer printers have more graphics capability than electrostatic printers.

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Topic 10

I. Adaptive technology

Here are some ideas

1 Of course, the main limitation experienced by blind users is the inability to see the screen. In addition, they cannot read printed documents, office correspondence, etc. Users with partial vision cannot see small character sizes on the screen.
There are various degrees of mobility limitation. Most motor-impaired users are not able to use a standard keyboard, and have difficulty in manipulating computer devices and printed material.

2 For blind users, devices include Braille input devices, speech synthesis systems, scanners (optical character recognition), Braille printers (embossers), etc.

3 There are adapted keyboards designed for people with different kinds of mobility limitations. There are a variety of alternative input devices that produce and transmit keystrokes as if generated by the keyboard. For example: muscle switches, optical head pointers, speech recognition devices, Morse code input systems, systems that scan the movements of the eye in order to make selections on the computer screen, etc.

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II. Reading

A

1 VertPro from TeleSensory and Window Bridge from Syntha-Voice.

2 A software magnification package may be appropriate.

3 The Juliet printer can emboss Braille on both sides of a page at a speed of 40 characters per second.

4 Adaptive switches can be activated by eye movements, breath control or any other reliable muscle movement.

5 Voice recognition systems permit people to issue verbal commands to a computer to perform data entry.

6 They use a headset microphone, muscle switches and a joystick control.

7 He uses an adapted keyboard, headphones and screen reading software.

B

1. b 2. c 3. a 4. e 5. f 6. d

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Answer key

IV. Language work: Compound nouns

1. Point out to your students that in this form of compound, the descriptive noun usually reverts to the *singular* form. For example, in 'computer programming', computer is singular.

Answers

1 a visual display unit
2 a magnetic card reader
3 a graph plotter
4 a laser printer
5 a magnetic disk holder
6 an ink jet printera data transmission rate
7 a multimedia presentation package
8 a batch processing program
9 a computer disk conversion process

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2. When students are doing this exercise, they will have to put some nouns back into the plural for the purposes of their explanation. For example, number 2, 'an optical character reader' reads characters.

Example answers

1 a device that inputs information
2 a device that reads optical characters
3 a stylus for creating graphics
4 a program that sorts documents
5 a system for the transmission of fibre optics
6 a register for the control of sequences
7 a device that displays using liquid crystals
8 information for the configuration of a network
9 a program for managing documents on top of your desk
10 a software package/a package of software for editing multimedia

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Topic 11

I. Warm-up

It is a floppy disk.
People use floppies to store data on.

II. Protect your floppies

A

1. e 2. b 3. c 4. f 5. d 6. a

B

Possible answers

1 You must store them in a protective case. (Note: This is to keep dust off the disk and avoid corruption of data by accident.)
2 You must insert the disk into the disk drive very carefully.
3 You mustn't put disks near strong magnetic fields. (Note: This is because magnetic fields corrupt data.)
4 You must keep your disks at a temperature of between 10^0C and 52^0C
5 You mustn't bend or fold the disk.

III. Types of disks

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1. Diskettes are available in 5.25 inch and 3.5 inch sizes.
2. 'DS' means 'double sided' (you can record information on both sides)
   'DD' stands for 'double density'
   'HD' stands for 'high density'
3. Conventional 3.5'' double density disks can hold 720/800 KB (5.25'' diameter disks can hold only 360 KB). 3.5'' high density disks can hold 1.44 megabytes (5.25'' diameter disks can only hold 1.2 MB).
4. HD disks have two holes or notches in the edges, whereas DD disks have only one. (The light beam also goes through the second hole to read and write information.)
5. 2.88 megabytes.

IV. Reading

B

1. c 2. d 3. f 4. e 5. a 6. b

V. Language work: Word building

1	a. magnetic	b. magnetized	c. magnetism	
2	a. recording	b. recorded, recorded	c. recording	
3	a. access	b. access	c. accessing	d. accessed
4	a. requirements	b. requires	c. required	
5	a. measurement	b. measured	c. measuring	d. measure

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Topic 12

I. Before you read

Possible answers

1 Hard disks provide permanent storage for both disks and programs.
2 Megabyte, Mbyte, or MB also gigabyte or GB.
3 Hard disks work faster than floppy disks. A hard disk delivers information to the computer's brain about ten times faster than a floppy.

- They have a longer data life.
- You can store huge amounts of information.

II. Reading

B

- Storage capacity: How many GB can it hold?
- Access time (seek time), measured in milliseconds
- Data transfer rate, measured in megabits per second
- Type of hard disk (drive mechanism): internal, external, removable cartridge

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C

1. T 2. T 3. F 4. F
5. F 6. F 7. T

III. Follow-up: A hard disk advertisement

1. multimedia	2. megabytes	3. drive	4. time	5. secure
6. protection	7. compatible	8. highest	9. write	

IV. Vocabulary

Hard

hard sell, hard copy, hard currency, hard drive, hard drugs, hard labour, hard time, hardware, hard worker.

Disk

compact disk, disk capacity, disk drive, disk directory, magnetic disk, optical disk, internal disk

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V. Language work

Word formation: prefixes

1	mono	5	semi
2	Sub	6	multi
3	mega	7	dec
4	de	8	inter

Topic 13

I. Warm-up

1 It is a compact disk (CD).
2 CD-ROM disks use optical technology. The data is retrieved using a laser beam.
3 CD-ROM stands for 'compact disk read only memory'

II. Reading

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	Technical specifications	*Use*
CD-ROM	Can store a lot of information (650 MB) Economical way of sharing information Can't write anything to it	Used to store software, dictionaries, multimedia database, etc. Can play music CDs
CD-Recorder	Allows you to create CDs in a format that can be read by a CD-R drive or a regular CD-ROM drive. Come in two different forms: CD-R (recordable), and CD-RW (rewritable)	To back up hard disks or to distribute and archive information
DVD	A DVD-ROM can hold 17 GB, about 25 times an ordinary CD-ROM. It's a 'read only' device. There are also DVD rewritable drives	To store multimedia software and complete Hollywood movies Can also play music CDs and CD-ROMs
Magneto-optical	Uses both a laser and an electromagnet to record information MO disks are rewritable	Ideal for back-up and portable mass storage

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Answer key

III. Discourse cohesion

A Reference signals

1 **they** refers to optical disks
2 **which** refers to the fact that one CD can replace 300,000 pages of text (about 500 floppies)
3 **you** has an indefinite usage here, meaning 'people in general'. The use of *you* is informal, often preferred to *one*, which is formal
4 **it** refers to a CD-ROM disk
5 **that** refers to CD-RW disks

B Connectors and modifiers

a Showing contrast: *However, Yet*
b Explaining cases and results: *Thus, For this reason*
c Adding new ideas: *Besides, In addition*

IV. Speaking

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Suggested answers

1 A hard disk
2 A tape drive or removable cartridge drive
3 A CD-ROM
4 An erasable optical disk system
5 A digital Video Disk-ROM

V. Crossword

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Topic 14

I. Warm-up

A
Possible answers

The function of the operating system is to control the hardware and software resources.
The operating system consists of a set of programs that interface between the users, applications programs and the computer. (Note: The OS translates commands into machine code that the computer understands.)

B
1. software 2. system software 3. applications software 4. operating system

II. Reading

1 MS-DOS (Microsoft Disk Operating System).
2 Outlook Express
3 The function of the Finder is to display the Macintosh's desktop and to enable the user to work with disks, programs and files.
4 'Multitasking' means that several tasks are performed at the same time.
5 UNIX
6 Linux
7 Open VMS
8 Java OS

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III. Basic DOS commands

1. d 2. c 3. e 4. g 5. b 6. h 7. f 8. a

IV. Language work: The present simple passive

1 are connected
2 are known
3 are typeset
4 is processed
5 are used
6 is supported
7 are coordinated
8 is held

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Answer key

V. Quiz

1 The operating system
2 Applications programs/Applications software
3 Microsoft Disk Operating System
4 COPY
5 Hundreds of routines are inside the ROM chips. Other parts of the OS are kept inside the System file and the Finder (in the System folder).
6 Sequence of instructions
7 IBM
8 Bell Laboratories, AT&T (American Telephone and Telegraph)
9 Java
10 Some viruses search out files to destroy, some destroy the contents of hard disks indiscriminately, and others cause problems by hindering normal operations.

Topic 15

I. A user-friendly interface

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II. Reading

A

user-friendly; attractive; graphics-based

C

1 'GUI' stands for 'graphical user interface'
2 From the first, Macintosh computers had a user-friendly interface based on graphics and intuitive tools: pull-down menus, windows, icons, dialog boxes, mouse, pointer, etc.
3 'WIMP' stands for Window, Icon, Mouse, and Pointer.
4 The Macintosh environment, Microsoft Windows and IBM OS/2 Warp
5 You can launch the desired program by double-clicking its icon.
6 Graphical user interfaces are easy to use – you don't need to memorize complex commands. They also stimulate users to be more creative and productive.

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III. Language work

1 The technology needed to set up a home network is here today.
2 You only need one network printer connected to the server.
3 Her house has a network allowing basic file-sharing and multi-player gaming.
4 There is a line receiver in the living room delivering home entertainment audio to speakers.
5 Eve has designed a site dedicated to dance.
6 She has built in links connecting her site to other dance sites.
7 She created the site using a program called Netscape Composer contained in Netscape Communicator.
8 At the centre of France Telecom's home of tomorrow is a network accessed through a Palm Pilot-style control pad.
9 The network can simulate the owner's presence making sure vital tasks are carried out in her absence.
10 The house has an electronic door-keeper programmed to recognize you, giving access to family only.

IV. Writing

Possible answer

In the past, only experts used computers. Nowadays, however, many people have access to computer systems, so there is an emphasis on the user interface.

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Macintosh computers were designed on a WIMP interface in order to facilitate the user's interaction with the computer. Other innovative GUIs are MS Windows and IBM OS/2 Warp.

Graphical interfaces have been successful because they are easy to use and stimulate users to be more creative.

Topic 16

I. Before you read

Possible answers

1. A word processor is a computer program which manipulates texts (and produces documents suitable for printing).
2. With a word processor you can:
   - change the text as often as you want before printing the final document (you don't have to retype it all)
   - edit on-screen, move text around, insert new text, delete unnecessary text, etc. Doing all this with a typewriter requires constant marking and typing of drafts because you are typing directly on paper.

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Answer key

3. Features offered by word processor:

- Editing: copy, cut , paste and delete text and graphics
- Search and Replace
- Formatting (automatic page numbering, headers and footers, justification, footnotes and endnotes, multiple columns)
- viewing hidden commands in the text
- typestyles like bold and italic, super and subscript characters
- running text and graphics
- automatic hyphenation
- spell checker
- mail merging
- tables, indexes, tables of contents
- borders.

II. Reading

B

1 WYSIWYG 2 Justification
3 font menu 4 Type style (x2)
5 format 6 mail merging 7 indent (x2)

C

1 b 2 f 3 a 4 d 5 c 6 e

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III. Writing

Possible answers

The picture is a visual representation of the 'Cut and Paste' editing technique. By using these commands you can move text (or graphics) between documents or between programs.

First, select the portion of the text that you want to move. Then choose Cut from the Edit menu, and the selected text disappears and is placed on the Clipboard – temporary storage inside the computer. Next, scroll to the new position and click to insert the cursor. Finally, choose Paste from the Edit menu; this inserts the content of the Clipboard into the active documents at the insertion point.

IV. Writing tools

A

1 c 2 a 3 b

B

1 'Like a conventional thesaurus, this database of words contains definitions and suggestions of words with similar and opposite meanings' should appear in text 2 after the first sentence.

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2 'Their power comes not from knowing every grammatical rule, but from questioning the writer about certain parts of the text' should appear in text 3 after the fourth sentence.
3 'However, this does not mean that all of the words in the document are spelled correctly' should appear in text 1 after the second sentence.

Topic 17

I. Look at a spreadsheet

1 A spreadsheet is like a large sheet of paper with a lot of columns and rows. It is used in business for financial planning: to make specific calculations, keep a record of the company's accounts, etc.
2 'Columns' are the vertical division of the spreadsheet. Each column is labeled with a letter, for example, A, B, C. 'Rows' are the lines, i.e. the horizontal divisions of the spreadsheet. They are labeled with numbers.
3 You can enter text, numbers and formulas (or formulae).
4 The values of the spreadsheet are automatically recalculated.

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II. Reading

1. right 2. wrong 3. wrong
4. right 5. wrong

III. Vocabulary

1 g 2 b 3 c 4 f 5 e
6 h 7 a 8 d

IV. Language work: Prepositions of place

Ss can do it individually.

1 The CPU is a large chip *inside/in* the computer.
2 Data always flows *from* the CPU *to* the address bus.
3 The CPU can be divided *into* three parts.
4 Data flows *between* the CPU and memory.
5 Peripherals are devices *outside* the computer but linked to it.
6 The signal moves *across* the VDU screen *from* one side *to* the other.
7 The CPU puts the address *onto* the address bus.
8 The CPU can fetch data from memory *along* the data bus.

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Answer key

V. Graphic representation

A The graph *is* a visual representation of the spreadsheet illustrated in Task 1.
B Net profits of this firm during the period 1997-98:339-172=$167,000,000
C Bar chart
D From the graph the reader can immediately compare the 1997 and 1998 figures and can also compare the different kinds of revenue and expenses.

VI. Extension

A

Name:	Redwood Comprehensive School		Invoice	
Address	Springbank Road, Easthill		**Date:** 12 May 2003	
Telephone:	436171			
Reference	Description	Quantity	Price	**Total**
Ulysses Classic	64MB of RAM, 9 GB HD	12	£1,050	£12,600
XGA Monitor	Colour 16"	9	225	2,025
Video Card	Millions of colours	5	316	1,580
Portable Ulysses	32 MB RAM, 2 GB HD	3	1,190	3,570
Laser SAT	PostScript	1	825	825
Scanner JUP	Flatbed. Includes OCR	2	675	1,350
			Subtotal	£21950
Company			VAT 17.5%	3,841
Ulysses Computers, Inc.			TOTAL	£25,791

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Topic 18

I. Warm-up

Possible answers

1. A data base is:
- a file of structured data
- a large collection of related information
- an organized collection of data stored in a computer file.

2. Possible applications
- To keep personal records or mailing lists with names, addresses, phone numbers, salaries, departments, etc.
- To keep track of stock, sales, orders, bills and other financial information.
- To store and find information about patients in a hospital or general medical practice.
- To keep records of students/pupils at college/school.

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3. (Note: For example, a *file* might contain the personnel records of a company. The *record* shown here holds information about one employee. Each piece of information in a record is given a separate *field*: for example, the 'name' is a field.)

II. Reading

C

1. A database is used to **store, organize and retrieve a large collection of related information.**

2. Information is entered on a database via **fields.**

3. Each field holds **a separate piece of information.**

4. 'Updating' a file means **making changes, adding new records or deleting old ones.**

5. The advantages of a database program over a manual filing system are:
- **it is much faster to consult**
- **it occupies much less space**
- **records can be easily sorted**
- **information can be easily updated**
- **computer databases can be shared by a lot of users on a network.**

6. Access to a common database can be protected by using **security devices such as passwords.**

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III. Puzzle

1M	E	R	G	I	N	G	
		2S	O	R	T	E	D
3R	E	C	O	R	D		
	4U	P	D	A	T	E	D
5D	A	T	A	B	A	S	E
	6L	A	Y	O	U	T	
	7F	I	E	L	D		

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Answer key

IV. Language work

Requirements: *need to, have to, must, be + essential, critical*
Divide the board into two sections. Label one *Required* and the other *Not required.* Ask Ss to search the texts for examples of both. Write the examples they find on the board in the correct section. Draw their attention to each of the ways used:

Required:
You need to be able to empathize with the person at the other end of the phone.
IT managers have to take responsibility for budgets.
You must be interested in your subject.
You must have worked for at least two years in systems analysis.
Experience with mainframes is essential/critical.

Not required:
You don't need to have a degree in computing science.
You needn't have a degree in computing science.
You don't have to be an expert in everything.

Point out that *have to do sth* similar to *must do sth* but the negative forms have different meanings. *Don't have to* = not required, *mustn't* = a warning or rule that it is important not to do sth. Show that *need* can behave like a modal and an ordinary verb.

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You may also wish to present the language used in job advertisements for desirable but not essential criteria. For example:
A knowledge of C++ would be an advantage.

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A. Do this individually, then compare in pairs.

Key (examples only)

1	need	3	need	5	must	7	must, needn't	9	must
2	mustn't	4	needn't	6	have	8	need	10	needn't

B. Make sure Ss are familiar with the abbreviations often used in advertisements such as *yrs, min, exp, &*. They can refer to the Glossary for any of the many technical abbreviations used.

Key
1 You must be a technical specialist with a minimum of two years' work in systems programming. You need to have experience of Netview, automation, design and support.
2 You must be an IBM MVS support technician. You must have worked for at least one year with VTAM, NCP, SSP, NPM, IBM 3745-900 hardware. Authority to work in the EU is essential.

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3 You must have three years' experience in a SAP Basic Technical Environment. You need to be a team player with strong analytical and problem-solving skills. Ability to communicate issues and solutions and manage time effectively is critical.
4 You need to have strong Unix experience. The ability to use HTML, DHTML and JavaScript is essential. You must have knowledge of shell scripts.
5 You must be CCNA qualified with excellent skills in the surrounding technologies. You must have worked for at least two years in support.
6 You need to have knowledge of NT and Netware. You must have experience of ERP system implementation. Very strong managerial skills are essential.

Topic 19

I. Warm-up

1 The Internet is a global network of computer networks. It allows organizations and individuals to share all sorts of information and computer resources.

2 You can send and receive email, explore the Web, transfer files, have live conversations, take part in online forums, use remote computers, etc. You can use the Web to:

- find and download software
- buy products online
- search for information
- read information about thousands of topics.

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II. Reading

A

1 a 2 f 3 e 4 c 5 b 6 g 7 d

B

1 b 2 b 3 a 4 a 5 a

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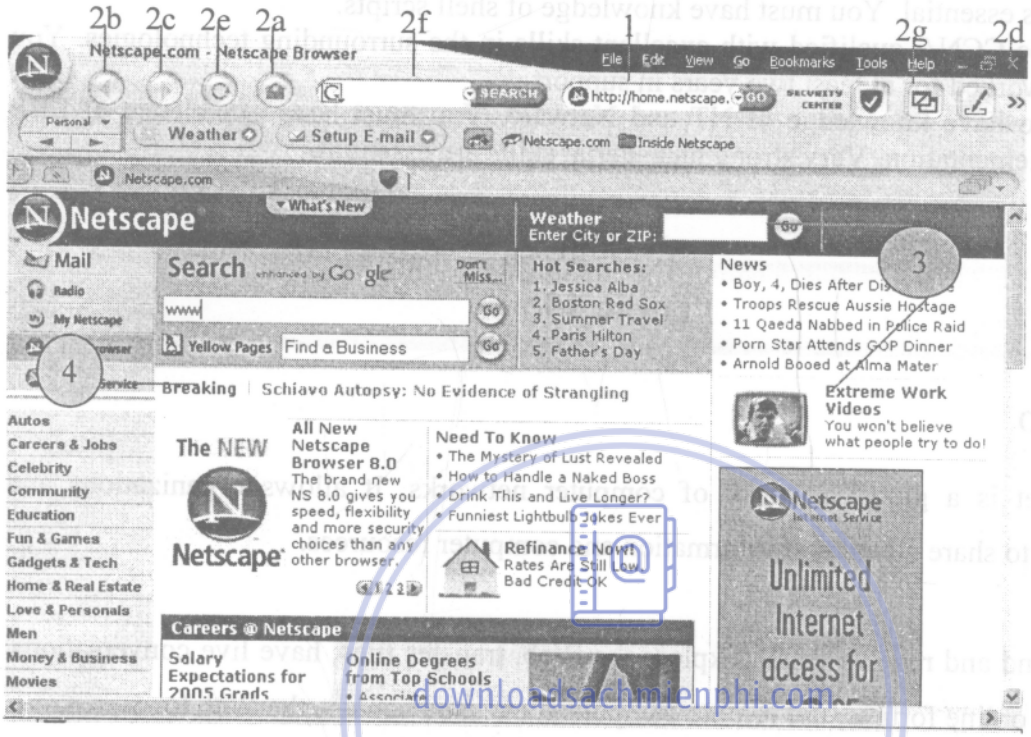
Answer key

III. A typical Web page

A



C

http://www.greenpeace.org/
http://www.telegrap.co.uk/
http://www.ibm.com/
http://www.fly.virgin.com/
http://www.oscars.org/
http://www.yahoo.com/

IV. Writing

A

Sender: teazzz2004@yahoo.co.uk
Recipient: Camellia Bronte teazzz@gmail.com
Line that describes the content:
Subject: The Internet and education an 'attached' file is a document included as part of an e-mail message.

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Topic 20

I. Warm-up

1 The car and the transmission system are three- dimensional. The map and the sphere are two-dimensional. Three-dimensional images represent objects (like the car here) more accurately. In graphs they can also illustrate different quantities more clearly.
2 Cartographers (map makers), car engineers and designers, architects and business executives might use computer graphics.
3 Specialized uses: designers in all kinds of industries to design and test products, engineers (e.g. telephone and electrical engineers) to plan circuits, weather forecasters to show changes in weather, economists to illustrate economic developments, Web designers to create pages for the Internet.
General uses: scientists in research, journalists in broadcasting, teachers.

II. Reading

1 Computer graphics are pictures and drawings produced by the computer.
2 CAD: Computer-Aided Design
CAE: Computer-Aided Engineering
CAM: Computer-Aided Manufacturing
3 Computer graphics can be used to develop, model and test car designs before the physical parts are made. This can save money and time.
4 Computer graphics can convey information more effectively, which is a benefit in business.
5 Computer animation is the process of creating objects and pictures which move across the screen.

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III. More about graphics

A

1 e 2 c 3 a 4 f 5 b 6 g 7 d

B

1 inverting 2 scaling 3 rotating
4 slanting 5 black- and –white dithering
6 zoom 7 patterns menu

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Answer key

IV. Language work: Gerunds (*-ing* nouns)

B

1 Loading into memory non-resident programs as required is one task of the supervisor program.
2 Communicating directly with the hardware is the role of the operating system.
3 Establishing a user interface is one of the key functions of the operating system.
4 Providing services for applications software is an additional role.
5 Supporting multiple programs and users is part of the work of mainframe operating systems.
6 Facilitating interaction between a single user and a PC is the task in most cases.
7 Processing large amounts of data quickly is one of the most important functions of a computer.
8 Allowing the computer to process data faster is the main reason for installing more memory.

C

1 Don't switch off without closing down your Pc.
2 I want to upgrade my computer.
3 He can't get used to logging on with a password.
4 You can find information on the Internet by using a search engine.
5 He objected to paying expensive telephone calls for Internet access.
6 He tried to hack into the system without knowing the password.
7 You needn't learn how to program in HTML before designing webpages.
8 I look forward to inputting data by voice instead of using a keyboard.

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V. Speaking

The figures for Graph 1

Communications	£3,250
new furniture	£1,800
repairs	£7,880
gas and electricity	£8,500
office supplies	£2,225
books	£2,900
technical equipment	£10,000

The figures for Graph 2

mortgage	£2,875
food	£2,820
entertainment	£1,800
gas and electricity	£1,050
transport	£840
clothes	£1,045
school	£350

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Topic 21

I. Warm-up

Possible answers

1 Texts (from word processors), graphics (from drawing programs), scanned images (from image manipulation programs)
2 Books, newsletters, leaflets, brochures, magazines, newspapers, posters, etc.

II. Reading

B

Possible answers

1. A page layout application can import and combine **text, graphics and scanned images.**
2. Font creation software enables users to **design and create their own fonts.**
3. Imagesetters are used to **print files onto film.**
4. Service bureaux offer services such as **imageset output, laser printed output, scanning equipment,** etc.

III. Computers for newspapers

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You may like to draw the students' attention to the following points:

- Where you put your address and the address of the person or company you're writing to
- How you write the date
- How you start and end the letter.

IV. Language work: Time clauses

Write the student's book examples on the board. Elicit the time links between each pair: *when, until, before, as*. Explain the differences. Note that example 4 uses *as* not *after* because the webpage is built up piece by piece. A visual representation may help.

Demonstrate how *once* can be used in place of *when* to emphasize the completion of the first action. It often occurs with the Present perfect. Similarly, show that we can use a participle with *before* or *after* if the subjects are the same in both actions. You will need to include an example of your own to illustrate *after*. Point out that a comma is used after the time clause when it comes first in a sentence.

Do this individually, and then compare answers in pairs.

1 When you use a search engine, it provides a set of links related to your search.
2 With POP3, email is stored on the server until you check your email account.
3 Once/When you have clicked on a hyperlink, you have to wait for the webpage to be copied to your computer.

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Answer key

4 As you listen to the first part of a streamed audio file, the next part is downloading.
5 The graphics can be displayed gradually as the webpage is downloaded.
6 After/When you receive an email message; you can forward it to another address.
7 When you click on a hyperlink, the browser checks to see if the linked webpage is stored in the cache.
8 You can bookmark a webpage to make it easier to find in the future when you find one you like.
9 After you type in a Web address, you should press the Enter key.
10 When you click on the Home button, the browser displays your starting webpage.

V. Word building

1 Upgrade: affixation, verb
2 Imprint: affixation, verb
3 Printed: affixation, verb or adjective
4 Print-out: compounding; noun
5 Interactive: affixation; adjective
6 Printing press: compounding; noun
7 Pre-press: affixation; noun
8 Creative: affixation; adjective
9 Manipulation: affixation; noun
10 Publishing: affixation; noun or particle
11 Publisher: affixation; noun
12 Newsletter: compounding; noun
13 Visually: affixation; adverb
14 Typeface: compounding; noun
15 Professional: affixation; adjective
16 Imagesetter: compounding; noun

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Topic 22

I. Multimedia is here

Possible answers

Text, graphics, scanned images, photographs, animated images, sound (music, voice annotations), and video sequences, in any combination.

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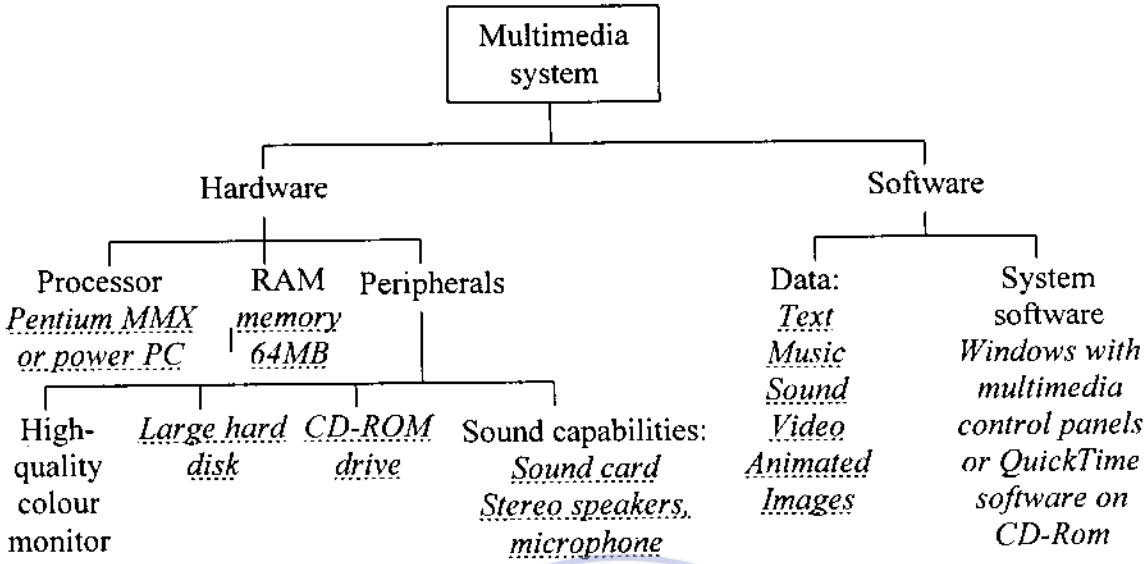

II. Reading

A

1. The potential of using multimedia
2. Sound, music, MIDI
3. CD-ROM is more than just heavy metal
4. CD-ROM titles full of pictures action and sound!

B

Suggested answers

1. Multimedia applications use huge amounts of data.
2. You need to have a sound board on your PC to hear speech and music.
3. Most multimedia software is distributed on CD-ROM disks.
4. Kodak's PhotoCD technology is compatible with many CD-ROM drives.
5. There are language courses available on CD-ROM

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C

1e 2c 3d 4b 5a

III. Language work: *if*-clause

A

1. If you **upgrade** your PC, you**'ll be able** to run multimedia application.
   Present simple + future (*will* + verb) = *if*-clause Type I (possible situation)
2. If the marketing manager **had** a multimedia system, she **could make** more effective presentations.
   Past simple + condition tense (*would* + verb) = *if*-clause Type II (unlikely, or imaginary situation)

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Answer key

B

1. get
2. had
3. don't have
4. came
5. would buy

C

1f If you press Print Screen, you can make a copy of the screen.
2h If you press Ctrl + Alt + Del in Windows 98, it displays a list of active programs.
3b If you added more memory, it would speed up the computer.
4e If you installed a modem, you would be able to connect to a telephone line.
5g If you used a better search engine, you would find more relevant results.
6c If you forget to save regularly, you may lose data.
7a If you hold down the mouse button over an icon, you can drag it across the screen.
8d If you used an LCD display, you would have more space at your desk.

D

1 If you don't virus-check floppies, you could get a virus.
2 If there was a power cut while you were using your computer, you might lose data.
3 If you install a faster processor, your computer can process data faster.
4 If you forgot your password, you would not be able to access your computer.
5 If you press the delete key, it will delete the character to the right of the cursor.
6 If you use a search engine, you might find information on the Web more quickly.
7 If you double-click on an icon, you will open up a program or a folder.
8 If you use power-saving options, you can cut your electricity bill.

IV. Multimedia on the web

A

1. The extension added to a file name describes the file's contents and helps us identify the format.
2. html: Hypertext Markup Language
3. .gif
4. RealAudio
5. .avi, .mov and .mpg (or .mpeg)
6. .mpg (or .mpeg)
7. .zip

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Topic 23

I. Warm-up

B

1 a given problem
2 the various parts of the program
3 language
4 binary numbers
5 may occur in programs

II. Reading

1 No, computers don't understand human languages because the central processor operates only on binary code numbers (machine code, 1s, and 0s)
2 In a low-level language, each instruction is equivalent to a single machine code instruction. However, in a high-level language, each statement is generally translated into many machine code instructions.
3 An assembler is a special program which converts a program written in a low-level language into machine code.
4 The function of compilers is to convert a source program into an object program. Compilers convert a program written in a high-level language into a program written in a lower level language.
5 A 'source program' is written in a language that cannot be directly processed by the computer but requires compilation into an 'object program'.
6 In the future, computers may be able to understand natural languages thanks to Artificial Intelligence.

III. Language work: Infinitive constructions

B

1 It is advisable to test the program under different conditions.
2 It is expensive to set up a data-processing area.
3 It is unusual for a program to work correctly the first time it is tested.
4 It is difficult for students to learn FORTRAN.
5 It is important to consider the capabilities of the programming language.
6 It is quite easy to write instructions in BASIC.

C

cannot understand
can understand
can be translated
can all be converted
can be made
will be
may be able

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Answer key

D

1 a I remember shutting down the computer before I left the room. (I shut down the computer, and now I remember it.)
We *remember* doing things in the past – things that we did.
b Please remember to buy the new program. (Don't forget to buy the new program.)
We *remember* to do things that we have to do.
2 a They stopped to look at the flowchart. (They paused, in the middle of something else, in order to look at the flowchart.)
b They stopped looking at the flowchart. (They didn't look at the flowchart any more.)
3 a I like studying C. (I 'enjoy' studying C)
b I like to study C in the evenings. (It does not imply 'enjoyment', but a habit or choice.)
4 a It has started to rain.
b It has started raining. (With verbs like *begin* and *start* we can use either the *–ing* form or the infinitive without much difference in meaning.)
5 a He needs to work harder. (It's necessary for him to work harder.)
b This hard disk needs repairing. (This hard disk needs to be repaired.)
After *need*, an *–ing* form has a passive meaning.

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Topic 24

I. Warm-up

A

Possible list of computer languages
BASIC, COBOL, FORTRAN, Pascal, C, LOGO, LISP, PROLOG, ADA language, FORTH, PostScript, Java, HTML, etc.

B

1 Sun Microsystems invented Java.
2 Java was developed in 1995.
3 Yes, Java can run on all platforms.
4 Java's small programs are called 'applets'. They allow us to watch animated characters and moving text, play music and interact with the Web.

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II. Language work: Would, Revision of time clauses

B

1 will
2 'd
3 will/would
4 will
5 would
6 would
7 would/'d
8 will
9 'll

C

1 When you click the mouse pointer on the file, it is highlighted.
2 You cannot save a file until you name it.
3 As the files are transferred, the transfer is graphically displayed.
4 Remove any floppies before you close down the computer.
5 Once the OK button is clicked, the copying process begins.
6 The percentage of file transferred is displayed as your browser downloads from the Internet.
7 The virus is not activated until you open the infected file.
8 Before you repair a PC, ensure the machine is disconnected.
9 Don't open an email attachment until you have virus-checked it.
10 After you add memory, change the BIOS settings.

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III. Speaking

Computer language	Date	Characteristics	Uses
COBOL (Common Business Oriented language)	1958 – 59	Easy to read. Able to handle very large files. Written in English	Mainly used for business applications.
BASIC (Beginner's All-purpose Symbolic Instruction Code)	1964 – 65	High-level programming language. Interactive. Easy to learn. Displays error messages that help users to correct mistakes. Has a large number of dialects.	General purpose language. Used to teach programming.
Pascal (named after the famous scientist Blaise Pascal)	1970 – 73	Structured language with algorithmic features designed for fast execution of the object program. A fast compiler called TurboPascal was created in 1982 – very popular.	General purpose. Often used in colleges and universities to teach programming.

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Answer key

LOGO	1969	Easy to learn. Flexible – it can do maths, make lists, construct graphs, etc. Its drawing capabilities allow children to construct simple graphics programs.	Designed for use in schools to encourage children to experiment with programming.
HTML (HyperText Markup Language)	1990	HTML codes control the use of fonts and images on a Web page and specify the links to other Internet sites. HTML files are viewed with a client program called a 'browser'.	Used to create hypertext documents that can be displayed on the Web.

IV. A short description of BASIC

1. to develop
2. stands
3. found
4. is
5. consists
6. allow
7. to interact
8. executed
9. input
10. given
11. held
12. removes
13. are

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Unit 25

I. Warm-up

A

b. a page description language

B

Adobe Illustrator, Macromedia Freehand, CorelDraw , etc.

C

Ss guess the meaning of unfamiliar words.

II. Reading

A

1. PostScript was created in the early 1980s.
2. The PostScript language is understood by imagesetters.
3. The 'prolog' contains the subroutines used to form different graphic elements./ It's the 'script' that contains the element introduced by the user.
4. PostScript can be used by any computer; it's device-independent.
5. PostScript-based laser printers need a Postscript interpreter to print pages in Postscript.
6. Postscript programs give more precise control over drawing than non-Postscript programs.

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7. Postscript pictures can be exported and imported.

III. Language work: Past simple questions (revision)

B

1 How many subjects did you study in your first term?
2 How many days each week did you have classes?
3 What did you have on Monday morning?
4 Which day was a free day for home study?
5 Where/In which room did you have Systems Analysis on Wednesday?
6 What did you study on Thursdays?
7 When did Programming happen?
8 How often did Communication take place?
9 Whose classes did you like most?
10 When did you have your lunch break?

IV. Word study: up- and –up verbs

1	back up	5	start up	9	keep up/catch up
2	upgrade	6	update	10	catch up/keep up
3	free up	7	starts up	11	built up
4	uploaded	8	set up		

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Technical help

PostScript is a computer language that describes how to print text and objects to different devices. It is referred to as a 'page description language' because it defines the page to be printed rather than giving a set of instructions on what to print.

Postscript can scale any font or graphic to any size and is used on many laser printers and imagesetters. It is 'device-dependent' , i.e. it is a language that allows computer from many different manufacturers to communicate with different output devices – printers, imagesetters, etc – and enables computers to adjust the quality of the output to the highest resolution possible.

The creation of the PostScript language has meant an important change the world of computers - in printing in particular.

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Unit 26

I. Reading

A

Some other qualities or abilities which could be added to the list:

enthusiasm	good communication skills
accuracy	creativity
reliability	versatility
confidence	ability to work under pressure
punctuality	ability to cope with routine work

C

Possible answers

Taking into account Charles Graham's experience and qualifications, the most suitable job for him is the post of DTP operator.

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II. Language work: Past simple and Present perfect

A

1	A	What did you do today?
2	B	I worked on my project. I searched the Web for sites on digital cameras.
3	A	Did you find any good ones?
4	B	I found several company sites – Sony, Canon … but I wanted one which compared all the models.
5	A	Which search engine did you use?
6	B	Dogpile mostly. Have you ever used it?
7	A	Yes, I've tried it, but I've had more luck with Ask Jeeves. Why don't you try it?
8	B	I've had enough for one night. I've spent hours on that project.
9	A	I haven't started on mine yet.
10	B	Yeh? I bet you've done it all.

B

1	apply	3	have worked/ have been working	5	have (now) been	7	spent
2	was advertised	4	worked	6	have won	8	made

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Unit 27

I. Before you read

1 One PC can be connected to another in the same building by using circuits over a network. If the computers are further away from each other, they can be linked by adding modems and connecting them to the telephone line.

2 Data communication systems:

- a computer network(computer devices are interconnected to allow users to exchange files, and share hardware resources)
- fax services
- telex (a system of communicating using teleprinters)
- teletext (a system of communicating information by using television signals)
- the Internet (allow anyone with a PC, a modem and a telephone to have access to a wide range of information services: *e-mail, mailing list, the Web, newsgroups, chats, FTP, Telnet, etc.)*
- local bulletin board systems (BBS)

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II. Reading

A

Suggested answers

1 b 2 a 3 e 4 d 5 c

B

				1O	N	L	I	N	E	
2T	E	L	E	P	H	O	N	E		
	3A	C	C	O	U	N	T			
				4M	O	D	E	M		
		5N	E	W	S	G	R	O	U	P	S
				6D	O	W	N	L	O	A	D
	7S	E	R	V	I	C	E	S		
				8N	E	T	W	O	R	K

C

file of structured data = database
BBS = bulletin board system
facsimile machine = fax
FTP= file transfer protocol
sysop= system operator
kilobits per second = kbps
modem= modulator/demodulator
Internet relay chat= IRC
phone network = telephone wires

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Answer key

III. Language work: Making predictions

B

1. d 2. f 3. a 4. b 5. e 6. c

C

1 F leave/will be
2 F look at/will get
3 S wanted/would need
4 F grows/will be reduced
5 S installed/would not post

Topic 28

I. Warm-up

A

1 Yes. It's difficult but it's possible for computer criminals to break into computer systems and read confidential information.
2 A hacker is someone who gains illegal (unauthorized) access to information via computer.
3 Yes. Viruses can enter your PC via email attachments or when you download files from the Internet.

B

1. d 2. b 3. c 4. a

II. Reading

A

1 Because the Internet is an open system and we are exposed to hackers who break into computers for fun, to steal information or to propagate viruses. Security is vital when we want to send information such as credit card numbers.
2 They display a lock when the Web page is secure and they warn you if the connection is not secure. They can also disable or delete cookies.
3 Banks use digital certificates. A popular standard is SET, or Security Electronic Transactions.
4 We can encode our email using an encryption program like *pretty Good Privacy.*
5 The most common methods to protect private networks are password access control, encryption and decryption systems, and firewalls.
6 Viruses can enter a PC through files from disks, the Internet or bulletin board systems. We have to take care when opening email attachments or downloading files from the Web.

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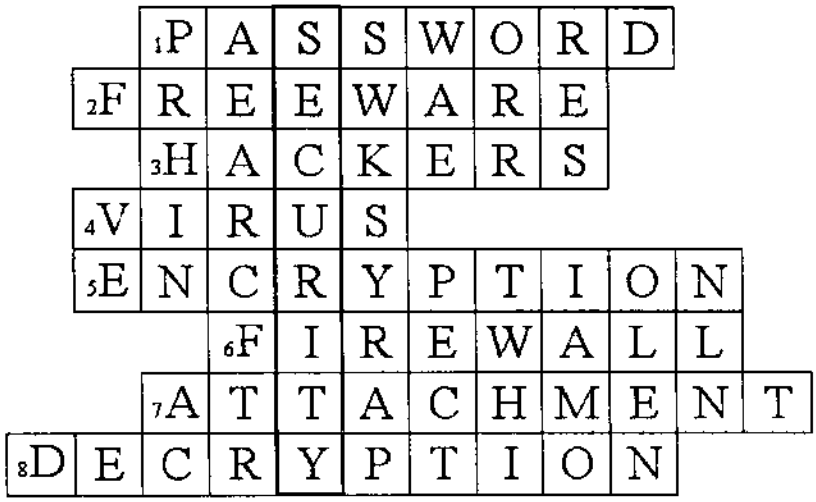
B



III. Hackers!

1 Kevin Mitnick's most famous exploit – hacking into North American Defense Command in Colorado Springs – inspired the movie *War Games*.
2 Nicholas Whitely was arrested in 1988 in connection with virus propagation.
3 Fifteen
4 Kevin Paulson was known as 'Dark Dante' on the networks. He was accused of the theft of US national secrets.
5 The German Chaos Computer Club

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IV. Language work: The past simple (revision)

John Draper **discovered … generated …started**
Kevin Mitnick **began …**
Ian Murphy **gained … hacked**
IBM international network **was paralyzed**
Union Bank **lost**
Nicholas Whitely **was arrested**
Fifteen-year-old hacker **cracked**
Hong Kong **introduced**
Israelis **arrested**
five teenagers **were charged**
Kevin Paulson **was charged … was accused**
German Chaos Computer Club **showed**
Computer criminals **propagated**

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Topic 29

I. Warm-up

Possible answers

1 It is a system of interconnected computers that share files and other resources.
2 A network enables us to get the most from our peripherals. For example, printers, scanners, plotters, and high-speed modems can be shared by a great number of users on the same network. In the same way, a network allows us to send and receive electronic messages, have access to large databases, and transfer files to and from other computers. This implies faster communications, flexible and interactive work between users, etc.

II. Reading

1. b 2. c 3. g 4. f 5. a 6. e 7. d

III. Language work: Prepositional phrase of 'reference'

with regard to	with reference to
in this regard	in regard to
as to	as regards
as for	on the matter of
in this respect	

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IV. WANs and worldwide communications

1 A WAN is a wide area network. (For long-distance communications, small area networks are usually connected into a WAN.)
2 Computers can be linked over long distances by telephone lines or fibre-optic cables. They are connected to the wires by a modem
3 Fibre-optic cables offer considerable advantages:
- they require little physical space
- they are safe because they don't carry electricity
- they avoid electromagnetic interference
- they transmit information at high speed.

4 Communications satellites receive and send signals on a transcontinental scale.

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V. Speaking

Suggested answers

- This diagram represents a wide area network or WAN. Two networks are linked via satellite.
  One network is in **Barcelona** and consists of **a central computer and various PCs**. The other LAN is in Los Angeles and contains a **central computer and several clients**.
- In Los Angeles, the computers are connected to the telephone lines by **a modem**. However, in Barcelona**, the network is linked to fibre-optic cables**.
- The satellite receives signals from the **dish aerials**. Then the signals are retransmitted to **workstations in Barcelona or Los Angeles**.
- The purpose of this integrated network may be **to establish communications services on a transcontinental scale**. It allows large companies and institutions to **exchange information over long distances**.

VI. Writing

Possible descriptions

In the **engineering area**, there are several workstations running under different operating systems (UNIX, Macintosh, and Digital). They all share a printer and a plotter. This area is adequate for CAD/CAM applications and can be used to generate engineering drawings and detailed graphics. The network is linked to the whole system by a gateway.

In the **DTP area**, we have a Local Talk network with various Macs sharing a laser printer, a file server and a scanner. This network is used to create corporate publications (catalogues, leaflets, reports, and other materials) with high publishing standards. It is connected to the other areas by a gateway. The whole network is linked to the external world by a modem.

Technical help

Network topologies

There are different ways a local area network (LAN) can operate. The three most common configurations are **Token Ring, Bus** and **Star.**

On a **Token Ring** network, all devices (PCs, printers, file servers, etc.) are connected to the same circuit, forming a continuous loop or ring. A token – a piece of software – circulates continuously along the ring, and is read through an adaptor card in each machine as the token passes by. A computer can only send a message or document on the network if it has the token; when it has finished, it passes the token to the next device.

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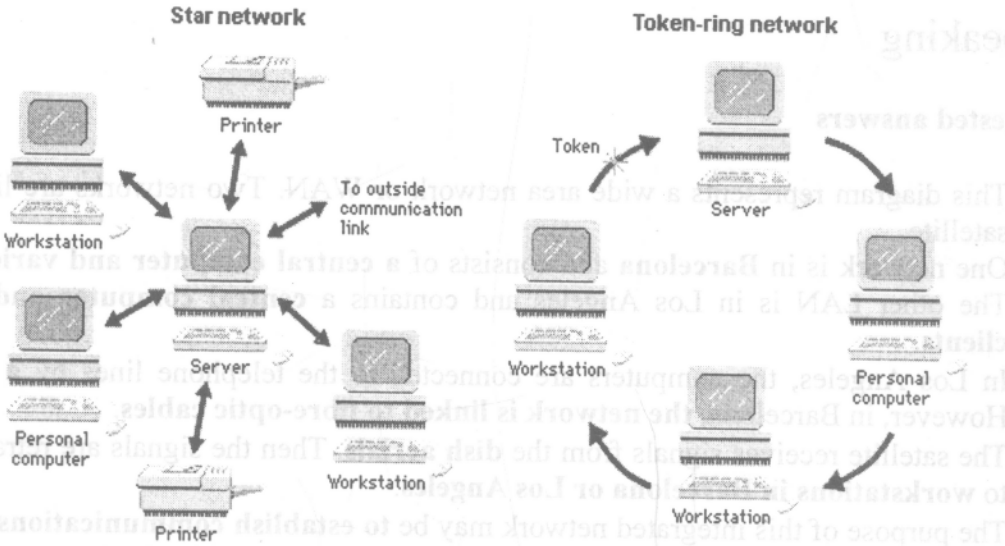
Answer key



The limitation of a Token Ring is that only one computer may send data at a time.

In a **Star** network configuration, all devices are connected to a central station, called the star controller. The central station functions as a switching centre. Computers cannot pass messages directly to one another; instead, they have to communicate via the central station which prevents messages from colliding. This means that more than one computer can send a message at the same time.

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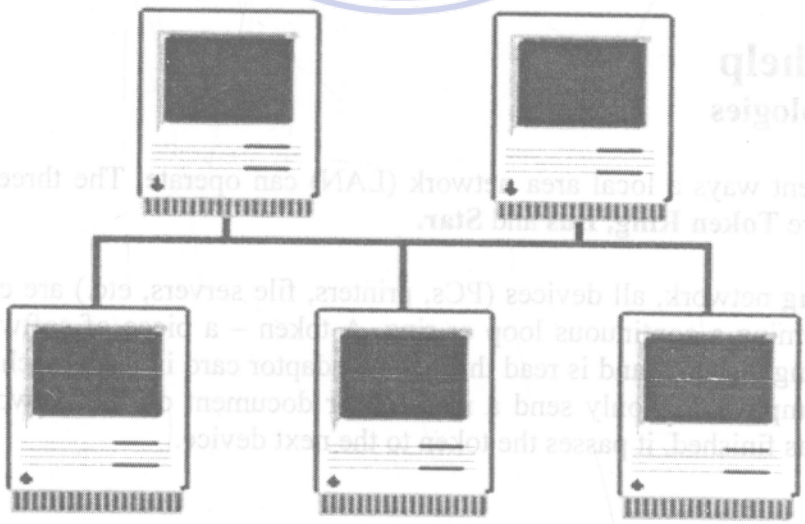
A **Bus** network consists of one cable to which all the devices are connected. The two ends of the cable are not joined. Each device is able to send a message to another device when it is sure that no other signals are being transmitted. Too many messages can slow down the network speed. When two devices send messages at the same time, there is a collision and the messages need to be sent again.



Bus network

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Topic 30

I. New products

A

1. a 2. d 3. b 4. c

B

Possible captions

a New mobile phones incorporate voice and data for email and Web access.

b Virtual reality systems – a new type of interaction between humans and computers, or virtual reality, a new technology with a growing number of applications.

c A typical video-teleconferencing setup. A system like this could change how you do business, or in video-teleconferencing, images are transmitted over the network.

d Internet-enabled TV sets for your living room.

C

1. d 2. a 3. e 4. c 5. b 6. f

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II. Discussion

Here are some ideas

1

- Desktop PCs use CRT monitors, whereas hand-held computers use small LCD screens.
- Hand-helds are smaller and weigh less than traditional PCs; they're pocket-size devices.
- Traditional PCs have a standard keyboard and a mouse as input devices. Hand-helds, however, have a small keyboard (about 50 keys). Some have buttons to launch programs and a touch-sensitive screen to input data with a stylus. Others offer a pen-based interface that can recognize handwritten characters.
- Traditional PCs are more powerful than hand-helds: they have faster processors, more RAM and more storage capacity.
- PCs are ideal for multitasking and multimedia. Palmtops are used to store personal information (schedules, addresses, etc.) or to send faxes and email.

2. Advantages:

- portable/mobile computing
- easy-to-use software
- can exchange data with other PCs via an infrared link

Limitations:

- not powerful enough to run high-demanding applications
- limited storage capacity
- may use batteries very quickly

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Answer key

3. Yes. SS should be allowed to use hand-held computers in class to take notes, make calculations or draw sketches which they can transfer to their home computers.
No, I disagree .../ From my point of view ...

4. I agree. We'll soon have a PDA, a phone and a PC wrapped into one hand-held device.
No, I don't agree. Hand-helds will not replace desktop PCs; they will only be used as PC companions or as personal digital assistants.

III. Language work: Making predictions

A

1 In ten years' time, a lot of people will have connected their televisions to the phone lines.
2 Portable computers will have replaced desktop computers in a few years' time.
3 With the help of computers, doctors will have found a cure for AIDS and cancer by the year 2010.
4 By this time next year, software manufacturers will have made hundreds of new programs.
5 By 2020, post offices and book shops will have disappeared.
6 By this time next year, I will have bought a pen computer.

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Glossary

A

acceleration card /ək,selə'reɪʃn kɑ:d/ (n) A board that increases the speed of the processor.

access time /'ækses ,taim/ (n) The average time required for the read/write head to move and have access to data; measured in milliseconds. Also known as 'seek time'.

acoustic coupler /ə,ku:stɪk 'kʌplə (r)/ (n) A type of modem which allows an ordinary telephone receiver to be used for connecting a computer to the telephone network.

ADA /'eidə/ A programming language developed for the US Department of Defense, named after Lord Byron's daughter Augusta Ada, who worked with Charles Babbage and is not unjustly described as the first programmer.

additive colour /'ædɪtɪv ,kʌlə/ (n) A colour model on cathode ray tube displays.

address /ə'dres/ (n) A code number that identifies the location of stored information.

Adobe Systems /ə'dəubɪ ,sɪstəmz/ Creators of the PostScript language and the illustrator application, and suppliers of fonts for use with PostScript printers.

algorithm /'ælgərɪðm/ (n) A series of instructions or a step-by-step procedure for the solution of a problem.

alias /'eɪlɪæs/ (n) A nickname that refers to a person or a list of persons on the net.

animation /,ænɪ'meɪʃn/ (n) The process of creating and recording images that change over time.

applets /'æpləts/ (n) Small applications written in Java. When you display a Web page with Java links, a Java applet is executed automatically.

application generator /,æplɪ'keɪʃn ,dʒenəreɪtə/ (n) A tool that allows applications to be created interactively. Frequently includes a fourth-generation language and a database management system.

application program /,æplɪ'keɪʃn ,prəugræm/ (n) A program which executes a specific task, such as word processing, database management or financial planning.

ARPANet /ɑ:pənet/ (n) Advanced Research Projects Agency Network, developed in the early 70s by the US Department of Defense. This network is the precursor to the Internet.

arithmetic logic unit (ALU) /ə,rɪθmətɪk 'lɒdʒɪk ju:nɪt/ (n) A component of the CPU which performs the actual arithmetic and logical operations asked for by a program.

arrow keys /'ærəu ,ki:z/ (n) Direction or cursor keys that allow the user to move the insertion point around the screen.

assembler /ə'semblə (r)/ A special program that converts a program

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written in a low-level language into machine code.

assembly language /ə'semblɪ 'læŋgwɪdʒ/ (n) A low-level language in which instructions are the mnemonic equivalent of the code understood by the machine. Used for specialized applications where speed or compactness of code is the most important consideration.

AT-compatible /ˌeɪˌtiːkəm'pætəbəl/ (adj) A computer which can run the same software as the IBM PC-AT, the model introduced by IBM in 1984.

attachment /ə'tætʃmənt/ (n) A file that has been included as part of an email message.

attributes /'ætrɪbjuːts/ (n) Characteristics that affect the visual representation of lines and polygons, e.g. line styles, rectangle colour, etc.

authentication /ɔːˌθentɪ'keɪʃən/ (n) A security measure used to verify the user's identity on the net. When you configure the PPP program to access the Internet you have to enter a password and the user identification number.

avatar /ˌævə'tɑː/ (n) An object which represents a participant in a three-dimensional chat room.

B

backbone /'bækbəun/ (n) High-speed lines or connections that form the major access pathways within the Internet.

backing store /'bækɪŋ ˌstɔː/ (n) A storage device with a larger capacity but slower access time than the main memory. This type of memory is stable. It can be in the form of hard disks, floppy disks, tapes or optical disks.

back-up /'bækʌp/ (n) A copy of data or software, usually kept in case the original disk is damaged.

back up /'bæk 'ʌp/ (v) To copy files from one disk to another.

bandwidth /'bændwɪdθ/ (n) The quantity of data that can be transmitted through a network. It is measured in bits per second (bps).

batch processing /'bætʃ ˌprəʊsesɪŋ/ (n) A method of information processing in which transactions are prepared for input to the computer for processing as a single unit. There may be some delay between the occurrence of the original events and the processing of data. Compare with real time.

baud /bɔːd/ (n) A unit for measuring the rate of data transmission. One baud = 1 bit per second. Named after Baudot, a pioneer of telegraphic communication.

binary digit /'bainərɪ ˌdɪdʒɪt/ (n) The smallest unit of information in the binary system, 0 or 1. Also called bit.

binary system /'bainərɪ ˌsɪstəm/ (n) A notation system in which the base for each digital position is 2. In this system numbers are represented by the two digits 0 and 1. Thus the binary number 10 represents 2 in decimal system, while 100 represents 4.

bit-mapped display /'bɪtmæpt dɪsˌpleɪ/ (n) A display that stores pixel information in RAM memory cells.

bookmark /'bʊkmɑːk/ (n) A saved link that takes users directly to a Web

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address. Bookmarks are also called hotlist entries or favourites.

boot /buːt/ (v) To start up a computer.

bridge /brɪdʒ/ (n) A device used to connect groups of computers.

browser /'braʊzə (r)/ (n) A program designed to fetch and display Web pages on the Internet.

bug /bʌg/ (n) An error in a program.

bulletin board /'bʊlətɪn ˌbɔːd/ (n) An online service that allows users to access and send information to other users quickly and easily. Any users who want to send or read messages dial up with their PC and modem combination to the central bulletin board system (BBS). Once connected, they can share information and files using various facilities.

bus /bʌs/ (n) A channel, or highway, which carries signals between units in the CPU.

byte /baɪt/ (n) A unit of information which consists of a fixed number of bits (usually 1 byte = 8 bits). A byte can represent any value from 0 to 255. The sequence of bits in a byte represents an instruction, letter, number or any other character. Compare with kilobyte, megabyte, gigabyte, terabyte.

cathode ray tube /ˌkæθəʊd 'reɪ tjuːb/ (n) The picture tube of the display, which is made of glass and contains a vacuum. In a monochrome monitor, the electron beam scans the screen and turns on or off the pixels that make up the black-and-white image. In a colour monitor, the screen surface is coated with triads of red, green, and blue phosphor. Three electron guns energize the phosphor dots, causing them to emit coloured light from which the picture is formed.

cell /sel/ (n) An intersection of a column and a row in spreadsheet.

central processing unit (CPU) /ˌsentrəl 'prəʊsesɪŋ juːnɪt/ (n) The 'brain' of the computer. Its function is to execute programs stored in the main memory by fetching their instructions, examining them and then executing them one after another. Its basic components are the control unit, the arithmetic logic unit and the registers. The CPU of a microcomputer is built into a single microprocessor chip.

channel /'tʃænl/ (n) An IRC conversation area. There are thousands of channels on the Internet.

character /'kærɪktə(r)/ (n) A symbol available on the keyboard (letter, number or blank space)

chat /'tʃæt/ (n) A real-time interactive conversation on the Internet. See Internet relay chat.

chip /'tʃip/(n) A tiny piece of silicon containing complex electronic circuits. Chips are used to make the hardware components of a computer.

Chooser /'tʃuːzə(r)/ (n) A desk accessory supplied by Apple and used to select the printer you wish to use.

client program /ˌklaɪənt 'prəʊgræm/ (n) Software running on your PC used to connect and obtain data from a server.

client-server /ˌklaɪənt 'sɜːvə(r)/ (n) A system in which various client programs all connect to a central server to obtain information or to communicate.

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Clipart /'klɪpaːt/ (n) Images hipped with graphics packages.

Clipboard /'klɪpbɔːd/ (n) A holding place for text or graphics that you have just cut or copied.

coding /'kəʊdɪŋ/ (n) The process of writing instructions for a computer.

colour palette /'kʌlə ˌpælɪt/ (n) The collection of colour available in a system. Its size depends on the hardware.

command /kə'mɑːnd/ (n) An order which the computer can obey. Synonymous with 'instruction'.

communications port /kəˌmjuːnɪkeɪʃnz ˌpɔːt/ (n) A socket at the back of your computer for a modem.

compact disk /kəm'pækt ˌdɪsk/ (n) A storage device which uses optical laser techniques and which provides mass storage capacity.

compatibility /kəmpætə'bɪlɪtɪ/ (n) This is said to exist between two computers if programs can be run on both without any change; it also refers to those applications that are executed in specific types of computers; these applications are 'compatible' with the computer.

compiler /kəm'paɪlə(r)/ (n) A special program that converts a source program (written in a high-level language) into an object program (written in a lower-level language).

compression /kəm'preʃn/ (n) The process which makes computer data smaller so the information takes less space and may be transmitted in less time. Compressed files have extensions like .zip, .arj, .sit.

configuration /kənˌfɪgju'reɪʃn/ (n) The physical components of a computer system.

control unit (CU) /kən'trəʊl ˌjuːnɪt/ (n) A component of the CPU which coordinates all the other parts of the computer system. This unit is also responsible for fetching instructions from the main memory and determining their type.

cookies /'kukɪz/ (n) Small files used by Web servers to know if you have visited their site before.

co-processor /kəʊ'prəʊsesə(r)/ (n) A silicon chip which performs precise tasks and mathematical operations very rapidly. Sometimes it is called the 'floating-point unit' of FPU.

cracker /'krækə(r)/ (n) An 'intruder' who breaks into computers systems for fun, to steal information, or to propagate viruses.

crash /kræʃ/ 1 (n) A serious failure which usually requires operator attention before the computers system can be restarted. 2 (v) When a hard disk system fails, it is said to have 'crashed'.

cyberspace /ˌsaɪbə'speɪs/ (n) A term originated by William Gibson in his novel *Neuromancer,* now used to refer to the Internet.

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D

data /'deɪtə/ (n) Information to be processed by a computer program. Data processing is the performing of operations on data to obtain information or solutions to a problem.

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database /'deɪtəbeɪs/ (n) A file of structured data.

database program /'deɪtəbeɪs ˌprəʊgræm/ (n) An applications program used to store, organize and retrieve a large collection of data. Among other facilities, data can be searched, sorted, and updated.

data communication system /'deɪtə kəˌmjuːnɪ'keɪʃən ˌsɪstəm/ (n) A computer system connected by telecommunications links (for data transmission).

data transfer rate /'deɪtə 'trænsfə reɪt/ (n) The average speed required to transmit data from a disk system to the main memory. Usually measured in megabits per second.

debug /diː 'bʌg/ (v) To correct program errors or 'bugs'.

debugger /diː 'bʌgə/ (n) A tool which lets the user follow the execution of programs one statement at a time, in order to help find errors in the code.

decryption /ˌdiː 'krɪpʃn/ (n) The process of decoding (deciphering) secret data.

default font /dɪ'fɔːlt ˌfɒnt/ (n) A font used by the system until another font is chosen from the menu.

desk accessory /ˌdesktɒp ək'sesərɪ/ (n) A mini-application available on the Apple Menu. Examples: Calculator, Clock, Scrapbook.

desktop /'desktɒp/ (n) An area of work – the menu bar and other sections of the screen.

desktop publishing (DTP) /'desktɒp 'pʌblɪʃɪŋ/ (n) The use of a computer system for all steps of document production, including typing, editing, graphics, and printing.

dial up /'daɪəl ʌp/ (v) To connect to a network over phone lines using a modem and a computer.

dialog box /'daɪəlɒg ˌbɒks/ (n) A message box requiring information from the user.

directory /ˌdaɪ-, ˌdɪrektərɪ/ (n) An alphabetical or chronological list of the contents (files) of a disk. Also known as catalogue.

disk /dɪsk/ (n) A storage device made of flat circular plates with magnetizable surfaces. See floppy, hard and optical disks.

disk drive /ˌdɪsk draɪv/ (n) The electronic mechanism that actually reads what is on a disk. If we are talking about hard disks, the disk and the drive are built into a single unit (hard disk = hard drive). If we are talking about floppies, the disk drive is the slot into which you insert a floppy disk.

dithering /'dɪðərɪŋ/ (n) The process of mixing two colours to produce an approximation to another colour. By using this shading technique, the human eye will blend the colours, increasing the apparent number of colours on the screen.

domain name /də'meɪn ˌneɪm/ (n) Internet sites are usually identified by a domain name which consists of two or more parts separated by dots, e.g. http://www.ibm.com. The part on the left, a subdomain, is the most specific (e.g. ibm, whitehouse). The part on the right, a primary domain, is the most general; this can be a country (e.g. fr for France, es for Spain, it for Italy), or the type of organization (e.g. com for commercial, org for organization, edu for education, or net for network). An

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IP address (e.g. 194.179.73.2) is translated into a domain name (e.g. sendanet.es) by a Domain Name System.

dot-matrix /'dɒt ˌmætrɪks/ (n) A regular pattern of dots; conventionally used to refer to dot-matrix printers which, instead of printing formed characters, print an array of dots. There are two main types of dot-matrix printers: the 9-pin and the 24-pin. The two most important emulations for these printers are Epson and IBM Proprinter.

download /'daʊnləʊd/ (v) To transfer a file from one computer to another over the telephone.

E

edit /'edɪt/ (v) To make changes and corrections to text and graphics. Well-known editing techniques are: 'select', 'undo', 'copy', 'cut' and 'paste' a portion of text.

electronic mail (email) /ɪlek'trɒnɪk 'meɪl/ (n) A facility which allows users to exchange messages electronically. here is a typical email address: leo@sendanet.es. 'leo' is the user name, @ means 'at', 'sendanet' is the Internet service provider. and 'es' means the server is based in Espana (Spain).

encrypt /ɪn'krɪpt/ (v) To encode data so that unauthorized users can't read it.

encryption /ɪn'krɪpʃn/ (n) The process of encrypting. Data encryption is important for network security, particularly when sending confidential information such as credit card numbers.

EPS format /ˌiːpiː'es ˌfɔːmæt/ (n) A file format that stands for 'Encapsulated PostScript'. It stores a file in a form that can be imported into a different file.

execute /'eksɪkjuːt/ (v) To perform the operations specified by a routine or instruction. Execute a program: run a program in a computer.

expansion slots /ɪk'spænʃən slɒts/ (n) The connectors that allow the user to install expansion boards to improve the computer's performance.

F

fault tolerance /'fɔːlt ˌtɒlərəns/ (n) A technique to protect data from hardware failures such as disk crashes, bad controllers or the destruction of important information on a file server. Fault-tolerant systems are essential for LAN installations.

fax /fæks/ (n) A facsimile machine that operates by scanning a document so that the image is sent to a receiving machine which produces a copy of the original.

field '/fiːld/ (n) A unit of information in a 'record'. In a database, information is entered via fields.

file /faɪl/ (n) 1 A collection of records (in a database). 2 A section of information stored on disk – a document or an application.

file compression /'faɪl kəmˌpreʃən/ (n) The encoding of a file into a more compact format so that it occupies less disk space.

file server /'faɪl ˌsɜːvə/ (n) The combination of a software controller

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and a mass storage device which allows various users to share common files and applications (in a network).

finger /'fɪŋgə/ (n) A program that helps you find people on other Internet sites.

firewall /'faɪə,wɔ:l/ (n) A software and hardware device that allows limited access to an internal network from the Internet. This prevents intruders from stealing or destroying confidential data.

firmware /'fɜ:mweə/ (n) Permanent software instructions contained in the ROM.

flame /fleɪm/ (n) An angry or insulting comment on a discussion group (on the Internet).

floppy disk /,lɒpɪ 'dɪsk/ (n) A disk made of flexible plastic material upon which data is stored on magnetic tracks.

flowchart /fləʊtʃa:t/ (n) A diagram or symbolic representation which shows the logical steps of a computer program.

flush /flʌʃ/ (adj) A line of type is said to be 'flush' when there is no space between it and a reference line. For example, text that is 'flush left' is aligned with the left margin of a page.

folder /'fəʊldə/ (n) A holder of documents, applications and other folders on the Macintosh desktop. Folders (similar to subdirectories in other systems) allow you to organize information in different levels.

font /fɒnt/ (n) The shape, style and size of a particular typeface, e.g. Times Bold at 10pt; **resident font** A font included in a laser printer's memory. (If a font is not resident, the printer has to load it from the computer, which takes up RAM from the printer.)

font formats

- PostScript Type 1 & 2, scalable font formats from Adobe Systems.
- Speedo, scalable font format from Bitstream.
- Truetype, scalable font format from Apple and Microsoft.

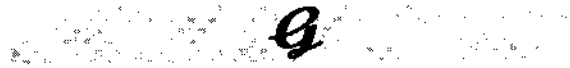
format /'fɔ:mæt/ 1 (n) The layout of a document, including page numbers, line spaces, margins, paragraph alignment, headers and footers, etc. 2 **format a disk** (v) To prepare a disk for use. When a disk is initialized, the operating system marks tracks and sectors on its surface.

fragmentation /,frægmen'teɪʃən/ (n) Disk performance can be affected by fragmentation. When the operating system cannot find enough contiguous space to store a complete file, the file is divided into several separated fragments. As disk fragmentation increases, disk efficiency starts decreasing.

frames /freɪmz/ (n) Subdivided areas of the screen. Some Web sits have frames or separate windows within the main window.

freeware /'fri:weə/ (n) Software that is available free of charge for public use.

function key /'fʌŋkʃən ,ki:/ (n) A key on a computer keyboard which causes a specific operation to take place, other than the entry of a standard character. What function keys do depends on the program.



gateway /'geɪtweɪ/ (n) A device used to interconnect different types of networks.

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gigabyte /gɪgəbaɪt/ (n) 1,024 megabytes.

graphics tablet /'græfɪks ˌtæblɪt/ (n) An input device which allows the user to specify a position on the screen by using a stylus. Tablets are more accurate than other devices.

graphical user interface (GUI) /'græfɪkəl juːzər 'ɪntəfeɪs/ (n) An operating environment based on graphics (windows, icons, pop-up menus), mouse and pointer, e.g. the Macintosh system, Microsoft Windows, IBM OS/2 Warp or OSF Motif.

graphic package /'græfɪks ˌpækɪdʒ/ (n) Software that allows the user to create and run graphics programs.

H

hacker /'hækə(r)/ (n) Someone who invades a network's privacy.

hard disk /'hɑːd 'dɪsk/ (n) A disk made from a solid magnetic material used as a storage device. There are different versions: fixed (internal, external), removable, etc. Compare with optical disks.

hardware /'hɑːdweə/ (n) The physical units which make up a computer system. See software.

hexadecimal system /ˌheksə'desɪməl ˌsɪstəm/ (n) The notation of numbers to the base of 16. The ten decimal digits 0 to 9 are used, and in addition six more digits - A, B, C, D, E and F - to represent 10 to 15.

high-level language /ˌhaɪ ˌlevəl 'læŋgwɪdʒ/ (n) A language in which each statement represents several machine code instructions, e.g. FORTRAN, COBOL, LISP, etc.

home page /ˌhəʊm 'peɪdʒ/ (n) 1 The first page of a Web site that contains links to other pages; 2 the default start-up page on which a Web browser starts.

host /həʊst/ (n) The computer which you contact to access the Internet.

hyperlink /'haɪpəlɪŋk/ (n) Text, image or button that connects to other destinations on the Web. It is like an embedded Web address that you can click.

hypermedia /ˌhaɪpə'mɪdɪə/ (n) A combination of hypertext and multimedia. A hypermedia document integrates different formats (text, graphics, sound, and video) and contains links that take you to other resources.

hypertext /'haɪpətekst/ (n) Text that contains links to other documents. The codes used to create hypertext documents are called HTML. See also Web.

hyphenation /ˌhaɪfə'neɪʃən/ (n) The division of words into syllables by a short dash '-' or hyphen. To produce lines of equal length, word processors hyphenate words instead of stretching word spaces too much.

I

icon /'aɪkɒn/ (n) A small picture representing an object, process or function.

image map /'ɪmɪdʒ ˌmæp/ (n) A clickable image that sends you to different Web pages depending on the area you click.

inch /ɪntʃ/ (n) The equivalent of 2.54 cm, or 72.27 points.

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indentation /ˌɪndenˈteɪʃən/ (n) This moves the edge of the text away from the margins towards the centre of the page.

INITs /ˈɪnɪts/ (n) System utilities activated when the computer is turned on.

ink-jet printer /ˈɪŋk dʒet ˌprɪntə(r)/ (n) A printer that generates an image by spraying tiny droplets of ink at the paper. By heating the ink within the print head, individual drops are expelled to make a matrix of dots on the paper.

input /ˈɪnpʊt/ 1 (n) The process of transferring information into the memory from some peripheral unit. 2 (v) To transfer data, or program instructions into the computer.

input devices /ˈɪnpʊt dɪˌvaɪsɪz/ (n) Units of hardware which allow the user to enter information into the computer, e.g. the keyboard, mouse, trackball, lightpen, graphics tablet, voice recognition devices.

integrated package /ˈɪntəgreɪtɪd ˈpækɪdʒ/ (n) Software which includes a family of applications – typically spreadsheet, word processor, database and graphics and communications modules. The modules are linked by a common user interface.

interface /ˈɪntəfeɪs/ (n) Channels and control circuits which provide a connection between the CPU and the peripherals. See also user interface.

internal memory /ɪnˈtɜːnəl ˌmeməri/ (n) See main memory.

Internet /ˈɪntənet/ (n) A global network of computer networks which facilitates data communication services such as email, file transfer, information retrieval and newsgroups.

Internet relay chat /ˈɪntənet ˈriːleɪ ˈtʃæt/ (n) A system that allows many people to have live conversations (usually typed) simultaneously on the Internet.

Internet telephone /ˈɪntənet ˈtelɪfəun/ (n) A system that allows people to make phone calls via the Internet.

Internet TV /ˈɪntənet ˈtiː ˈviː/ (n) A TV set used as an Internet device.

interpreter /ɪnˈtɜːprɪtə/ (n) A programming environment that executes statements directly, avoiding the need for compilation.

Intranet /ˈɪntrənet/ (n) An internal company network which uses public Internet software but makes the Web site only accessible to employees and authorized users.

IP address /ˌaɪ ˈpiː əˈdres/ (n) A number which identifies a computer on the Internet. Every machine on the Internet has a unique IP address, e.g. 194.179.73.2

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J

Java /ˈdʒɑːvə/ (n) The cross-platform programming language from Sun Microsystems for building Internet applications.

joystick /ˈdʒɔɪstɪk/ (n) An input device with a vertical lever used in computer games to move the cursor around the screen.

justification /ˌdʒʌstɪfɪˈkeɪʃən/ (n) The process by which the space between the words and letters in a line of type is evenly divided to produce a line that is flush with both left and right margin.

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K

kerning /'kɜ:nɪŋ/ (n) The process of adjusting the spaces between letters to achieve even, consistent letter spacing.

key pals /'ki:pælz/ (n) Pen pals (pen friends) that exchange email messages.

keyboard /'ki:bɔ:d/ (n) An input device with typewriter keys for letters, numbers and line controllers. It may also have function keys for special purposes.

kilobit /'kɪləbɪt/ (n) One thousand bits; unit used to measure the bandwidth of transmission, e.g. 56 kilobits per second.

kilobyte /'kɪləbaɪt/ (n) A unit for measuring the memory or disk space in thousands of bytes. Also called k = 1,024 bytes.

L

laptop /'læptɒp/ (n) A small type of portable computer.

laser printer /'leɪzə ˌprɪntə(r)/ (n) A non-impact printer that takes in data from the computer and builds up an image of the page in its own internal memory. A laser beam traces the image's dot pattern onto a rotating photosensitive drum, placing a static charge on the exposed areas. As the drum rotates, the toner particles are attracted to the charged areas. Then an electrically-charged wire pulls the toner particles off the drum, and they fall onto the paper.

lightpen /'laɪtpen/ (n) A highly sensitive photo-electric device which uses the CRT screen as the positioning reference. The user can pass the pen over the surface of the screen to detect, draw or modify images displayed on the screen.

link /lɪŋk/ (n) See hyperlink.

list server /'lɪst ˌsɜ:və(r)/ (n) See mailing list.

load /ləʊd/ (v) To read program instructions into the main memory.

local area network (LAN) /ˌləʊkəl ˌeərɪə 'netwɜ:k (læn)/ (n) A network contained in a relatively small area.

login /'lɒgɪn/ (n) The act of identifying yourself when entering a network. You usually type your user name and password.

log on /ˌlɒg 'ɒn/ (v) To connect to a network FTP site or Telnet remote system.

log off /ˌlɒg 'ɒf/ (v) To disconnect from a network or online system.

low-level language /ˌləʊ ˌlevəl 'læŋgwɪdʒ/ (n) A language in which each instruction has a corresponding machine code equivalent.

M

machine code /mə'ʃi:n kəʊd/ (n) Binary code numbers, the only language that computers can understand directly.

macro /'mækrəʊ/ (n) 1 An abbreviation for 'macro-instruction'. 2 A stored set of commands, control sequences or definitions that is substituted for the macro name when that is invoked.

mailing list /'meɪlɪŋ ˌlɪst/ (n) A system that allows people to send email to

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one address. The messages are then distributed to all the subscribers. Mailing lists are usually discussion groups which connect people with common interests.

mail merging /'meɪl ˌmɜːdʒɪŋ/ (n) The process of combining a database file with a word processor to personalize a standard letter.

mainframe /'meɪnfreɪm/ (n) The largest and most powerful type of computers. Mainframes process enormous amounts of data and are used in large installations.

main memory /ˌmeɪn 'meməri/ (n) The section which holds the instructions and data currently being processed; also referred to as the 'immediate access store', 'primary memory' or 'internal memory'. Microcomputers make use of two types of internal memory: RAM and ROM.

megabit /'megəbɪt/ (n) A million binary digits; used to refer to storage devices.

megabyte /'megəbaɪt/ (n) 1,024 kilobytes

megahertz /'megəhɜːts/ (n) A unit of a million cycles per second used to measure processor speed.

menu bar /'menjuː ˌbɑː/ (n) The area at the top of the screen which allows access to the various menus.

microchip /'maɪkrəʊˌtʃɪp/ (n) See chip.

microprocessor /ˌmaɪkrəʊ'prəʊsesə(r)/ (n) A chip, or integrated circuit, that processes the instructions provided by the software.

mnemonic /nɪ'mɒnɪk/ (n) A label or abbreviation used to make words easier to remember.

modem /'məʊdem/ (n) A device attached to a computer and the telephone line allowing access to wide networks. Standard telephone lines carry analogue signals, so the digital signals used by computers must be converted into the correct form by means of a modem.

monitor /'mɒnɪtə(r)/ (n) A CRT device which displays the computer output. Monochrome monitors display one colour at a time, in contrast to colour monitors which can display many different colours at the same time.

mouse /maʊs/ (n) A small input device with a ball underneath that is rolled by the user to specify the position of the cursor or to make choices from the menu.

multimedia /ˌmʌltɪ'miːdiə/ (n) This refers to the integration of existing technologies of audio, video, animation and telecommunications with computing. Multimedia applications are also known as hypermedia.

multitasking /mʌltɪ'tɑːskɪŋ/ (n) The execution of several tasks at the same time.

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N

netiquette /'netɪket/ (n) Rules of etiquette ('good manners') when sending messages to a mailing list or newsgroup.

network /'netwɜːk/ (n) A system of computer devices (e.g. CPUs, printers) or 'nodes' interconnected so that information and resources can be shared by a large number of users.

newsgroups /njuːzˌgruːps/ (n) The public discussion areas which make up Usenet.

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newsreader /'nju:z,ri:də/ (n) A program that reads and sends articles to newsgroups.

node /nəʊd/ (n) A point on a junction of communication lines in a network. In a communications network, various computer devices (nodes) are interconnected to permit information to be interchanged between those devices.

O

object language /'ɒbdʒɪkt ,læŋwɪdʒ/ (n) A language or set of instructions into which a source language is translated by a compiler.

object-oriented programming /,ɒbdʒɪkt 'ɔ:rɪentɪd 'prəʊgræmɪŋ/ (n) A programming technique that allows the creation of 'objects' which can be reused, or used as the foundation of others. Used to develop complex programs, especially GUI programs.

octal system /'ɒktəl ,sɪstəm/ (n) The notation of numbers using 8 as a base or radix.

offline /'ɒf laɪn/ (adj) Not connected to the net.

online /'ɒnlaɪn/ (adj) Connected to the net.

operating system /'ɒpəreɪtɪŋ ,sɪstəm/ (n) The programs and routines which allow a computer to operate; it usually consists of a group of programs which coordinate the software and hardware of a computer system.

optical character recognition /,ɒtɪkəl 'kærɪktə rekəg,nɪʃən/ (n) Technology that allows computers to recognize text input into a system with a scanner. After a page has been scanned, an OCR program identifies fonts, styles and graphic areas.

optical disk /,ɒptɪkəl 'dɪsk/ (n) A storage device in which data is recorded as microscopic 'pits' by a laser beam. The data is read by photoelectric sensors which do not make active contact with the storage medium.

optical fibre cable /,ɒptɪkəl 'faɪbə ,keɪbəl/ (n) A type of cable that guides light impulses at high frequencies along the glass fibre.

output /'aʊtpʊt/ 1 (n) The results produced by a computer. 2 (v) To transfer information form a CPU to an output device.

output devices /'aʊtpʊt dɪ,vaɪsɪz/ (n) The units of hardware which display the results produced by the computer (e.g. plotters, printers, monitors).

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P

page description language /,peɪdʒ dɪs'krɪʃən 'læŋgwɪdʒ/ (n) A computer language that describes how to print the text and images on each page of the document.

palmtop /'pa:mtɒp/ (n) A hand-held computer which is used as PC companion.

parallel port /,pærəlel 'pɔ:t/ (n) An interface port on a printer used to communicate with the computer. It transmits and receives 8 bits of data side by side. Compare with serial port.

Pascal /pæs'kæl/ A high-level language, named after Blaise Pascal.

password /'pa:swɜ:d/ (n) A secret word which must be entered before access is given to a computer system.

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paterns /'pætənz/ (n) A menu or palette from which the user can pick the required pattern to fill shapes and draw borders.

peripherals /pə'rɪfərəlz/ (n) The units connected to the CPU: input devices, output devices and storage devices.

phosphor /'fɒsfər/ (n) The material or substance of the CRT screen that lights up when struck by an electron beam.

photosetter /'fəʊtəʊˌsetə/ (n) A printer that sets type by a photographic process or on photographic film that allows for high resolution.

pica /'paɪkə/ (n) A unit of 4.23 mm used in typography.

piracy /'paɪərəsɪ/ (n) The illegal copying of programs.

pixel /'pɪsəl/ (n) The smallest element of a display surface. In monochrome monitors, one pixel is the visual representation of a bit in the refresh buffer (the memory used for storing the picture for screen refresh). The pixel is white if the bit is 0, and black if the bit is 1. In colour monitors, each pixel can represent various bits.

platform /'plætfɔːm/ (n) A type of computer system, e.g. IBM PCs and compatibles, Macintosh computers.

plot /plɒt/ (v) To draw lines connecting the points on a graph.

plotter /'plɒtə(r)/ (n) A very common graphics output device which is used to make various types of engineering drawings.

plug-ins /'plʌgɪnz/ (n) Special programs which extend the capabilities of a browser so that it can handle audio, video, 3-D and animation.

point /pɔɪnt/ (n) A unit used to measure font types and the distance between baselines. A point is a subdivision of a pica: there are 12 points in a pica and 72.27 points in an inch.

pointer /'pɔɪntə(r)/ (n) 1 A small picture that follows the mouse movements. 2 The cursor which locates the insertion point on the screen, i.e. indicates where the next character will be displayed.

port /pɔːt/ (n) A socket or channel in the rear panel of the computer into which you can plug a wide range of peripherals: modems, fax machines, hard drives, etc.

PostScript /'pəʊsskrɪpt/ (n) A page description or graphics language developed by Adobe systems Inc. A PostScript font is any font – such as Times or Helvetica – that is defined in the PostScript language.

primary colours /ˌpraɪmərɪ 'kʌləz/ (n) These are red, green and blue in computers. Compare with the colours considered basic in inks (magenta, yellow, and cyan).

primitives /'prɪmɪtɪvz/ (n) The basic shapes used to construct graphical objects: lines, polygons, etc.

printer /'prɪntə(r)/ (n) An output device which converts data into printed form. The output from a printer is referred to as a print-out. There are various types of printers: laser, dot-matrix, ink-jet, thermal, etc.

printer driver /'prɪntəˌdraɪvə(r)/ (n) A program installed to control a particular type of printer.

program /'prəʊgræm/ (n) A set of instructions for solving a specific problem by computer.

programming /'prəʊgræmɪŋ/ (n) The process by which a set of instructions

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is produced for a computer to make it perform a specified task. The task can be anything from the solution to a mathematical problem to the production of a graphics package.

protocol /'prəʊtəkɒl/ (n) A set of rules which determine the formats by which information may be exchanged between different systems.

proxy /'prɒksɪ/ (n) A special server which controls the traffic between the Internet and a private network. Thanks to this server, all the computers of an internal network can access the Internet simultaneously. A proxy also contains security mechanisms. See also firewall.

Q

quit /kwɪt/ (v) To leave a program.

R

random access memory (RAM) /ˌrændəm 'ækses ˌmeməɪ/ (n) The part of the main memory which stores information temporarily while you are working. RAM requires a continuous power supply to retain information. Compare with ROM.

RAM cache (n) A certain amount of RAM memory which can be designated to store information that an application uses repeatedly.

read only memory (ROM) /ˌriːd 'əʊnlɪ ˌmeməɪ (rɒm)/ (n) Chips of memory containing information which is present and permanent.

real time /'rɪəl ˌtaɪm/(adj) Involving the processing of data input to a system at almost the same time as the event which generates the data. Compare with batch processing.

reboot /riː'buːt/ (v) To restart the computer.

record /'rekɔːd/ (n) A unit of a file consisting of a number of interrelated data elements (fields).

recording heads /rɪ'kɔːdɪŋ ˌhedz/ (n) The read/write heads of disk drives.

refresh rate /'rɪfreʃ reɪt/ (n) The number of times per second the display screen is scanned, creating the pixels. Also known as the 'scan rate'. (A refresh rate of 70 Hz or more is needed if flicker is to be avoided.)

register /'redʒɪstə(r)/ (n) The component in the processor or other chip which holds the instruction from the memory while it is being executed.

resolution /ˌrezə'luːʃən/ (n) The maximum number of pixels in the horizontal and vertical directions of the screen; also refers to the number of pixels per inch.

router /'ruːtə(r)/ (n) A device used to connect various LANs.

routine /ruː'tiːn/ (n) A piece of code which performs a specific function or task in the operation of program or system.

ruler icons /'ruːlər ˌaɪkɒnz/ (n) Small graphics representing different format options – tab stops, paragraph alignment, line spacing, etc. – which are displayed in rows at the top of a Windows screen.

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S

save /seɪv/ (v) To copy information form the RAM to a disk.

scale /skeɪl/ (v) 1 To magnify or shrink a particular font in order to use it at a range of point sizes. 2 To make an object larger or smaller in nay direction.

scanner /'skænə(r)/ (n) An input device that scans (reads) the image as a series of dots and introduces the information into the computer's memory. Flatbed scanners have a flat surface. Slide scanners work with 35 mm slides.

Scrapbook /'skræpbʊk/ (n) A desk accessory in which you can keep images and text. You can copy, cut and paste frequently used pictures.

screen saver /'skri:n seɪvə(r)/ (n) A program that darkens the screen after you have not worked for several minutes. Designed to protect an unchanging image form burning into the screen, but used more often as a status symbol.

scroll /skrəʊl/ (v) To move a document in its window by using scroll bars so that text in another part of the document is visible.

search engine /'sɜ:tʃ ˌendʒɪn/ (n) A program that allows users to search a large database of Web addresses and Internet resources. Examples of search engines are Yahoo, Altavista, Lycos.

secondary memory /ˌsekəndərɪ 'meməri/ (n) See backing store.

sector /'sektə(r)/ (n) A part of a track or band of a magnetic disk.

serial port /ˌsɪərɪəl 'pɔ:t/ (n) An interface port on a modem, mouse or printer used to communicate with the computer. It transmits and receives bits of data one after the other. Compare with parallel port.

shareware /'ʃeəweə/ (n) Programs that are distributed free, via an electronic bulletin board or on a disk from user groups. The programmer usually requests that you send £5 or £10 to him or her, but only if you like the software.

silicon chip /'sɪlɪkən tʃɪp/ (n) A device made up of a non-metallic semiconducting material, (silicon), which contains a set of integrated circuits, with high-speed performance.

single in-line memory modules (SIMMs) ˌsɪŋgəl ɪn laɪn 'meməri ˌmɒdju:lz/ (n) Boards containing RAM chips, connected to the mainboard of the computer.

smileys /'smaɪlɪz/ (n) Faces made form punctuation characters to express emotions in email messages.

snail mail /'sneɪl ˌme:l/ (n) Conventional mail delivered very slowly, in contrast with email.

software /'sɒftweə/ (n) Programs or instructions executed by the computer. See hardware.

source program /'sɔ:s ˌprəʊgræm/ (n) A program written in a source language, i.e. a programming language which cannot be directly processed by the hardware but requires 'compilation' into an 'object program'.

spell checker /'spel ˌtʃekə/ (n) A utility to correct typing mistakes. Some programs are able to correct grammar and style.

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spooler /'spu:lə/ (n) A utility which makes it possible to send one document to the printer (by creating a temporary file for it) so that the user can work on another.

spreadsheet /'spredʃi:t/ (n) An application program for financial planning which allows the user to analyze information presented in tabular form, by manipulating rows and columns.

style /staɪl/ (n) A distinguishing visual characteristic of a typeface, e.g. plain text, italic, bold, etc.

subroutine /'sʌbru:ti:n/ (n) A set of instructions which performs a specific function of the program.

tags /tægz/ (n) Codes used in an HTML document to mark the start, end or exact location of a formatting feature or a link on a Web page.

teletext /'telɪ,tekst/ (n) A method of communicating information by using TV signals. An extra signal is broadcast with the TV picture and translated into text on the screen by a decoder.

telex /'teleks/ (n) An automatic exchange service which uses telegraphic equipment (e.g. teleprinters).

Telnet /'telnet/ (n) A network program which is used to log directly into remote computer systems. This enables you to run programs kept on them and edit files directly.

terabyte /'terəbaɪt/ (n) 1,024 gigabytes.

terminal /'tɜ:mɪnəl/ A visual display unit where data may be input to or output from a data communications system.

thesaurus /θɪ'sɔ:rəs/ (n) A utility for searching synonyms and antonyms. Word finder.

three-dimensional (3-D) /ˌθri:-dɪ'menʃənəl/ (adj) 3-D drawings have depth.

token /'təʊkən/ (n) A special unit of data which acts as a key on a Token Ring network; only the adapter in possession of the token can transmit on the network.

track /træk/ (n) An area marked on the surface of a disk. When a disk is initialized, the operating system divides the surface of the disk into circular tracks, each one containing several sectors. A floppy disk usually contains 80 tracks. Tracks and sectors are used to organize the information stored on disk.

trackball /'trækbɔ:l/ (n) A stationary device that works like a mouse turned upside down. The ball spins freely to control the movement of the cursor on the screen.

transceiver /træn'zi:və(r)/ (n) A transmitter and receiver: a hardware component that sends and receives network signals.

transformation /ˌtrænsfə'meɪʃən/ (n) the manipulation of an object by moving, rotating or scaling it.

two-dimensional (2-D) /ˌtu:-dɪ'menʃənəl/ (adj) 2-D drawings have no depth (they look flat).

typeface /'taɪpfeɪs/ (n) A set of visually related shapes for the characters of a script. A bit-mapped typeface is one where the characters are stored as images made up of dots. A bit-mapped typeface cannot be altered in size. A scalable typeface is one where

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the outline of the characters is stored with formulae which adjust the outline as the font is enlarged or shrunk.

typeset /'taɪpset/ (v) To set text as type.

U

UNIX /'juːnɪks/ (n) A popular operating system designed by Bell Laboratories in the USA and widely adopted by many manufacturers.

update /ʌp'deɪt/ (v) To correct, add or delete information in a file and thus ensure that the file reflects the latest situation.

upgrade /ˌʌp'greɪd/ (v) To add or replace hardware or software in order to expand the computer's power.

upload /ˌʌp'ləʊd/ (v) To send a file from one computer to another via modem.

Usenet /'juːsˌnet/ (n) A large collection of discussion areas (called 'newsgroups') on the Internet.

user-friendly /ˌjuːzə 'frendlɪ/ (adj) An expression used to describe computers which are designed to be easy to use, by means of self-explanatory interaction between users and computer.

user interface /ˌjuːzər 'ɪntəfeɪs/ (n) The standard procedures for interaction with specific computers.

utility /juː'tɪlɪtɪ/ (n) A small program designed to improve the performance of the system. The term 'system utility' refers to a diverse field covering anything from software designed to help you back up your hard disk or locate files, to anti-virus programs or routines used by the system.

V

videotext /'vɪdɪəʊteks/ (n) A viewdata service that uses telephone lines to transmit data and information; it provides services such as tele-banking and tele-shopping.

virtual interface /ˌvɜːtjʊəl 'ɪntəfeɪs/ (n) A type of interface in which the user puts on a set of special goggles as a display, a controlling device (such as a glove) and a motion detector that allows a computer to sense when and how the user moves. What the user sees is an artificial, computer-generated world in which they can move.

virtual reality /ˌvɜːtjʊəl rɪ'ælətɪ/ (n) A computer-generated space in which the user interacts with artificial objects and environments through three-dimensional computer simulation. This is done by using sensory peripherals such as data gloves and head-mounted displays to give the feeling of being immersed into an illusionary, yet sensate, world.

virus /'vaɪərəs/ (n) A piece of software which attaches itself to an application or file. Once you run an infected application, the virus quickly spreads to the system files and other software. Some viruses can delete files or destroy the contents of hard disks.

voxel /'vɒksəl/ (n) A volume element, analogous to pixels. In spatial-partitioning representations, a solid can be decomposed into cubic cells (voxels).

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W

Web /web/ (n) A hypertext-based system by which you can navigate through the Internet. By using a special program known as a 'browser' you can find news, pictures, virtual museums, electronic magazines – any topic you can imagine. You travel through the Web pages by clicking on keywords that take you to other Web sites. It is also known as the World Wide Web or WWW.

Web site /'web saɪt/ (n) A location on the Internet where a company puts Web pages with information.

wide area network (WAN) /ˌwaɪd ˌeərɪə 'netwɜːk (wæn)/ (n) A network that extends outside a building or small area. For long distance communications, LANs are usually connected into a WAN.

widow /'wɪdəʊ/ (n) A single line ending a paragraph and appearing at the top of a printed page or column.

window /'wɪndəʊ/ (n) A rectangle on the desktop that displays information.

window-based /'wɪndəʊ ˌbeɪst/ (adj) This refers to an application or program whose interface is based around windows.

word processor /'wɜːd ˌprəʊsesə(r)/ (n) An application that manipulates text and produces documents suitable for printing.

word wrap /'wɜːd ˌræp/ (n) An editing facility which automatically moves a word to the next line if there is not enough space for the complete word on the current line.

workstation /'wɜːksteɪʃən/ (n) A computer system which usually includes a defined collection of input and output devices.

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Acronyms and abbreviations

ACK positive ACKnowledgement
ADB Apple Desktop Bus
AI Artificial Intelligence
AIFF Audio Image File Format
ALGOL ALGOrithmic Language, a problem-oriented, high-level programming language for mathematical and scientific use
ALU Arithmetic Logic Unit
AMD Advanced Micro Devices, manufacturer of microprocessors
API Application Program Interface
ASCII American Standard Code for Information Interchange
AT Advanced Technology. The AT was born in 1984 with the introduction of the IBM PC-AT. Most ATs have 286 processors
AT&T American Telephone & Telegraph company
ATM 1 Adobe Type Manager 2 Automated Telling Machine
AVI Audio Video Interface, a video format

BASIC Beginner's All-purpose Symbolic Instruction Code
Bcc Blind carbon copy. Addresses in the Bcc: line of an email will receive a copy of the message but the identity of the recipients will be kept secret
BSS Bulletin Board System
BCPL system programming language form which the language C was derived
BIOS Basic Input/Output System
bit binary digit
bps bits per second
BUS Binary Unit System

C A high-level language designed for system programming, usually (but not exclusively) for software development in the UNIX environment
CAD Computer-Aided Design
CAE Computer-Aided Engineering
CAI Computer-Assisted Instruction
CALL Computer-Assisted Language Learning
CAM Computer-Aided Manufacturing
CASE Computer-Aided Software Engineering
Cc Carbon copy. Addresses on the Cc: line of an email will receive the same message.
CD Compact Disk
CD-R Compact Disk-Recordable
CD-ROM Compact Disk-Read Only Memory
CD-RW CD-Rewritable
CGA Color Graphics Adaptor
CMYB Cyan, Magenta, Yellow, Black
COBOL Common Business-Oriented Language
COM Computer Output on Microfilm
cps 1 characters per second 2 cycles per second
CPU Central Processing Unit
CR Carriage Return
CRT Cathode Ray Tube
CU Control Unit

DA Desk Accessory
DAC Digital to Analogue Converter
DAT Digital Audiotape, DAT desks are becoming the standard for professional music recording

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Acronyms and abbreviations

DBMS DataBase management System
DD 1 Disk Drive 2 Double Density
DDE Dynamic Data Exchange
DEC Digital Equipment Corporation
DNS Domain Name System
DOS Disk Operating System
dpi dots per inch
DRAW Direct Read After Write
DR DOS Digital Research disk operating system
DS disks double-sided disks
DTP Desktop Publishing
DTV Desktop Video
DVD Digital Video Disk (or Digital Versatile Disk)
DVI Device Independent

EAROM Electrically Alterable Read-Only Memory
ECMA European Computer Manufacturers' Association
EDIF Electronic Data Interchange Format
EGA Enhanced Graphics Adaptor
EOD Erasable Optical Disk
EPS(F) Encapsulated PostScript (file)

FAQ Frequently Asked Questions, a file containing answers to questions that the Internet users frequently ask
FD Floppy Disk
FDD Floppy Disk Drive
FDDI Fibre Distributed Data Interface
FDHD Floppy Disk High Density
FORTRAN FORmula TRANslation
FPU Floating-point Unit
FTP File Transfer Protocol

GB Gigabyte (1,024 megabytes)
GCR Group-Coded Recording (format to recognize disks, Macintosh)
GHz Gigahertz: one billion cycles per second
GIF Graphic Interchange Format
GNU Gnu's Not UNIX
GUI Graphical User Interface
HD 1 Hard Disk 2 High Density disk
HDD Hard Disk Drive
HDTV High-definition Television
HP Hewlett-Packard
HTML Hypertext Markup Language, codes used on the Web pages
Hz Hertz (unit of frequency equal to one cycle per second), named after Heinrich Hertz

IAC Inter-application Communications
IBM International Business machines
IC 1 Interface Converter (Card) 2 Integrated Circuit
ICR Intelligent Character Recognition
IDE Integrated Drive Electronics: a standard hard disk controller
IGES Internal Graphics Exchange Specification
i/f interface
I/O Input/Output
IP Internet Protocol
IRC Internet Relay Chat
ISA Industry Standard Architecture. An ISA bus is 16 bits wide
ISDN Integrated Services Digital Network
ISO International Standard Organization
ISP Internet Service Provider
IT Information Technology

JPEG Joint Photographic Experts' Group: standard in image compression

k 1 kilo, used to denote a thousand 2 1,024 bytes
KB kilobyte (1,024 bytes)

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Kbps kilobits per second
kHz kilohertz: 1,000 cycles per second

LAN Local Area Network
Laser Light Amplification by Stimulated Emission of Radiation
LCD Liquid-Crystal Display
LIMDOW Light Intensity Modulation/Direct Overwrite, a method that allows you to overwrite data on optical disks
LISP LISt Processing: high-level language used for artificial intelligence research
LP Linear Programming
LQ Letter Quality
MB 1 megabyte: one million bytes
2 Mother Board
MBPS MegaBits Per Second
MC Memory Card
MCA Micro Channel Architecture: standard 32-bit bus
MDA Monochrome Display Adaptor
MFM Modified Frequency Modulation (format to recognize disks: IBM and compatibles)
MHz megahertz: one million cycles per second
MIDI Musical Instrument Digital Interface
MIME Multipurpose Internet Mail Extensions, a standard for attaching files to email messages
MIPS Million Instructions Per Second
MMX Multimedia Extensions
modem Modulator/DEModulator
MP3 Moving Pictures Experts' group: standard for compressing and decompressing images
ms millisecond: thousandth of a second
MS-DOS Microsoft Disk Operating System
MTBF Mean Time Between Failure. Refers to the average rate of hours for a hard disk

NAK Negative ACKnowledgement
NAS Network Application Support
NIC Network Interface Card
NLQ Near Letter Quality
NUI Network User Identifier

OCR Optical Character Recognition
OLE Microsoft's Object Linking and Embedding standard
OOP Object Oriented Programming
OROM Optical Read Only Memory
OS Operating System
OSF Open software Foundation
OSI Open System Interconnection
PC Personal Computer
PCI Peripheral Component Interconnect, a standard bus
pdf Portable document formatted to distribute text files over the Internet; it can be read with Adobe Acrobat
PDS Processor Direct Slot
PERT Project Evaluation and Review Technique
PGA Professioanl Graphics Adaptor
picon picture icon
pixel picture element
PHIGS Programmer's Hierarchical graphics Interactive Standard
PL/1 Programming Language 1
PMMU Paged Memory Management Unit
PPD PostScript Page Description
ppi pixels per inch
POP Point of Presence, the location you dial into when you want access to the Internet
PPP Point to Point Protocol, allows computers to use modems and to have access to the Internet
PROM Programmable Read Only Memory
PS PostScript

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RAM Random Access Memory
RGB Red, Green, Blue
RIP Raster Image Processor
RISC Reduced Instruction Set Computer
ROM Read Only Memory
RS series Requirement Specification, referring to the interconnection standards for computing devices: RS 232, RS 422, and RS 423

SCSI Small Computer System Interface
SIMMs Single In-line Memory Modules: circuit boards which contain RAM chips
SMTP Simple Mail Transfer Protocol
SNA System Network Architecture: data network protocol developed by IBM
TB terabyte: one million megabytes
TCP/IP Transmission Control Protocol/Internet Protocol, the language used for data transfer on the Internet
TELEX TELeprinter EXchange
TIFF Tagged Image File Format: the kind of graphics-file format created by a scanner
TFT Thin Film Transistor: In a TFT display, each pixel is produced by three tiny transistors: one each for red, green, and blue. This allows for very clear and stable pictures
TOS tramiel Operating System

URL Uniform Resource Locator, an address of a Web site's location on the Internet
USB Universal Serial Bus

VAT Value Added Tax
VAX Virtual Address eXtension
VDT Video Display Terminal
VGA Visual graphics Array
VMS Virtual Memory System
VRAM Video Random Access Memory, common type of video card memory for color graphics
VRML Virtual Reality Modeling Language

WAN Wide Area Network
WFW Windows for Workgroups
WIMP Window, Icon, Mouse, and Pointer
WORM Write Once/Read Many
WP Word Processor
WWW World Wide Web
WYSIWYG What You See Is What You Get

XGA eXtended Graphics Array
XT eXtended Technology. The XT was born in 1983 with the launch of the IBM PC-XT

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Từ vựng

A

acceleration card /ək,selə'reɪʃn kɑ:d/ (n) card gia tốc

access time /'ækses ,taim/ (n) thời gian truy cập

acoustic coupler /ə,ku:stɪk 'kʌplə (r)/ (n) bộ nối âm thanh

ADA /'eidə/ ngôn ngữ Ada

additive colour /'ædɪtɪv ,kʌlə/ (n) màu bổ sung

address /ə'dres/ (n) địa chỉ

Adobe Systems /ə'dəubɪ ,sɪstəmz/ chương trình Adobe

algorithm /'ælgərɪðm/ (n) thuật toán, thuật giải

alias /'eɪlɪæs/ (n) bí danh

animation /,ænɪ'meɪʃn/ (n) hoạt hình

applets /'æpləts/ (n) ứng dụng ký sinh (Một chương trình ứng dụng nhỏ viết bằng ngôn ngữ Java).

application generator /,æplɪ'keɪʃn ,dʒenəreɪtə/ (n) một công cụ cho phép các ứng dụng được tạo ra một cách tương tác

application program /,æplɪ'keɪʃn ,prəugræm/ (n) chương trình ứng dụng

ARPANet /ɑ:pənet/ (n) Mạng của cơ quan quản lý các dự án nghiên cứu cao cấp

arithmetic logic unit (ALU) /ə,rɪθmətɪk 'lɒdʒɪk ju:nɪt/ (n) đơn vị logic số học

arrow keys /'ærəu ,ki:z/ (n) phím mũi tên

assembler /ə'semblə (r)/ chương trình (bộ) dịch hợp ngữ

assembly language /ə'semblɪ 'læŋgwɪdʒ/ (n) hợp ngữ (ngôn ngữ Assembly)

AT-compatible /,eɪ,ti:kəm'pætəbəl/ (adj) tương thích AT

attachment /ə'tætʃmənt/ (n) file đính kèm

attributes /'ætrɪbju:ts/ (n) thuộc tính

authentication /ɔ:,θentɪ'keɪʃən/ (n) sự thẩm định quyền, sự xác thực

avatar /,ævə'tɑ:/ (n) hình ảnh tượng trưng

B

backbone /'bækbəun/ (n) mạng xương sống, mạng trục chính

backing store /'bækɪŋ ,stɔ:/ (n) (vùng, thiết bị) lưu trữ phụ; lưu trữ hỗ trợ

back-up /'bækʌp/ (n) sao chép dự phòng, sao lưu

back up /'bæk 'ʌp/ (v) sao lưu

bandwidth /'bændwɪdθ/ (n) dải tần, dải thông, độ rộng dải thông

batch processing /'bætʃ ,prəusesɪŋ/ (n) xử lý nhóm, xử lý theo lô

baud /bɔ:d/ (n) đơn vị đo tốc độ truyền dữ liệu (1 baud = 1 bit/s)

binary digit /'bainərɪ ,dɪdʒɪt/ (n) số nhị phân

binary system /'bainərɪ ,sɪstəm/ (n) Hệ nhị phân

bit-mapped display /'bɪtmæpt dɪs,pleɪ/ (n) ánh xạ bit, sự hiển thị được tạo bởi các bit

bookmark /'bʊkmɑ:k/ (n) đánh dấu văn bản, dấu sách

boot /bu:t/ (v) khởi động, nạp hệ điều hành

bridge /brɪdʒ/ (n) cầu nối

browser /'brauzə (r)/ (n) trình duyệt

bug /bʌg/ (n) lỗi máy tính

bulletin board /'bʊlətɪn ,bɔ:d/ (n) bản tin

bus /bʌs/ (n) kênh, tuyến

byte /baɪt/ (n) byte

C

cathode ray tube /,kæθəud 'reɪ tju:b/ (n) ống tia âm cực, đèn hình

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cell /sel/ (n) ô, ô nhớ

central processing unit (CPU) /ˌsentrəl ˈprəʊsesɪŋ ˌjuːnɪt/ (n) đơn vị xử lí trung tâm

channel /ˈtʃænl/ (n) kênh

character /ˈkærɪktə(r)/ (n) kí tự

chat /ˈtʃæt/ (n) hội thảo, trò chuyện trực tuyến

chip /ˈtʃip/(n) chip, mạch tổ hợp

Chooser /ˈtʃuːzə(r)/ (n) Một chương trình phụ của chương trình Desktop của Macintosh do hãng Apple Computer cung cấp cùng với hệ điều hành của Mac (System). Chương trình Chooser quản lý việc chọn lựa các driver máy in, đó là các chương trình điều khiển việc thông tin với máy in. Chooser sẽ hiển thị các biểu tượng của các driver máy in đã được cài đặt trong System Folder.

client program /ˌklaɪənt ˈprəʊgræm/ (n) chương trình khách hàng

client-server /ˌklaɪənt ˈsɜːvə(r)/ (n) khách hàng – chủ dịch vụ

Clipart /ˈklɪpaːt/ (n) hình mẫu

Clipboard /ˈklɪpbɔːd/ (n) bảng ghi tạm, trích giữ, khay

coding /ˈkəʊdɪŋ/ (n) mã hóa

colour palette /ˈkʌlə ˌpælɪt/ (n) bảng màu

command /kəˈmɑːnd/ (n) lệnh

communications port /kəˌmjuːnɪkeɪʃnz ˌpɔːt/ (n) cổng truyền thông

compact disk /kəmˈpækt ˌdɪsk/ (n) đĩa compact, đĩa CD

compatibility /kəmpætəˈbɪlɪtɪ/ (n) độ tương thích

compiler /kəmˈpaɪlə(r)/ (n) trình biên dịch, bộ biên dịch

compression /kəmˈpreʃn/ (n) nén dữ liệu

configuration /kənˌfɪgjuˈreɪʃn/ (n) cấu hình

control unit (CU) /kənˈtrəʊl ˌjuːnɪt/ (n) đơn vị điều khiển

cookies /ˈkʊkɪz/ (n) các file nhỏ mà một máy chủ dùng để kiểm soát các trang web được truy cập

co-processor /kəʊˈprəʊsesə(r)/ (n) bộ đồng xử lý

cracker /ˈkrækə(r)/ (n) kẻ bẻ khóa, kẻ hủy hoại

crash /kræʃ/ 1 (n) đổ vỡ, phá hủy. 2 (v) gặp sự cố

cyberspace /ˌsaɪbəˈspeɪs/ (n) Internet, không gian máy tính

D

data /ˈdeɪtə/ (n) dữ liệu

database /ˈdeɪtəbeɪs/ (n) cơ sở dữ liệu

database program /ˈdeɪtəbeɪs ˌprəʊgræm/ (n) chương trình cơ sở dữ liệu

data communication system /ˈdeɪtə kəˌmjuːnɪˈkeɪʃən ˌsɪstəm/ (n) hệ thống truyền thông dữ liệu

data transfer rate /ˈdeɪtə ˈtrænsfə reɪt/ (n) tốc độ truyền dữ liệu

debug /diː ˈbʌg/ (v) gỡ rối

debugger /diː ˈbʌgə/ (n) chương trình gỡ rối

decryption /ˌdiː ˈkrɪpʃn/ (n) sự giải mã

default font /dɪˈfɔːlt ˌfɒnt/ (n) phông mặc định

desk accessory /ˌdesktɒp əkˈsesərɪ/ (n) dụng cụ văn phòng, bảng phụ kiện

desktop /ˈdesktɒp/ (n) vùng làm việc trên màn hình, màn hình nền

desktop publishing (DTP) /ˈdesktɒp ˈpʌblɪʃɪŋ/ (n) chế bản điện tử, chế bản bằng máy vi tính

dial up /ˈdaɪəl ʌp/ (v) quay số, kết nối với mạng qua đường dây điện thoại

dialog box /ˈdaɪəlɒg ˌbɒks/ (n) hộp thoại

directory /ˌdaɪ-, ˌdɪrektərɪ/ (n) thư mục

disk /dɪsk/ (n) đĩa

disk drive /ˌdɪsk draɪv/ (n) ổ đĩa

dithering /ˈdɪðərɪŋ/ (n) phối màu

domain name /dəˈmeɪn ˌneɪm/ (n) tên miền

dot-matrix /ˈdɒt ˌmætrɪks/ (n) ma trận điểm

download /ˈdaʊnləʊd/ (v) tải xuống

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E

edit /'edɪt/ (v) soạn thảo, hiệu chỉnh, biên tập

electronic mail (email) /'elektrɒnɪk 'meɪl/ (n) thư điện tử

encrypt /ɪn'krɪpt/ (v) mã hóa

encryption /ɪn'krɪpʃn/ (n) sự mã hóa

EPS format /'ɪ:pi:'es ˌfɔ:mæt/ (n) định dạng EPS

execute /'eksɪkju:t/ (v) thực thi, chạy, xử lý

expansion slots /ɪk'spænʃən slɒts/ (n) khe cắm mở rộng

F

fault tolerance /'fɔ:lt ˌtɒlərəns/ (n) dung sai lỗi, khoảng lỗi sai cho phép

fax /fæks/ (n) fax, máy fax

field '/fi:ld/ (n) trường

file /faɪl/ (n) file

file compression /'faɪl kəm,preʃən/ (n) nén file

file server /'faɪl ˌsɜ:və/ (n) máy chủ file

finger /'fɪŋgə/ (n) ngón tay (Finger là lệnh UNIX (liên quan đến Internet) dùng để tìm thấy người dùng nào đó có vào mạng (Internet) không.)

firewall /'faɪə,wɔ:l/ (n) bức tường lửa

firmware /'fɜ:mweə/ (n) phần mềm thường trú được lưu ở trong ROM, phần mềm có tính chất cố định

flame /fleɪm/ (n) thông điệp có tính chất châm chọc, khiêu khích trên Internet

floppy disk /ˌlɒpɪ 'dɪsk/ (n) đĩa mềm

flowchart /fləʊtʃɑ:t/ (n) lưu đồ, biểu đồ thông

flush /flʌʃ/ (adj) không có sự thụt vào ở đầu dòng

folder /'fəʊldə/ (n) thư mục

font /fɒnt/ (n) phông

font formats định dạng phông

format /'fɔ:mæt/ (n) định dạng

fragmentation /ˌfrægmen'teɪʃən/ (n) sự phân đoạn tệp, chia rời tệp

frames /freɪmz/ (n) khung, mành

freeware /'fri:weə/ (n) phần mềm miễn phí

function key /'fʌŋkʃən ˌki:/ (n) phím chức năng

G

gateway /'geɪtweɪ/ (n) cổng nối

gigabyte /gɪgəbaɪt/ (n) 1,024 megabytes.

graphics tablet /'græfɪks ˌtæblɪt/ (n) bản vẽ đồ họa

graphical user interface (GUI) /'græfɪkəl ˌju:zər 'ɪntəfeɪs/ (n) giao diện người sử dụng đồ họa

graphic package /'græfɪks ˌpækɪdʒ/ (n) phần mềm đồ họa

H

hacker /'hækə(r)/ (n) hắc khách, tin tặc

hard disk /'hɑ:d 'dɪsk/ (n) đĩa cứng

hardware /'hɑ:dweə/ (n) phần cứng

hexadecimal system /ˌheksə'desɪməl ˌsɪstəm/ (n) hệ đếm 16

high-level language /ˌhaɪ ˌlevəl 'læŋgwɪdʒ/ (n) ngôn ngữ cấp cao

home page /ˌhəʊm 'peɪdʒ/ (n) 1 trang chính (trang khởi đầu) 2 trang khởi động mặc định

host /həʊst/ (n) máy chủ

hyperlink /'haɪpəlɪŋk/ (n) siêu liên kết

hypermedia /ˌhaɪpə'mɪdɪə/ (n) Một chương trình (giảng dạy) kết hợp giữa liên kết đa văn bản và đa phương tiện

hypertext /'haɪpətekst/ (n) siêu văn bản, văn bản liên kết

hyphenation /ˌhaɪfə'neɪʃən/ (n) sự tách từ dùng dấu gạch nối

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I

icon /'aɪkɒn/ (n) biểu tượng

image map /'ɪmɪdʒ ˌmæp/ (n) ánh xạ ảnh

inch /ɪntʃ/ (n) 1 inch = 2,54 cm

indentation /ˌɪnden'teɪʃən/ (n) sự thụt vào, viết thụt vào

INITs /'ɪnɪts/ (n) Trong môi trường Macintosh, đây là một chương trình tiện ích thực hiện trong khi một hệ đang khởi động hoặc khởi động lại, như SuperClock hiển thị ngày và giờ hiện hành của hệ thống trong dải trình đơn, hoặc Adobe Type Manager dùng công nghệ phông chữ hình bao để hiển thị các phông chữ màn hình của Adobe.
Chú ý: Giống như các chương trình TSR (termiate-and-stay-resident) trong môi trường IBM, các INIT có thể tranh chấp lẫn nhau và làm đổ vỡ hệ thống. Nếu hệ thống của bạn chạy có vẻ chập choạng, thì hãy lấy từng INIT một ra khỏi System Folder và khởi động lại hệ thống; bạn có thể xác định được một INIT nào đó là thủ phạm.

ink-jet printer /'ɪŋk dʒet ˌprɪntə(r)/ (n) máy in phun mực

input /'ɪnpʊt/ 1 (n) dữ liệu nhập, sự nhập. 2 (v) hoạt động nhập dữ liệu vào máy.

input devices /'ɪnpʊt dɪˌvaɪsɪz/ (n) thiết bị nhập dữ liệu

integrated package /'ɪntəgreɪtɪd 'pækɪdʒ/ (n) gói phần mềm tích hợp

interface /'ɪntəfeɪs/ (n) giao diện

internal memory /ɪn'tɜ:nəl ˌmeməri/ (n) bộ nhớ trong

Internet /'ɪntənet/ (n) Internet, mạng toàn cầu

Internet relay chat /'ɪntənet 'ri:leɪ 'tʃæt/ (n) xem chat (hội thảo thông qua tiếp vận Internet)

Internet telephone /'ɪntənet 'telɪfəun/ (n) điện thoại Internet

Internet TV /'ɪntənet 'ti: 'vi:/ (n) TV Internet

interpreter /ɪn'tɜ:prɪtə/ (n) bộ diễn giải

Intranet /'ɪntrənet/ (n) mạng nội bộ công ty

IP address /ˌaɪ 'pi: ə'dres/ (n) địa chỉ giao thức Internet

J

Java /'dʒɑ:və/ (n) Ngôn ngữ Java

joystick /'dʒɔɪstɪk/ (n) gậy điều khiển,

justification /ˌdʒʌstɪfɪ'keɪʃən/ (n) căn chỉnh

K

kerning /'kɜ:nɪŋ/ (n) sự co dãn

key pals /'ki:pælz/ (n) bạn trao đổi thư điện tử

keyboard /'ki:bɔ:d/ (n) bàn phím

kilobit /'kɪləbɪt/ (n) 1024 bit thông tin

kilobyte /'kɪləbaɪt/ (n) kilobyte

L

laptop /'læptɒp/ (n) máy tính xách tay (máy tính có thể đặt vào lòng để làm việc)

laser printer /'leɪzə ˌprɪntə(r)/ (n) máy in laze

lightpen /'laɪtpen/ (n) bút quang

link /lɪŋk/ (n) liên kết

list server /'lɪst ˌsɜ:və(r)/ (n) xem mailing list.

load /ləʊd/ (v) tải

local area network (LAN) /ˌləʊkəl ˌeərɪə 'netwɜ:k (læn)/ (n) mạng cục bộ

login /'lɒgɪn/ (n) đăng nhập

log on /ˌlɒg 'ɒn/ (v) mở máy, nối máy vào hệ thống

log off /ˌlɒg 'ɒf/ (v) tắt máy

low-level language /ˌləʊ ˌlevəl 'læŋgwɪdʒ/ (n) ngôn ngữ cấp thấp

M

machine code /mə'ʃi:n kəʊd/ (n) mã máy

macro /'mækrəʊ/ (n) lệnh macro

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mailing list /'meɪlɪŋ ˌlɪst/ (n) danh sách địa chỉ thư

mail merging /'meɪl ˌmɜːdʒɪŋ/ (n) trộn thư

mainframe /'meɪnfreɪm/ (n) máy tính lớn

main memory /ˌmeɪn 'meməri/ (n) bộ nhớ chính

megabit /'megəbɪt/ (n) megabit

megabyte /'megəbaɪt/ (n) 1,024 kilobytes

megahertz /'megəhɜːts/ (n) megahertz

menu bar /'menjuː ˌbaː/ (n) thanh menu

microchip /'maɪkrəʊˌtʃɪp/ (n) chip vi xử lý

microprocessor /ˌmaɪkrəʊ'prəʊsesə(r)/ (n) bộ vi xử lý

mnemonic /nɪ'mɒnɪk/ (n) chữ viết tắt cho dễ nhớ

modem /'məʊdem/ (n) bộ điều chế, modem

monitor /'mɒnɪtə(r)/ (n) màn hình, màn hiển thị

mouse /maʊs/ (n) chuột

multimedia /ˌmʌltɪ'miːdiə/ (n) đa phương tiện

multitasking /mʌltɪ'taːskɪŋ/ (n) đa nhiệm, xử lý đa nhiệm

N

netiquette /'netɪket/ (n) nghi thức mạng

network /'netwɜːk/ (n) mạng

newsgroups /njuːzˌgruːps/ (n) nhóm tin

newsreader /'njuːzˌriːdə/ (n) chương trình đọc và gửi tin

node /nəʊd/ (n) nút, mắt

O

object language /'ɒbdʒɪkt ˌlæŋwɪdʒ/ (n) ngôn ngữ đích, ngôn ngữ đối tượng

object-oriented programming /ˌɒbdʒɪkt 'ɔːrɪentɪd 'prəʊgræmɪŋ/ (n) lập trình hướng đối tượng

octal system /'ɒktəl ˌsɪstəm/ (n) hệ đếm 8

offline /'ɒf laɪn/ (adj) ngoại tuyến

online /'ɒnlaɪn/ (adj) trực tuyến

operating system /'ɒpəreɪtɪŋ ˌsɪstəm/ (n) hệ điều hành

optical character recognition /ˌɒtɪkəl 'kærɪktə rekəgˌnɪʃən/ (n) nhận dạng ký tự bằng quang học

optical disk /ˌɒptɪkəl 'dɪsk/ (n) đĩa quang

optical fibre cable /ˌɒptɪkəl 'faɪbə ˌkeɪbəl/ (n) dây cáp quang

output /'aʊtpʊt/ 1 (n) đầu ra. 2 (v) xuất dữ liệu

output devices /'aʊtpʊt dɪˌvaɪsɪz/ (n) thiết bị đầu ra, thiết bị xuất

P

page description language /ˌpeɪdʒ dis'krɪʃən 'læŋgwɪdʒ/ (n) ngôn ngữ mô tả trang

palmtop /'pɑːmtɒp/ (n) máy tính bỏ túi, máy tính cầm tay

parallel port /ˌpærəlel 'pɔːt/ (n) cổng song song

Pascal /pæs'kæl/ ngôn ngữ lập trình Pascal

password /'pɑːswɜːd/ (n) mật khẩu

patterns /'pætənz/ (n) mẫu ký tự

peripherals /pə'rɪfərəlz/ (n) thiết bị ngoại vi

phosphor /'fɒsfər/ (n) photpho

photosetter /'fəʊtəʊˌsetə/ (n) thiết bị tạo ảnh

pica /'paɪkə/ (n) 1 pica = 4,33 mm

piracy /'paɪərəsɪ/ (n) sự ăn cắp bản quyền

pixel /'pɪsəl/ (n) điểm ảnh, phần tử ảnh

platform /'plætfɔːm/ (n) kiểu hệ thống máy tính, một loại hệ thống máy tính

plot /plɒt/ (v) vẽ, dựng (đồ thị)

plotter /'plɒtə(r)/ (n) máy vẽ

plug-ins /'plʌgɪnz/ (n) chương trình đặc biệt để mở rộng tính năng của trình duyệt sao cho có thể xử lý âm thanh, hình ảnh, hoạt hình, hình không gian 3 chiều

point /pɔɪnt/ (n) điểm

pointer /'pɔɪntə(r)/ (n) con trỏ

port /pɔːt/ (n) cổng

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PostScript /'pəʊsskrɪpt/ (n) ngôn ngữ mô tả trang

primary colours /ˌpraɪmərɪ 'kʌləz/ (n) màu sơ cấp, màu nguyên thủy

primitives /'prɪmɪtɪvz/ (n) nguyên thủy

printer /'prɪntə(r)/ (n) máy in

printer driver /'prɪntəˌdraɪvə(r)/ (n) trình điều khiển máy in

program /'prəʊgræm/ (n) chương trình

programming /'prəʊgræmɪŋ/ (n) lập trình

protocol /'prəʊtəkɒl/ (n) giao thức

proxy /'prɒksɪ/ (n) Một máy chủ đặc biệt dùng để điều khiển việc lưu thông giữa mạng Internet và mạng tư nhân

Q

quit /kwɪt/ (v) thoát, ra khỏi

R

random access memory (RAM) /ˌrændəm 'ækses ˌmeməri/ (n) bộ nhớ truy cập ngẫu nhiên

RAM cache (n) bộ nhớ truy cập nhanh

read only memory (ROM) /ˌriːd 'əʊnlɪ ˌmeməri (rɒm)/ (n) bộ nhớ chỉ đọc

real time /'rɪəl ˌtaɪm/(adj) thời gian thực

reboot /riː'buːt/ (v) khởi động lại máy

record /'rekɔːd/ (n) mẩu tin, bản ghi

recording heads /rɪ'kɔːdɪŋ ˌhedz/ (n) đầu ghi

refresh rate /'rɪfreʃ reɪt/ (n) tốc độ làm tươi lại

register /'redʒɪstə(r)/ (n) thanh ghi

resolution /ˌrezə'luːʃən/ (n) độ phân giải

router /'ruːtə(r)/ (n) bộ dẫn đường

routine /ruː'tiːn/ (n) thường trình thủ tục

ruler icons /'ruːlər ˌaɪkɒnz/ (n) các biểu tượng trên thước

S

save /seɪv/ (v) lưu

scale /skeɪl/ (v) co dãn

scanner /'skænə(r)/ (n) máy quét

Scrapbook /'skræpbʊk/ (n) Trong Macintosh, đây là một dụng cụ văn phòng dùng để giữ các hình đồ hoạ hay dùng, như tiêu đề trên đầu thư của công ty chẳng hạn, mà sau đó bạn có thể chen vào các tài liệu mới khi cần thiết.

screen saver /'skriːn seɪvə(r)/ (n) trình tiện ích tiết kiệm màn hình

scroll /skrəʊl/ (v) cuộn

search engine /'sɜːtʃ ˌendʒɪn/ (n) công cụ tìm kiếm

secondary memory /ˌsekəndərɪ 'meməri/ (n) xem backing store.

sector /'sektə(r)/ (n) cung, sector

serial port /ˌsɪərɪəl 'pɔːt/ (n) cổng nối tiếp

shareware /'ʃeəweə/ (n) phần mềm cổ đông, phần mềm tự động

silicon chip /'sɪlɪkən tʃɪp/ (n) chip làm bằng silicon

single in-line memory modules (SIMMs) /ˌsɪŋgəl ɪn laɪn 'meməri ˌmɒdjuːlz/ (n) môđun nhớ một hàng chân

smileys /'smaɪlɪz/ (n) ký hiệu thư điện tử

snail mail /'sneɪl ˌmeːl/ (n) dịch vụ bưu điện (chuyển thư rất chậm)

software /'sɒftweə/ (n) phần mềm

source program /'sɔːs ˌprəʊgræm/ (n) chương trình nguồn

spell checker /'spel ˌtʃekə/ (n) bộ kiểm tra chính tả

spooler /'spuːlə/ (n) chương trình Spooler (một chương trình thường nằm trong số những trình tiện ích của hệ điều hành, dùng để hướng các lệnh in cất tạm vào một tệp trên đĩa hoặc trong RAM thay vì vào máy in, và sau đó sẽ phát các lệnh in này ra khỏi bộ xử lý trung tâm CPU) rõi)

spreadsheet /'spredʃiːt/ (n) bảng tính

style /staɪl/ (n) kiểu dáng

subroutine /'sʌbruːtiːn/ (n) chương trình con, thủ tục phụ

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T

tags /tægz/ (n) các mã dùng trong file HTML để đánh dấu điểm đầu, cuối hoặc vị trí chính xác của một đặc tính đang format hoặc một đường link trên trang

teletext /'telɪ,tekst/ (n) dịch vụ Teletext – truyền văn bản từ xa

telex /'teleks/ (n) dịch vụ chuyển đổi tự động khi sử dụng thiết bị đồ họa từ xa

Telnet /'telnet/ (n) Trong các máy dựa vào hệ điều hành UNIX và được nối vào mạng Internet, đây là một chương trình cho phép người sử dụng tiến hành thâm nhập vào các máy tính ở xa thông qua các ghép nối TCP/IP

terabyte /'terəbaɪt/ (n) 1,024 gigabytes.

terminal /'tɜ:mɪnəl/ đầu cuối, thiết bị cuối

thesaurus /θɪ'sɔ:rəs/ (n) từ điển chuyên biệt

three-dimensional (3-D) /,θri:-dɪ'menʃənəl/ (adj) không gian 3 chiều

token /'təukən/ (n) thẻ bài, hiện dạng

track /træk/ (n) rãnh ghi

trackball /'trækbɔ:l/ (n) quả cầu đánh dấu, bóng xoay

transceiver /træn'zi:və(r)/ (n) máy thu phát

transformation /,trænsfə'meɪʃən/ (n) phép biến đổi, phép chuyển dạng

two-dimensional (2-D) /,tu:-dɪ'menʃənəl/ (adj) 2 chiều, không có độ sâu

typeface /'taɪpfeɪs/ (n) kiểu chữ

typeset /'taɪpset/ (v) sắp chữ

U

UNIX /'ju:nɪks/ (n) hệ điều hành UNIX

update /ʌp'deɪt/ (v) cập nhật

upgrade /,ʌp'greɪd/ (v) nâng cấp

upload /,ʌp'ləud/ (v) tải lên

Usenet /'ju:s,net/ (n) hệ thống Usenet, mạng người dùng

user-friendly /,ju:zə 'frendlɪ/ (adj) thân thiện với người dùng

user interface /,ju:zər 'ɪntəfeɪs/ (n) giao diện người sử dụng

utility /ju:'tɪlɪtɪ/ (n) tiện ích

V

videotext /'vɪdɪəuteks/ (n) văn bản video

virtual interface /,vɜ:tjuəl 'ɪntəfeɪs/ (n) giao diện ảo

virtual reality /,vɜ:tjuəl rɪ'ælətɪ/ (n) thực tế ảo, hiện thực ảo

virus /'vaɪərəs/ (n) virút máy tính

W

Web /web/ (n) web

Web site /'web saɪt/ (n) vị trí web

wide area network (WAN) /,waɪd ,eərɪə 'netwɜ:k (wæn)/ (n) mạng toàn cục

widow /'wɪdəu/ (n) mồ côi

window /'wɪndəu/ (n) cửa sổ

window-based /'wɪndəu ,beɪst/ (adj) dùng cửa sổ

word processor /'wɜ:d ,prəusesə(r)/ (n) bộ xử lý văn bản

word wrap /'wɜ:d ,ræp/ (n) ngắt từ

workstation /'wɜ:ksteɪʃən/ (n) trạm công tác, trạm làm việc

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