UNIVERSITY OF DA NANG

SCHOOL OF INFORMATION AND COMMUNICATION TECHNOLOGY

ENGLISH FOR INFORMATION TECHNOLOGY

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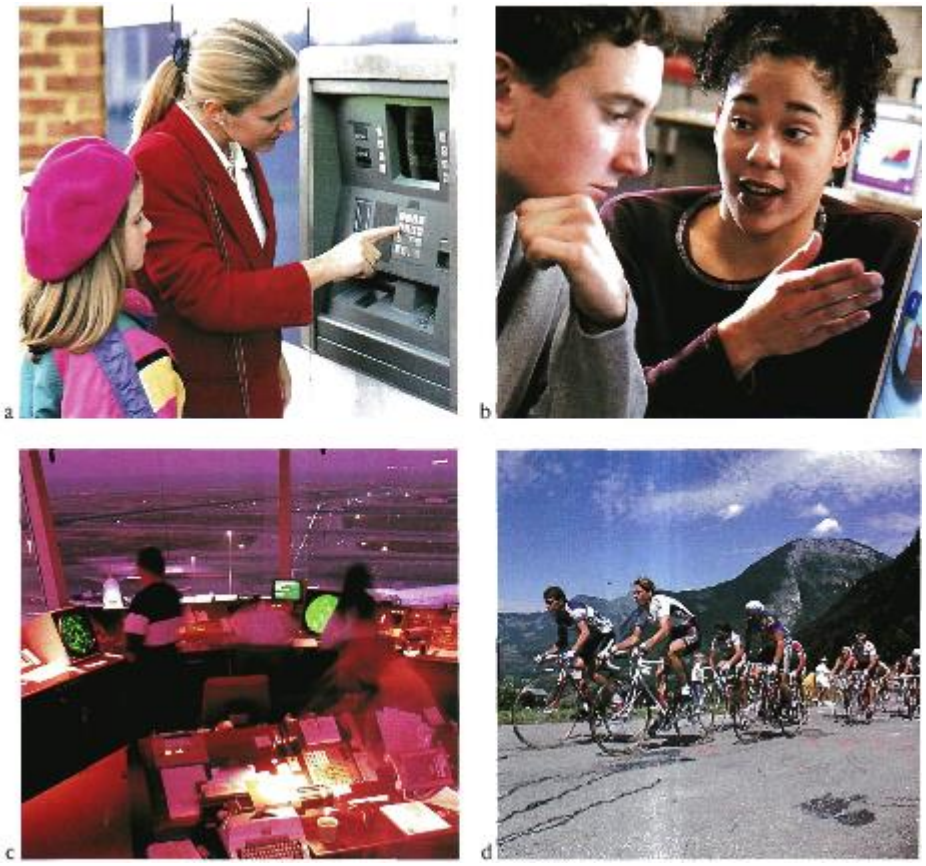
Tài liệu lưu hành nội

Unit 1: COMPUTER APPLICATIONS

1/ MATCH THE PICTURE:

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.



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

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.

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.

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 the Tour de France demands the use of computer technology ☐
Controlling air traffic ☐

C ***When you read texts like these, you don't always need to understand every word. But these 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 ….

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

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

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?

2/ LISTENING

Listen to these people talking about how they use computers at work and write each speaker's job in the table.

electrical engineer secretary librarian composer

Speaker	Job	What they use computers for
1		
2		
3		
4		

Now listen again and write what each speaker uses their computer for.

[1]

3/ 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 visits shops and offices which have been designed with the help of computers, we read magazines which have been produced on computer, we pay bills prepared by computers. Just picking up a telephone and dialing a number 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 customer's 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.

4/ LANGUAGE WORK: THE PRESENT SIMPLE PASSIVE

Look at the HELP box and then read the sentences. Fill in the blanks with the correct form of the verbs in brackets.
Example

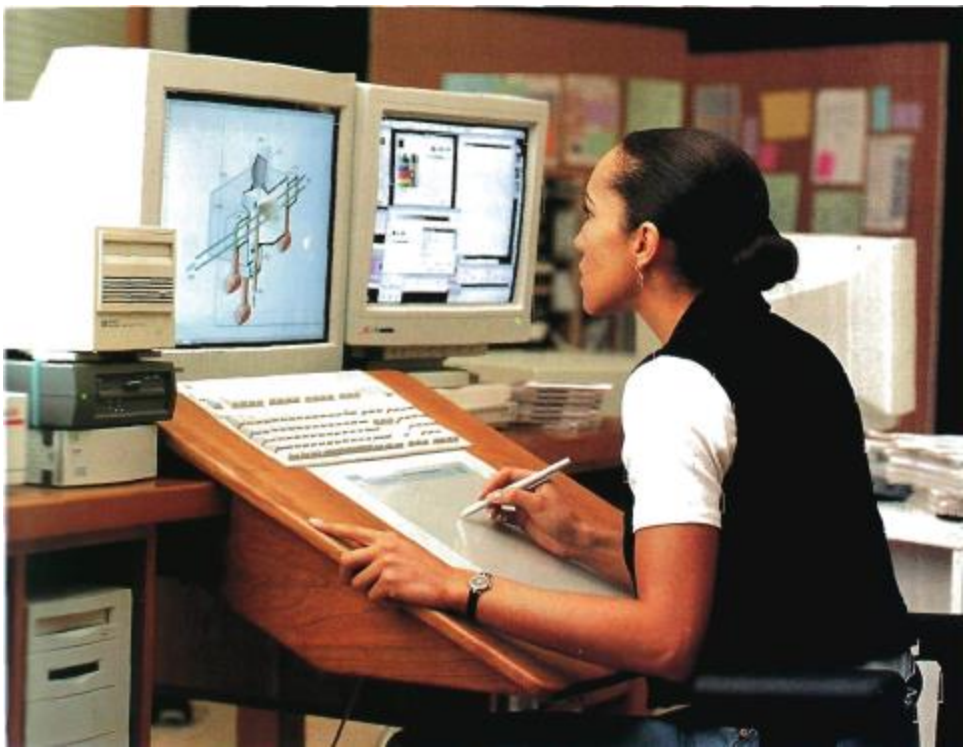
Houses (design) …….. with the help of computers.
Houses are designed with the help of computers.

1. Various terminals (connect) ……. to this workstation.
2. Microcomputers (know) ……..at ‘PCs’.
3. Magazines (typeset) ……...by computers.
4. When a particular program is run, the data (process) ……..by the computer very rapidly.
5. The Web (use)..... to search for information and buy products online.
6. The drugs-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 disk.

HELP box

The present simple passive

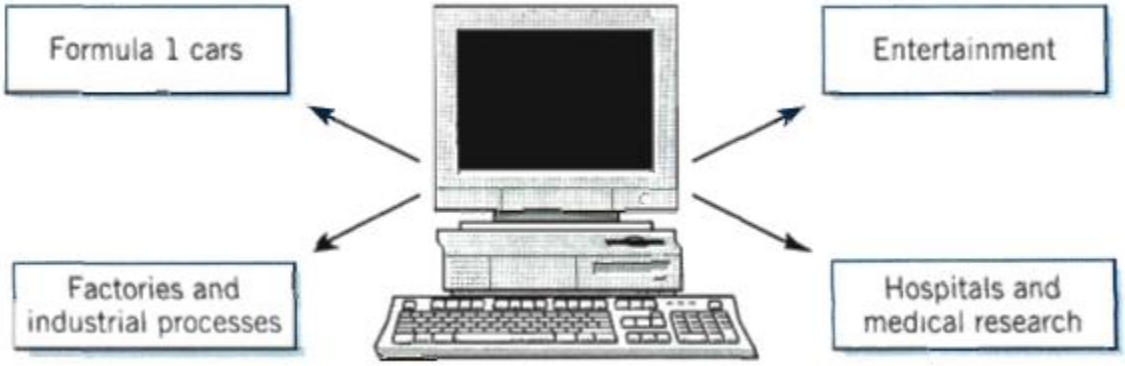
- You form the present simple passive with am/is/are + past participle, e.g.:
  - This program **is written** in a special computer language.
  - Program and data **are** usually **stored** on disks.
- Remember that the word data takes a singular verb (3rd person singular) when it refers to the information operated on in a computer program.
  - The data **is** ready for processing.



Computer have revolutionized the design process

5/ Other applications

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



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 idea to the rest of the class.

Examples

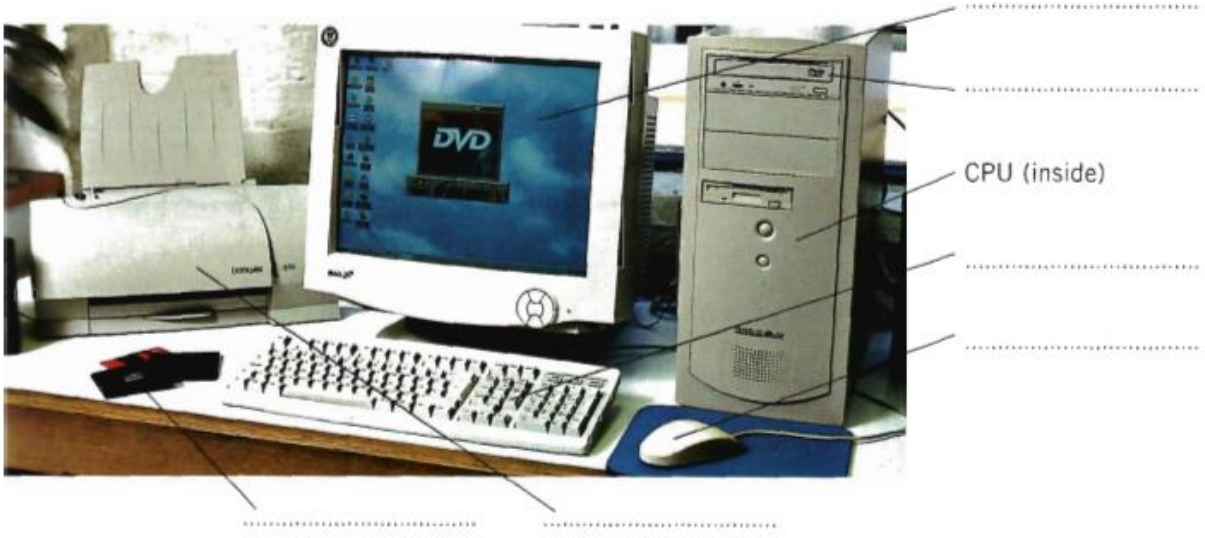
In business, computers are used for financial planning, accounting and specific calculations,

In the office, computers are used to write letters and e-mails, and keep records of clients, suppliers and employees.

Unit 2: COMPUTER ESSENTIALS

1/ WARM-UP

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



2 READING

Read the text and study the diagram on page 12.

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 on p.12).

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

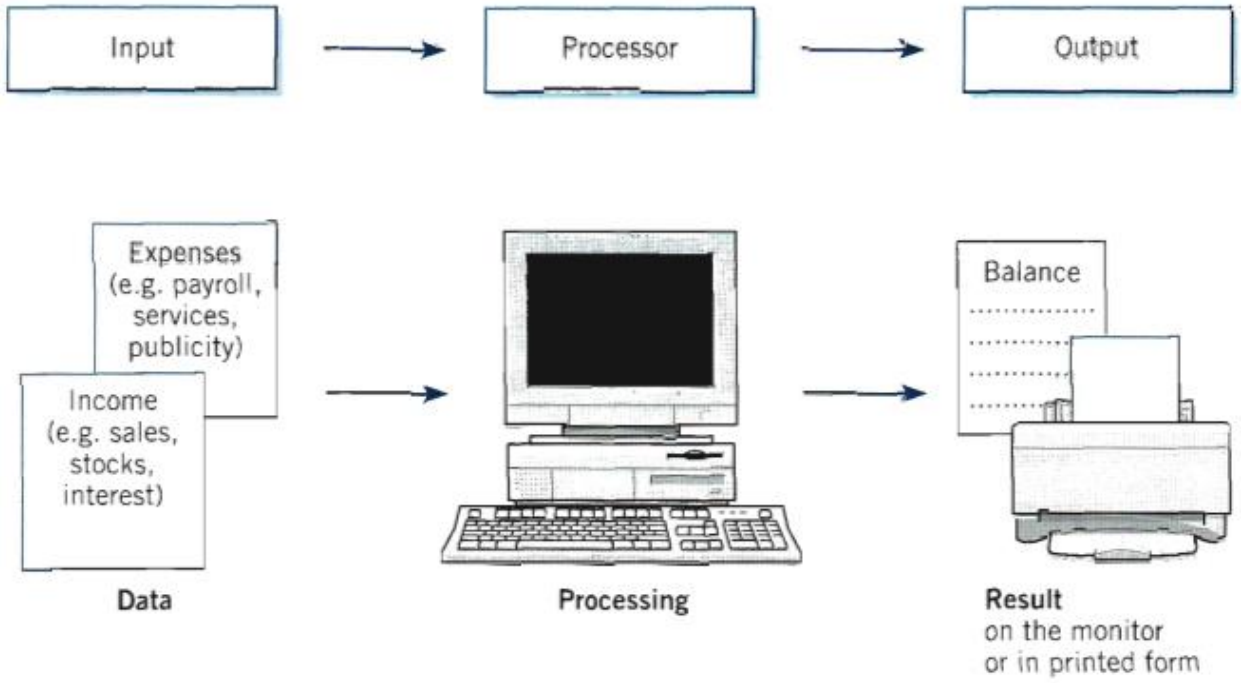
Perhaps the most influential component is the **central processing unit.** Its function is to execute program instructions and coordinate the activities of all the other units. In a way, it is the 'brain' of the computer. The **main memory** holds

the instructions and data which are current-ly 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 or hard disks) provide a permanent storage of both data and pro-grams. **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 sev-eral ports into which we can plug a wide range of peripherals — modems, fax machines, optical dri-ves and scanners.

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



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 central Processing Unit

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.	_____ _____ _____ _____ _____ _____ _____ _____ _____

3/ 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 colours.'	
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) Tower 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.'	
6 a) 'Your fingers will hardly know they're working.' b) 'Choose a full 105-key layout, and type with efficiency.'	

4/ GET READY FOR LISTENING

Before listening, answer these questions.

1 Have you got a computer at home, school or work? What kind is it?
2 How often do you use it? What do you use it for?
3 What are the main components and features (the configuration) of your computer system?

5/ LISTENING

A Listen to a short lecture given by John Griffiths, an expert on computer systems. As you listen, label the pictures on the next page •with these words:

Laptop	desktop PC	handheld	mainframe




A …….. B…….. C……. D…….

B Listen again and put a tick next to the correct answer.

1 According to the speaker:
a) a mainframe computer is less powerful than a minicomputer.
b) a mainframe is more powerful than a minicomputer.
c) a mainframe is not very powerful but can execute jobs very rapidly.

2 Mainframe computers are used by:
a) students and teachers in schools.
b) executives and businessmen.
c) large organizations that need to process enormous amounts of data.

3 'Multitasking' means:

a) access to a minicomputer through terminals.
b) doing a number of tasks at the same time.
c) connection to a 'host' computer by a network so that many users have access to data and programs.

4 The most suitable computers for home use are:
a) mainframes.
b) minicomputers.
c) microcomputers (PCs).

5 Handheld computers are:
a) Small enough to fit into the palm of one hand.
b) Bigger than laptops.

6/ LANGUAGE WORK: COMPOUND ADJECTIVES

Find these noun phrases in the text and explain their meaning as in the HELP box.

Help box:

A compound adjective is made up of two parts and usually describes appearance. The second part is frequently a past participle.

E.g. **Blue-eyed** girl = a girl who has got blue eyes

Sugar-free product = a product that uses no sugar

Wearable computer, aren't they chic?

Can you imagine wearing a PC on your belt and getting email on your eyeglasses? Wearable computers are battery-powered systems worn on the user's body - on belt, backpack or vest and are designed for mobile or hands-free operation, often incorporating a microphone and a head-mounted display.

Some devices are waist-mounted, equipped with a wireless modem, a keypad and a small screen. Others are voice-activated, worn like a scarf and can access email or voice mail.

Users of wearable technology consider themselves 'cyborgs'. This term comes from 'cybernetic organism', referring to a being that is part robot, part human.

Unit 3: INSIDE THE SYSTEM

1/ WARM-UP

HOW TO READ A COMPUTER ADVERTISEMENT

1 Intel Pentium 4 processor (3GHz, 800MHz FSB) **2** Mini-tower chassis **3** 1GB dual channel DDR2 SDRAM **4** 200GB Serial ATA hard drive (7200 r.p.m.) **5** 128MB PCI-Express video card **6** Integrated audio **7** 48X CD-RW drive **8** 19" TFT flat panel XGA (1024x768) monitor **9** Microsoft Windows XP Professional	

1 The main processing chip called a 'Pentium 4' that was designed and manufactured by the Intel Corporation. It operates at a clock speed of three gigahertz and has a front-side bus that operates at a speed of eight hundred megahertz.
2 A small, tall and narrow style of case containing the computer system.
3 Synchronous dynamic random access memory with a capacity of one gigabyte. It is a high bandwidth, double data rate memory.
4 A hard drive with a capacity of two hundred gigabytes that uses a type of connection interface known as Serial ATA i.e. It has a serial data connection rather than the original parallel connection. It rotates at speed of seven thousand, two hundred revolutions per minute.
5 Electronics for driving the graphics output that has a memory capacity of one hundred and twenty-eight megabytes and uses a type of connection interface known as PCI-Express.
6 Electronics for controlling the sound output that is built into the main electronics of the computer.

7 A compact disk read/write disk drive that operates at forty-eight times the speed of the original CD drives.
8 A nineteen inch, flat display screen made from thin film transistors with a resolution of 1024 by 768
9 The operating system that is used to control the system.

2/ READING

A Read the text below and then sentences 1-8 on page 18 . Decide if the sentences are true or false, and rewrite the false ones to make them true.

What's inside a PC system?

The nerve centre of a microcomputer is the Central Processing Unit, or CPU. This unit is built into a single microprocessor chip — an inte-grated circuit — which executes program instruc-tions 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 mem-ory. Another is the Instruction Register (IR) which holds the instruction that is currently being executed. (See Fig. 1.)

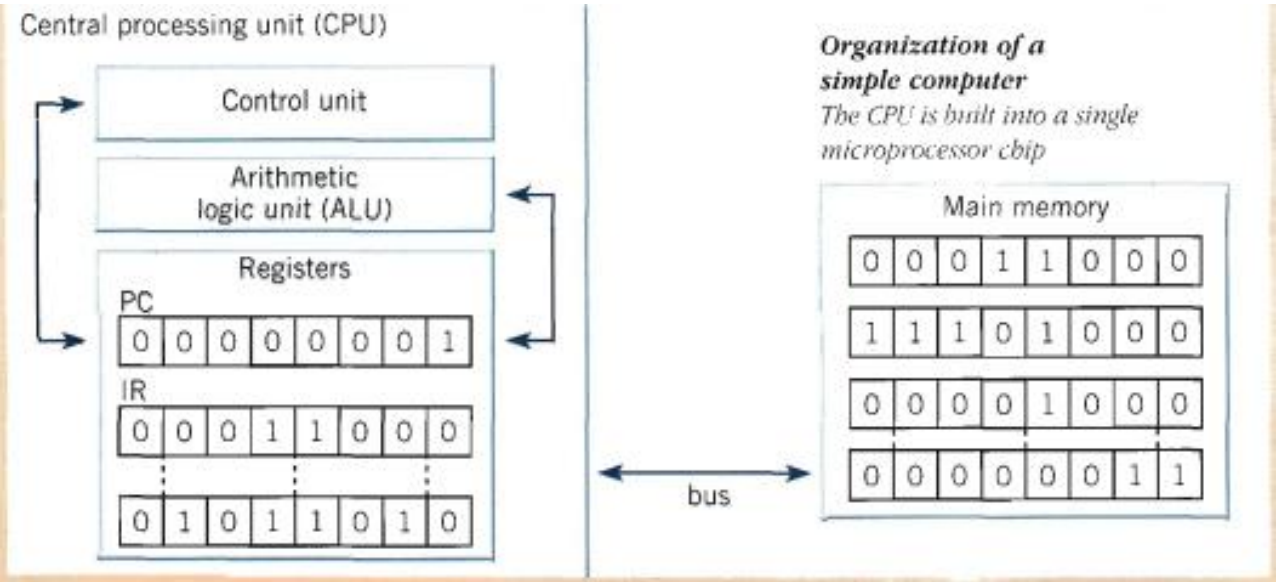
One area where microprocessors differ is in the amount of data — the number of bits — they can work with at a time. There are 8, 16, 32 and 64-bit processors. The computer's internal architec-ture is evolving so quickly that the new 64-bit processors are able to address 4 billion times more information than a 32-bit system. (See Fig. 2.)

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 memory 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.

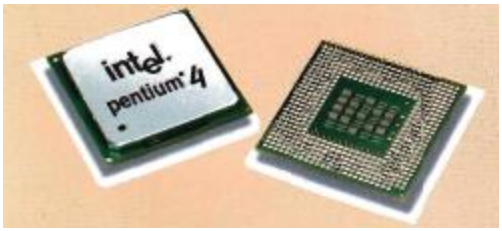
Most of today's computers have internal **expan-sion slots** that allow users to install acceleration cards or co-processors. As the word implies, an **acceleration card** is a board that increases the processor speed. A **co-processor** is a silicon chip that performs precise tasks and mathemati-cal operations at a very high speed.

The power and performance of a computer is partly determined by the speed of its micro-processor. A **clock** provides pulses at fixed inter-vals 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 GPU running at 50 MHz (50 million cycles per second) is likely to provide a very fast processing rate and will enable the computer to handle the most demand-ing applications.



Organization of a simple computer
The CPU is built into a single microprocessor chip

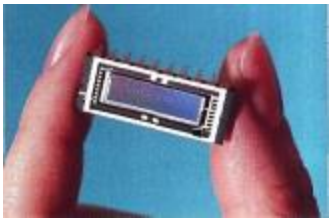
Figure 1



Microprocessor chip

Popular chips:

- Intel's Pentium (as show)
- AMD's Athlon
- Apple and IBM's PowerPC
- Sun's UltraSPARC



A RAM CHIP

The RAM capacity can sometimes be expanded by adding extra chips. These are usually contained in small circuit boards called single in-line memory modules (SIMMs). Modern Pentium processors also accept dual in-line memory modules (DIMMs), which allow for a wider data path.

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

Contextual reference

B What do the words in bold print refer to?

1 ... which executes program instructions and supervises... (line 3)

2 ... the instruction **that** is currently being executed, (line 14)
3 ... the amount of data — the number of bits — **they** can work with at a time, (line 17)
4 ... when the user runs an application, the microprocessor looks for **it** and ... (line 24)
5 ... **its** information is lost when the computer is turned off. (line 26)
6 A co-processor is a silicon chip **that** performs precise tasks ... (line 29)

C Match each item in Column A with its function in Column B. Then describe its function in two ways.

A Item	B Function
RAM	controls the cursor
processor	inputs data through keys like a typewriter
mouse	displays the output from a computer on a screen
clock	reads DVD-ROMs
flash memory key	reads and writes to electronic chips on a card
monitor	holds instructions which are needed to start up the computer
keyboard	holds data read or written to it by the processor
DVD-ROM drive	provides extremely fast access for sections of a program and its data
cache	controls the timing of signals in the computer
ROM	controls all the operations in a computer

D With the help of the Glossary if necessary, describe the function of these items.

1. Scanner
2. Printer
3. ATM
4. PDA
5. Hard disk drive
6. Barcodes
7. Memory
8. Mouse

3/ LANGUAGE WORK: RELATIVE CLAUSES

We can define people or things with a restrictive (defining) relative clause. Look at these sentences:

a) *The teacher **who** is responsible for the computer centre has just arrived.*

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

c) *The computer we saw at the exhibition runs at 100 MHz.*

In (a) we use the relative pronoun ***who*** because it refers to a person. We could also use the pronoun *that.* In (b) we use *which* because it refers to a thing, not a person. We could also have used *that.* In (c) the relative pronoun is not necessary. A relative pronoun can be omitted when it is not the subject of the relative clause.

Complete these sentences with suitable relative pronouns. Give alternative options if possible.

1 That's the CPU .....I'd like to buy.

2 The microprocessor is a chip ..... processes data and instructions.

3 The microprocessor coordinates the activities ..... take place in the computer system.

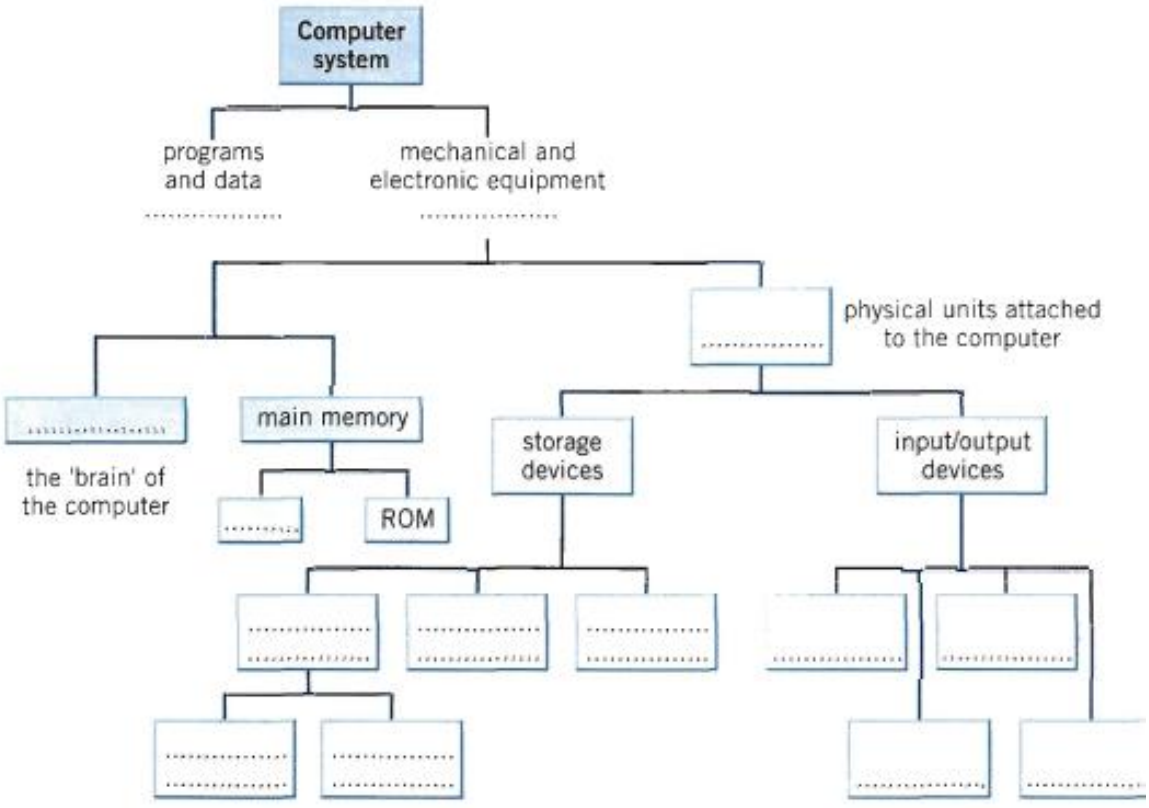
4 Last night I met someone ..... works for GM as a computer programmer.

5 Some Intel 80386 processors have an expansion socket..... allow us to install a math co-processor 80387.

6 A co-processor is a silicon chip ..... carries out mathematical operations at a very high speed.
7 A megahertz is a unit of frequency …….is used to measure processor speed.
8 Here's the floppy disk ..... you lent me!

4/ LISTENING

A Label this diagram with the correct terms.



5/ YOUR IDEAL COMPUTER SYSTEM

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

CPU: .....Speed.....
Minimum/maximum RAM:….. Hard disk:.....

Floppy disk drives:.....
Monitor: .....
Software: .....

B Now describe it to your partner. Useful expressions:

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

Unit 4: BITS AND BYTES

1/ Reading

A With a partner, try to answer these questions.

I 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 (IK) equals 1,024 bytes. Can you work out the value of these units?
1 megabyte = ... bytes/I,024kilobytes (kilo-: one thousand)
1 gigabyte = ... bytes/1,024 megabytes (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.

Units of memory

Bits — basic units of memory

Information is processed and stored in computers as electrical signals. A computer contains thou-sands 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 'under-stand' anything. Everything about computers is based upon this binary process. Each 1 or 0 is called a **binary digit,** or **bit.**

Bytes and characters

Is and Os 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 for the binary representation of characters. This is the American Standard Code for Information Interchange, known popularly as ASCII' (pro-nounced 'ask-key'). There are 256 different ways of combining 0 and 1 bits in a byte. So 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 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.

Kilobytes, megabytes and gigabytes

In order to avoid astronomical figures and sums in the calculation of bytes we use units such as kilo- bytes, 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 equiva-lent to 1,024 kilobytes, and one gigabyte is 1,024 MB.

We use these units (KB, MB, GB) to describe the RAM memory, the storage capacity of disks and the size of any application or document. For instance, the text of this book contains roughly 1 MB of information.

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



1 One……. represents one character	2 One……. represent 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)

2/ Word building

A Prefixes are often used in computer science. Knowing the meaning of the most common prefixes can help you understand new words. Look at the prefixes in this table.

Prefix	*Meaning*	*Examples*		
deci-	ten	*decimal*	*decimalize*	*decibel*

hexadeci-	Sixteen	*hexadecimal*		
kilo-	one thousand (1,000)	*kilocycle*	*kilogram(me)*	*kilowatt*
	(1,024 in binary: 2^{10})			
rnega-	Large	*megahertz*	*megalith*	*megaton*
	one million			
giga-	very large	*gigantic*	*gigabyte*	
	one thousand million			
mini-	small	*minibus*	*minimum*	*minimize*
micro-	very small	*microfilm*	*microphone*	*microwave*
bi-	two	*bidirectional*	*bidimensional*	*binary*

tri-	three	*tripartite*	*tricycle*	*trilingual*
Multi-	many -	*multi-racial*	*multi-user*	*multitasking*
Mono-	one	*monologue*	*monosyllable*	*monolingual*

B Explain the meaning of these expressions taking into account the value of the prefix and the sense of the base form.

Example: the binary system
The binary system is a notation which uses two digits, 0 and 1.

1 a minicomputer
2 a microcomputer
3 the decimal system
4 the hexadecimal notation
5 a multi-user configuration
6 a bidimensional chessboard
7 a tricycle
8 a monochrome computer
9 a CPU with 8 megabytes of RAM
10 a document of 3 kilobytes

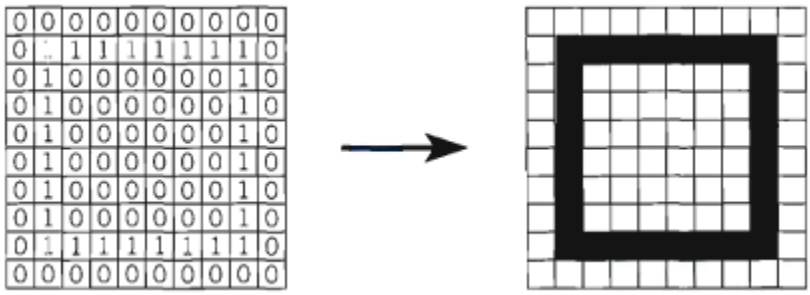
3/ Bits for pictures

A Read the questions and text and study the diagrams.

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 colour systems, if you have 8 bits per primary colour, the palette of your computer can obtain 16.7 million colours?

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



Refresh buffer (memory) *Display*

On colour systems, each pixel is a certain combination of the three primary colours: red, green and blue. The total number of colours which can be shown on the screen is called the colour 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 colour can generate up to 8, or 2^3, colours, as you can see from the table below. A graphics adaptor with 8 bits per primary colour can generate 16.7 million, or $(2^3)^8$ colours.
One bit per primary colour

Colour	*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

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 colours		e palette

1 The menu of colours 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 colour systems,...) into your language.

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

Unit 5: BUYING A COMPUTER

1/ Before you listen

Name eight different items you can buy in a computer shop.

2/ Listening

A You are going to hear two people making enquiries in a Macintosh computer shop. The shop assistant is telling them about the two models below. Listen and fill in the missing information.

iBook

Processor speed ……...
RAM standard……..…...
Hard disk capacity ……...
Price £1,207
DVD and Mac
OS included?……....

iMac

Processor speed ……...
RAM standard …...……
Hard disk capacity ……...
Price £1,207
DVD and Mac
OS included? ……....

B Now listen again and fill in the gaps below.

Assistant: Do you need any help?
Paul: Urn yes, we're looking for a personal computer
Have you got any fairly basic ones?
Assistant: Yes, sure. If you'd like to come over here
Paul: What different (1)..... are there?
Assistant: At the moment we've got these two models: The iMac, which is a desktop computer with a(2)..... Operating at 1 gigahertz, and the portable iBook, which has a processor (3)..... at 700 megahertz.
Sue: So the iMac is the (4)..... one. And which one has the most memory? I mean - which has the most RAM?
Assistant: Well, the iMac has 256 megabytes of (5) ……., which can be (6)..... Up to 1 gigabyte, and the iBook has 128 megabytes which can be expanded up to (7)..... It all depends on your needs. The iMac is suitable for home users and small offices. The iBook is ideal for student and for people who travel.

3/ Role play

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*
Portable	*486dx 66 MHz*	*4 MB expandable to 32*	*500MB*	*3.5" drive*	*colour LCD*	*£999*

IBM Aptiva	*Pentium Pro 166 MHz*	*16 MB expandable to 128*	*1.6GB*	*3.5" drive CD-ROM*	*Super VGA*	*£2,800*
HPVectra	*Pentium Pro 150 MHz*	*1 6 MB expandable to 256*	*2GB*	*3.5" drive CD-ROM*	*VGA Plus*	*£2,850*
Compaq	*Pentium 120 MHz*	*8 MB expandable to 128*	*1 GB*	*3.5" drive CD-ROM*	*SuperVGA*	*£1,430*
Sunrise	*PowerPC 133 MHz*	*8 MB expandable to 64*	*850MB*	*3.5" drive CD-ROM*	*Sony Multiscan*	*£1,710*

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.

4/ Read and talk

A Read the descriptions of the four people and the four computers below and on the next page. 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 modeling. 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.

<table>
<tr>
<td> 

DEC workstation Alpha AXP
- DEC chip 21064 processor at 133 MHz
- 128 MB RAM expandable up to 512 MB
- Disk capacity: 2.1 gigabytes
- Supports several graphics formats</td>
<td> 

Amstrad PC
- Intel 386sx main board. IBM AT-compatible
- Running at 16 MHz
- A full 1 MB of RAM upgradable to 16 MB
- High density 3.5", 1.44 MB floppy disk drive</td>
</tr>
</table>

- Lets you attach peripherals and link up to nearly any network *- Allows you to handle your toughest technical, commercial, scientific and business-critical applications* *- System software: OpenVMS AXP, DEC OSF/1* *- £5,049*	*- 4 expansion slots and room to add extra floppy disk drives* *- 80 MB fast-access hard disk* *- MS-DOS and Windows* *- £700*
 ***Compaq Centura Notebook*** *- 486sl 25 MHz processor* *- 4 MB RAM (expandable to 20 MB)* *- 120 MB fixed disk* *- 3.5" 1.44 MB floppy disk drive* *- 9" colour VGA display* *- Compaq trackball mouse* *- Slot to add a modem, or a network card* *- The battery provides over three hours of continuous use* *- Weighs only 6.2 lb* *- Windows and MS-DOS come pre-installed* *- £1,799*	 ***Power Macintosh Audiovisual 7100/80*** *- PowerPC processor at 80 MHz* *- 8 MB of RAM expandable to 136 MB* *- 2 MB of video RAM memory* *- 350 MB or 700 MB hard disk* *- 3.5", 1.44MB SuperDrive* *- Comes with sound board and built-in microphone* *- Includes CD-ROM optical drive* *- Macintosh operating system and QuickTime (a system extension that lets you play the video on the computer)* *- £2,790*

5/ Writing

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

UNIT 6: TYPE AND CLICK!

1/ Interacting with your computer

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.*

A Link the inputs on the left and the outputs on the right with the appropriate peripherals in the centre.

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

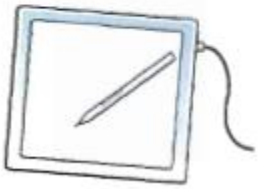
1 .....

2 .....

3 .....

4 .....

5 .....



6 .....

7 .....

8 .....

2/ Listening

A Listen to these descriptions of three input devices. What are they?

1 .....
2 .....
3 .....

B Check your answers with a partner.

3/ Language work

In Task 2 the mouse was described like this:

1 *This is a device for controlling the cursor and selecting items on the screen.*

We could also describe it like this:

2 *A mouse is a device which controls the cursor.*

3 *A mouse is a device which/that is used to control the cursor.*

4 *A mouse is a device used to control the cursor.*

From these examples you can see that we can describe the function of an object in several ways:

1 *for + ing (for controlling]*

2 relative pronoun + verb *(which controls]*

3 relative pronoun + *is used + to +* infinitive *(which/that is used to control]*

4 *used + to +* infinitive *(used to control)*

Use these notes to write a similar description of a joystick.

Input device

Use: play games

The user takes hold of a lever to control/move the cursor around the screen

4/ About the keyboard

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

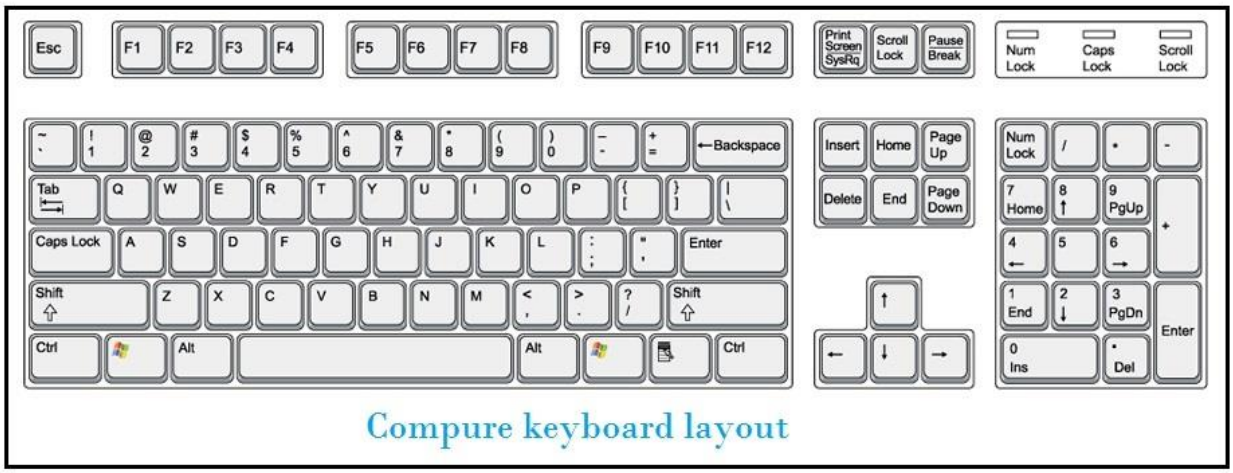
1 Alphanumeric keys: arranged in the same order as a typewriter.

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).

5 Special keys: used to issue commands or to produce alternative characters in key, combinations, for example, the Alt key.



Compure keyboard layout

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 application. (.....) 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

5/ 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 answers 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.

Mice are so widely used in graphics applications because they can do things that are difficult, if not impossible, to do with keyboard keys. For exam-ple, 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 key-board 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 point-er on an object on the screen, lor 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) i

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

click **double-click** **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. 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.)

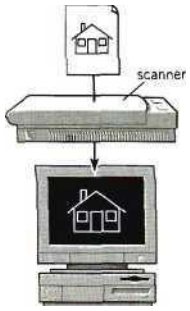
Unit 7: CAPTURE YOUR FAVOURITE IMAGE

1*/ The eyes of your computer*

You can capture your favourite pictures using three different input devices:
a scanner, a digital camera, or a camcorder.
Use the information below to answer these questions.

1. Which device is used to input text and graphic images from a printed page?
2. How does a colour scanner work?
3. Do digital cameras use film? How do they store photographs?
4. Which device would you use to take digital video?
5. What kind of software is used to manipulate video clips on the computer?
6. What do you think are the benefits of using scanners and cameras at home and in business?

What does a scanner do?



A scanner 'sees' images and converts the printed text or pictures into electronic codes that can be understood by the computer. With 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 the digitized image that is sent to the computer and stored as a file.

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

What does a digital camera do?

A digital camera takes photos electronically and converts them into digital data (binary codes made up of 1s and 0s). It doesn't use the film found in a normal camera; instead it has a special light-sensitive silicon chip. Photographs are stored in the camera's memory before being sent to the computer. Some cameras can be also connected to a printer or a TV set, to make viewing images easier.

What does a camcorder do?

A camcorder, or digital video camera, records moving pictures and converts them into digital data that can be stored and edited by a computer with special video editing software. Digital video cameras are used by home users to create their own movies, or by professionals in computer art and video conferencing.

They are also used to send live video images via the Internet. Then they are called Web cameras or webcams.

2/ Listening

Listen to the conversation between Vicky Cameron, an Information Technology (IT) lecturer, and one of her students, and complete these notes.

1 The technology used in scanners is similar to that used in.....
2 A laser beam reads the image in.....
3 The image is then.....
4 Text is scanned with.....
5 Flatbed scanners can scan.....
6 Slide scanners are used to scan.....
7 Hand-held scanners are used for capturing.....

3/ Facts and opinions

A Read the advertisements below and underline what you think are facts and circle the opinions. Then write them in the table on p.46.

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

HELP box

- **dpi:** dots per inch
- **JPEG**: - a standard format in image compression.

The ColourScan XR from Sunrise

The ColourScan XR from Sunrise is a flatbed scanner with 600 dpi 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 colour compositions, video and animation work.

It comes complete with its own image- capture software which allows for colour and grey retouching. And it's easy to use. What more could you want for only £290? It couldn't be cheaper.

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

ColourScan 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 colour. 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 colour definition and sharpness. And it comes with OCR software and Adobe Photoshop, so you can manipulate all the images you capture.

This is a fantastic machine you will love working with. And at only £510 it is an excellent investment.

	ColourScan XR	*ScanPress 800*
Facts	Flatted scanner 600 dpi of resolution	Self-calibrating, flatted scanner
Opinions	You can get crisp, clean scans	The highest technology

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?

4/ Language work: Comparatives and superlatives

Apart from catchy slogans and other persuasive techniques, advertisements often use the comparatives and superlatives of adjectives and adverbs. Read the following examples from advertisements. What can you say from these examples about how comparatives and superlatives are formed?

1 ... only ten times faster.
2 It couldn't be cheaper.
3 The manufacturers have chosen the highest technology ...
4 The cleverest personal scanner ...
5 The most revolutionary computer peripheral ...
6 The best scans with the least effort …
7 Flatbed scanners are more accurate than ...
8 Now you can edit your documents more easily than ever, and they'll look better than ever too with ...

5/ Word building

The class of a word can often be changed by adding a suffix. For example, if *-er* is added to the verb *scan* (and the 'n' is doubled) we get the noun *scanner*.

Common adjectival suffixes are*: -ing, -y, -able, -ible, -ive, -al, -ed, -ful*
Common noun suffixes are*: -er, -or, -ion, -tion, -ation, -ment, -ness, -ity; -ant, -logy*

Put the words in the box into the correct column below.

Computer self-calibrating easy resolution sharpness information printed personal capable compression technology calculator useful assistant expensive possibility reducible investment

Adjectives	Nouns
……	……
……	……
……	……
……	……
……	……
……	……
……	……
……	……
……	……
……..	……

6/ Advertisement: A digital camera

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

Vivid easy-to-use faster fashionable wide shots

If you want great pictures from an (1).....digital camera, you want the Kodak DC215. Now you can capture life's memories in style with this sleek and (2).....digital camera.

The camera's 2X (29 mm-58 mm) optical zoom Jens lets you get close up and personal without sacrificing image detail or quality while the (3).....angle lens design helps you capture more in each shot.

With one million (1152 x 864) pixels, you'll have enough detail to generate crisp, (4).....realistic photos up to 5" x 7".

The 1.8" colour LCD lets you preview and review your pictures so you get only the (5).....you want and let you delete those you don't.

With the included USB COMPACTFLASH Card Reader, you can download pictures up to ten times (6).....than with serial connections for faster image sharing.

Unit 8: VIEWING THE OUTPUT

1/ Warm-up

After the information has been processed by the CPU, we can see the results on the screen. This is also called a monitor or visual display unit (VDU).

Describe the monitor of your computer to another student. Use these questions to help you.

- Is it a monochrome or a colour monitor?
- What size is the screen?
- Does it have a cathode ray tube or a flat LCD screen?
- How can you change the picture using the controls?
- Does it produce a high quality image?

2/ Reading

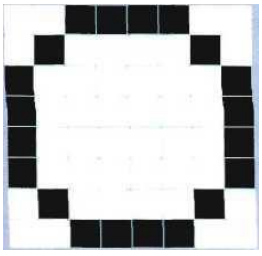
A Read the text and try to guess the meaning of any new words in the box below. Refer to the Glossary if necessary.

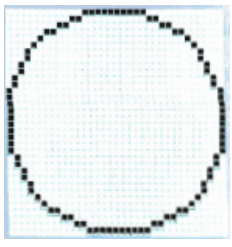
Dot pixel display resolution cathode ray tube electron beam scan (verb) hertz refresh rate flicker bit-mapped visualize

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.

Typical resolutions are 640 x 480 or 1,024 X 768 pixels. The diagrams on page 50 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 15 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 20 continuous sequence, similar to the movement of our eyes when we read, but much faster. This sequence is repeated 50, 70 or 85 times per second, depending on the system. If the rate of this repetition is low, we can perceive a 25 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 30 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.

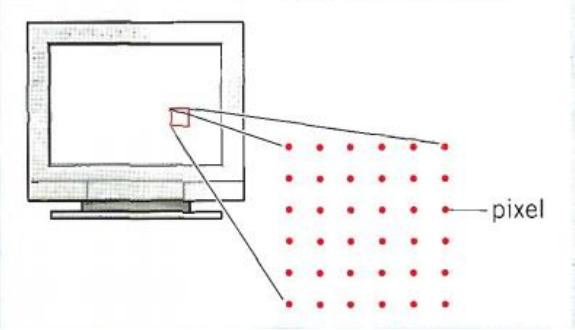
On colour displays, there are three electron 35 guns at the back of the monitor's tube. Each gun shoots out a beam of electrons for each of the primary colours: red, green and blue. These electrons strike the inside of the screen which is coated with substances called 40 phosphors that glow when struck by electrons.

Three different phosphor materials are used - one each for red, green and blue. To create different colours, 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 colour monitors.

Now flat-screen monitors are fashionable. They are inherently flat, and therefore require less space. In addition, they give crisp, clear images and eliminate screen flicker.

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.



Each dot on the screen is a pixel

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 use LCD displays?

3/ Writing

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

	Type	*Size*	*Pixel res.*	*Visual display*	*Refresh rate*	*Til-and -swivel*	*Other features*
Monitor A Compaq TFT 8020	Flat-panel LCD	18.1"	1024 x 768	16.7 million colours	75 Hz flicker-free	√	Energy saver mode
Monitor B Paintview	CRT monitor	19"	1280 x 1024	16.7 million colours	85 Hz flicker-free	√	anti-glare filter

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

1. This is a flat-panel Liquid Crystal Display The screen size is 18.1 inches (diagonal viewable image size).
2. You get a resolution of 1024 by 768 pixels.
3. It offers support for 16.7 million saturated colours.
4. This digital display has a 75 hertz refresh rate. It never flickers (the images are bright, sharp, and distortion-free).

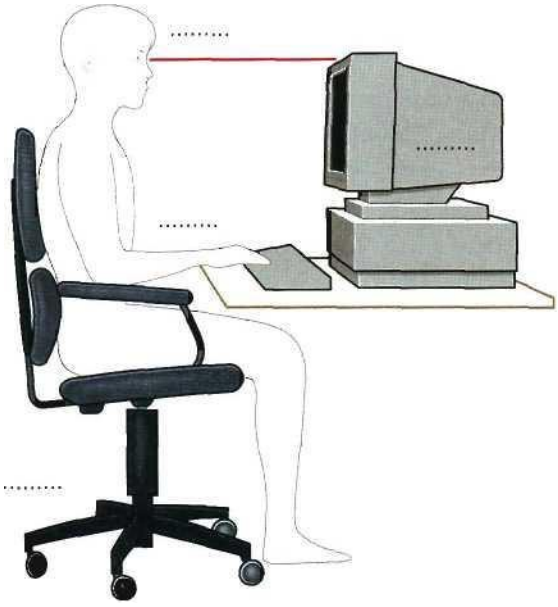
5. You can change the orientation of the display, adjusting your viewing angle back and forth.
6. It has a built-in power feature that saves a lot of energy consumption.

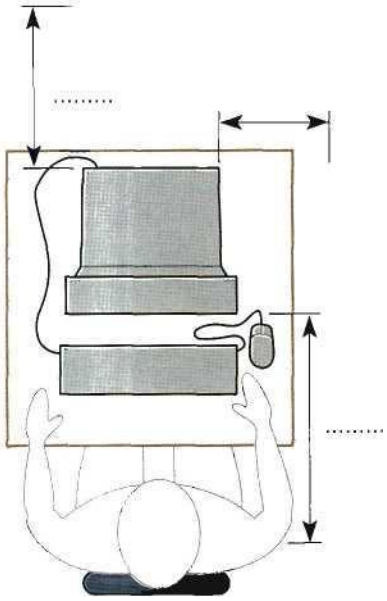
B Use the example above to help you describe Monitor B.

4/ Listening

Tony Clark, a lecturer in computer ergonomics, is talking to some students about health and safety in a computer classroom. Listen and complete the sentences below. Then decide where they should go in the picture. Write the number of each in the correct place.

1. You should get a good chair, one that ……..…
2. Position the keyboard…….
3. Position the monitor……eye level, or just……....
4. A tilt-and-swivel display lets you……..
5. You should stay an arm's length away from…….
6. If you work in a room with a Jot of computers, sit……...





5/ Language work: Instructions and advice

Look at the HELP box and then rewrite the sentences below about what you should do to protect your eyes. Use modal auxiliary verbs in your sentences.

HELP box
Instructions and advice

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

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

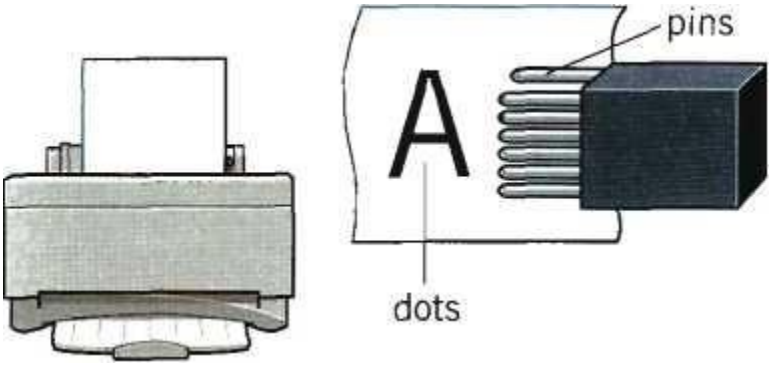
1. Do not stare at the screen for long periods of time.
2. Avoid placing the monitor so that it reflects a source of bright light, such as a window.
3. Keep the screen clean to prevent distorting shadows.
4. If you work in an office with a large number of computers, don’t sit too close to the sides or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

Unit 9: CHOOSING A PRINTER

1/ Reading

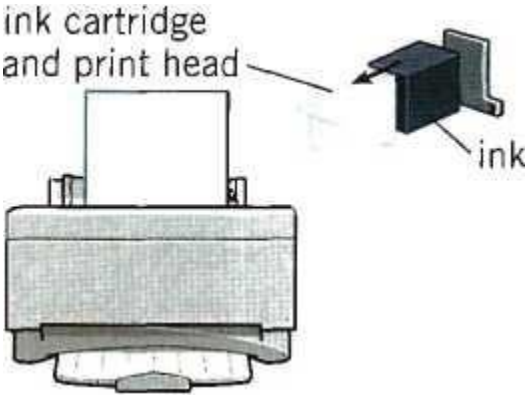
A How many kinds of printers can you think of? Make a list

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



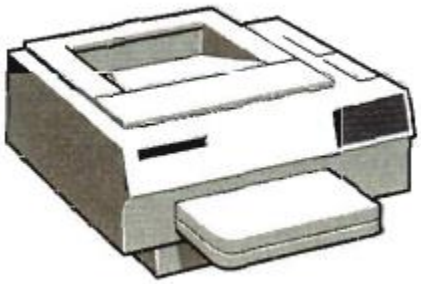
The resolution depends on the number of pins (9, 24 or 48)

1……...



The quality (resolution) of the images ranges from 300 to 1,200 dots per inch (dpi)

2……



Provides high quality output - a resolution of 600,/2,400 (dpi)

3……

Provides the highest resolution -

more than 3,000 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 10 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 500 characters per second (cps); *however*, they

produce relatively low 20 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 25 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 30 *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.

Laser printers produce output at great speed and with a very high resolution of 600/2,400 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 40 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 for home users.

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 colour models that emulate HP (Hewlett Packard) plotters cost too much to be included in *the same* category.

Imagesetters can be regarded as an attractive alternative. They produce very high-resolution output (up to 3,540 dpi) on paper or microfilm. *In addition*, they are extremely fast. They are used in desktop publishing. *Although* they produce the highest quality output, they have one important drawback: they are too expensive for homes or small offices.

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	
Imagesetter	
Plotter	

2/ Discourse cohesion

Reference signals

A Read the text and say what the boxed 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 500 characters per second (cps).

Linking devices

B 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*

C Write a short text about the pros and cons of a printer or printers you use. Use some linking devices from the list above. Write about these aspects: type, cost, speed, noise, output quality, resident fonts.

3/ Listening

Listen to the radio interview and tick (√) the statements about ink-jet printers that are true.

1. Ink-jet printers are quieter than dot-matrix printers.
2. Ink-jet printers are cheaper than dot-matrix printers.
3. Ink-jet printers are not real competition for laser printers.
4. Ink-jet printers can easily print on envelopes, labels and transparencies.
5. Ink-jet colour printers use four inks: magenta, yellow, cyan and black.
6. Ink-jets are ideal for workgroups and large businesses.

B Listen again and, with the help of a partner, correct the statements that are not true

4/ 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.*

5/ 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. 'Phis printer offers laser quality at a lower price.
8. Monochrome printers operate faster than colour ones.
9. Dot-matrix printers are too slow
10. Dot-matrix printers are not quick enough

B Look at the advertisements again and compare the printers. Talk about their: speed, memory, fonts, emulations, resolution, service, price, noise. Use adjectives from the box below.

fast	slow	high/low quality		noisy	quiet
cheap	expensive	easy	difficult		simple
powerful	reliable		adaptable		expandable
compatible with					

Unit 10: I/O DEVICES FOR THE DISABLED

1/ 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 soft re	keyboard voice recognition
Braille printer	voice recognition system
adaptive switch	screen-pointing device
optical head pointer	system screen-pointing
motor-impaired person	pneumatic tube (sip and puff)

2/ Reading

Reading

A Read the text below and find:

1 the name of the law that ensures equal opportunity for persons with disabilities in the US.
2 the type of software which is recommended for someone with low or partial vision.
3 the type of software that reads printed material, recognizes the text and then sends it to the PC.
4 the switch that can be used by someone with quadriplegia.
5 the function of voice recognition devices.
6 the device used by the disabled person at the Center for the Handicapped in Seattle.
7 how the blind student (in the photo) interacts with the machine.
8 how Bob Love enters information into the computer.

Computers for the disabled

Computers have taken a dominant role in our society, so most new jobs require access to computers and the Internet. But what happens if a person is blind, deaf or motor-disabled? They needn't worry. The latest assistive technology is designed to help them use computers and do their jobs in the office, learn at school, or interact with their families at home. In addition, new laws oblige employers to adapt :d the workplace to accommodate disabled people. For example, companies in the USA are subject to the Americans with Disabilities Act or ADA. This makes it illegal for employers to discriminate against people with disabilities.

The first task in adding assistive 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 :o such as Braille, magnification, speech synthesis and Optical Character Recognition (OCR).

Modern Braille keyboards have Braille lettering on keyboard overlays, allowing the blind user to

easily identify each key. For Braille output, there are printers that can emboss Braille on both sides of a page at high speed.

For someone with limited but usable vision, a screen magnification program may be appropriate. Magnification programs can enlarge text appearing on the screen by up to 16 times. In addition, they are now being developed with various levels of speech output capabilities, and work with all applications, including the Internet.

A disabled person using a voice command- activated, computer at Center for the Handicapped in Seattle. He operates the system with a headset microphone, muscle switches and a joystick control.

A speech-synthesis system is used to read aloud the work on the computer. It has a speech-synthesizer, which produces the audio output, and a screen reader, the program which reads aloud text and menus from word processors, databases, and even the Web.

A blind student using an adapted keyboard, in the presence of his tutor. The headphones and a screen reading program allow him to hear the text from the screen.

OCR uses a flatbed scanner and specialized OCR software to read printed material and send the text to the computer. Then the PC can produce a copy of the text in Braille, a magnified copy, or a version that can be read aloud by a speech-synthesis system.

Deaf computer users can overcome many communication difficulties with the aid of visual alerts and electronic note takers.

Visual alerts are indicators that alert the deaf user when there is an error. So instead of hearing a sound, the user is alerted by a menu bar blinking or by a message on the screen. Electronic note-takers are devices which print out what is

spoken in meetings or business presentations, where lip-reading is not possible.

Motor-impaired workers unable to type on a standard keyboard can employ expanded or ergonomic keyboards, on-screen keyboards, adaptive switches and voice recognition systems.

On-screen keyboards are software images of a keyboard that appear on the screen and may be activated with a trackball, touch screen, screen-pointing device, or eye movements. In an eye-gaze system, the keys on the virtual keyboard are activated by the user's eyes when they pause on a key for 2 or 3 seconds.

Switches come in many shapes and sizes. They are operated by muscle movements or breath control. For example, a pneumatic switch - known as 'sip and puff - allows someone with quadriplegia to control the PC by puffing and sipping air through a pneumatic tube.

Voice-recognition allows the computer to interpret human speech, transforming the words into digitized text or instructions.

Bob Love was born with no arms. He uses an overlay keyboard with his feet and the computer and monitor on the floor. The key overlays give a much larger surface for each key.

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

a Braille b speech synthesizer c electronic note-taker d on-screen keyboard e eye-gaze system

1. a keyboard displayed within the computer screen. 2. a system of writing and reading (using raised dots) for blind people, to enable them to read by touch. 3. a hardware device used in conjunction with a screen reader program to convert screen contents into spoken words 4. a system activated by the movement of the user's eyes 5. a device used by deaf users to record and print out what is spoken in a meeting	

3/ Language work: Noun phrases

A Look at the HELP box and then the noun phrases 1 to 7. Decide what type of modifier(s) is/are placed before the 'head' in each case.

Types of modifiers

a adjective

b participle

c 's genitive

d noun

1 disabled worker
2 rehabilitation engineer
3 employee's abilities
4 external adaptive switch
5 Windows-based applications
6 pointing device
7 speech synthesizer

HELP box
Noun phrases
In describing a noun phrase, we can distinguish two components:

the head

the modifier - notably adjectives and nouns. Thus:

- compatible computer
  modifier head
- machine code
  modifier head

We have the following range of modifiers:

adjectives

I like this portable computer.
- a computer which is portable

participles

I like this drawing and painting program.
- a program that draws and paints I like this pocket-sized computer.
- a computer that fits into your pocket

's genitive

I like the director's computer.
- the computer which belongs to the director

nouns

I like this colour scanner.
- a scanner which works in colour

Explain the following noun phrases.

Examples

memory chips	*chips of memory*
disk controller	*a device which controls the disk drive*

1 screen reader
2 printing devices
3 company's database
4 adapted keyboards
5 magnification program
6 movements

4 Listening

A Mike Hartley is a director of the Adaptive Technology Project for the Blind in Washington, DC. Listen to this interview with him in which he discusses the needs of blind computer users and make notes.

- Work he's involved in:.....
- Minimum configuration required to meet the needs of these workers:
  Processor:.....
  RAM:.....
- Expansion slots:.....
- Specific technologies (input/output devices):.....
- Companies that are developing adaptive equipment:.....

B Compare your notes in pairs.

C Listen again and complete your notes.

5 Writing

Write a letter to Mike Hartley asking for information about computers for the disabled. Make sure you include the following points.

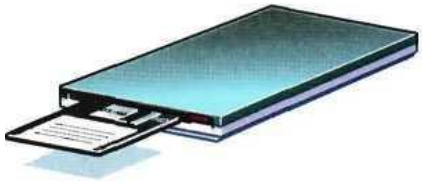
- Begin by saying why you're writing:
  I am writing to ...
- Ask for information about specific I/O equipment for deaf, blind and motor-disabled workers:
  I would like to know …
  Ask for a free handbook about how to add adaptive technology to personal computers:
  I would be very grateful if...
-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

Unit 11 MAGNETIC DRIVES

1 Types of drives

Look at the illustrations and find out:

1. the size of a floppy disk
2. the storage capacity of a high density diskette
3. the name of a hard drive on a PC platform
4. the storage capacity of a SyQuest cartridge
5. the system that can hold 10 GB tapes
6. a type of drive used by digital cameras and music players.



3.5-inch diskette
A high-density (HD) floppy can store 1.44 MB of information. A floppy drive uses 3- 5-inch disks and it's called drive A.

Hard disk
Most PCs have one hard drive, called drive C. It's used to keep software and files organized in a convenient way. A hard disk can hold several gigabytes of data.

Removable hard drive
Popular drives are the Zip and Jaz systems from Iomega. A Syquest cartridge can hold 1.5 GB.

Tape drive
A tape drive stores data on tape cartridges. It's used for backup purposes. A Digital Audio Tape drive can hold up to 10 GB of data.

Pocket-sized drive
Ultra portable drives are used with mobile computers. They hold 40 MB disks.
The Peerless system can hold 20 GB disks, which allows you to store thousands of MP3s and video games.

Microdrive
A Microdrive is the smallest hard drive for digital cameras, laptops, and audio players. It comes in 340 MB and 1 GB capacities. It uses a PC Card adapter.

2 Listening

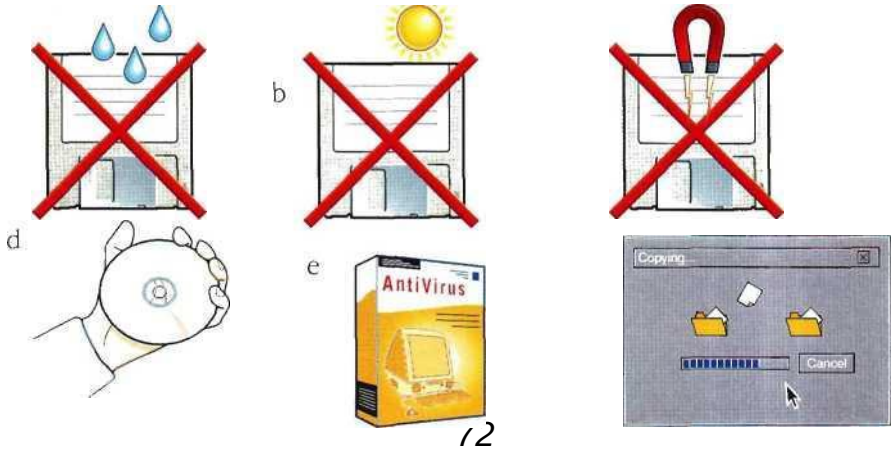
Sue is in a shop. Listen to the conversation and answer these questions.

1. What type of drive does Sue want to buy?
2. What's the storage capacity of a Zip disk?
3. How much information can be stored on a Jaz disk?
4. What type of disk is a good substitute for diskettes?
5. How much is a Jaz drive?
6. Which system is ideal to store MP3 music and videos - the Jaz or the Peerless?

3 Protect your data

A Match the instructions to the pictures.

1. Protect your floppies against high temperatures.
2. Check for viruses before opening files you receive from the Web or via e-mail.
3. Keep back-ups (spare copies) of your data.
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. When handling CDs or DVDs, hold the disks around the edge.



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

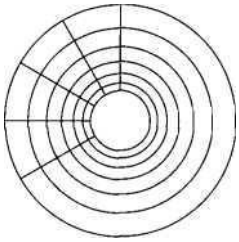
Example *You mustn't stack disks on top of each other.*

1. disks in a protective case
2. into the disk drive very carefully
3. near magnets; they can damage the information stored on them
4. update your anti- virus program regularly since new viruses are created everyday
5. passwords and security devices to protect confidential information

4 Reading

A Read the text and match the terms 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 memory
4 formatting	d) diskettes
5 directory	e) initializing, setting tracks and sectors on magnetic disks
6 read/ write heads	f) a device which spins disks and contains a read/ write head



B Look at the illustration. Identify some tracks and sectors.

Technical details

Floppy disks ace so called because they consist of flexible plastic material which has a magnetizable surface.

The surface of a 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 OS looks for its entry in the directory, moves the read/write heads to the correct sectors, and reads the file into the RAM area.

Hard disks work in the same way as floppies. But they have important advantages: they can hold much more data and spin at higher speed, so you can store and retrieve information much faster than with floppies. The speed at which a hard drive finds data is called 'access time'- or seek time. The average access time is measured in milliseconds (ms). Most hard drives have an access time of 8 to 14 ms.

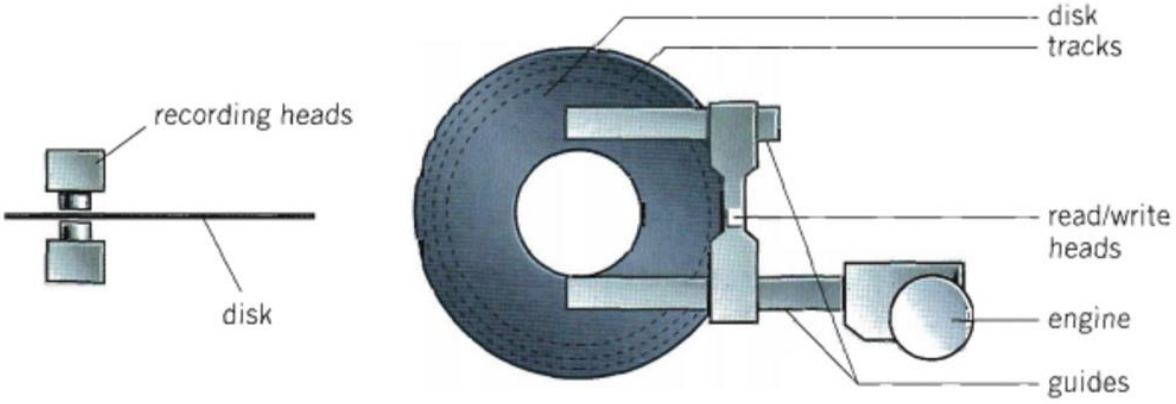
You have to distinguish between access time (e.g. 9 ms) and 'data transfer rate' (the average speed required to transmit data from a disk system to the RAM, e.g. at 10 megabits per second). Remember that the transfer rate depends also on the power of your PC.

If you only use word-processing programs, you will need less storage capacity than if you use CAD, sound and animation programs. If you need an extra hard drive, you should consider the type of mechanism. There are 'internal' and 'external' drives which are both rigid disks sealed into the drive unit, either within or attached to the computer.

Another type of hard drive, known as 'removable', allows you to record data on 'cartridges', which can be removed and stored off-line for security purposes. Some systems allow you to back up your entire PC on one disk.

Laptops use pocket-sized drives. Digital cameras and music players use microdrives with special cards.

A floppy disk drive spins at 360 revolutions per minute. A hard disk drive spins at 7,200 rpm and stores data on a stack of metal rotating disks; called platters.



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

1. Hard drives are faster than floppy drives.
2. 'Access time' refers to the average time required for the recording heads to move and access data.
3. 'Access time' and 'data transfer rate' mean the same.
4. Hard disks use rigid rotating disks.
5. A hard drive is about 20 times faster than a floppy disk drive.
6. If you use multimedia applications you need the same storage capacity as required for word processors.
7. Removable cartridges are not transportable.

5 Word building

Look at the groups of words and decide what class each word belongs to: noun, verb, adjective or adverb. Complete the sentences.

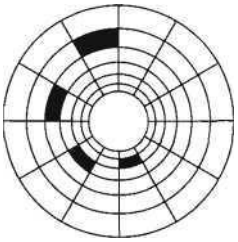
magnet magnetic magnetically
magnetism magnetize magnetized

1. ……...is the science of magnetic phenomena and properties.
2. Floppy and hard disks are considered as……....storage devices.
3. Data is recorded on a disk in the form of……..spots called bits.

record /ri'ko:d/ recorder recording recorded

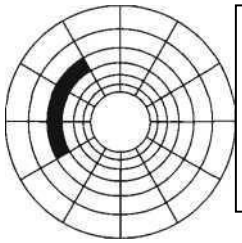
4. All disks must be initialized before information can be ……...onto them.
5. The…….heads follow the tracks and magnetize the coating along each track.
6. A disk drive works very much like a tape……..that can both play and record.

fragment fragmentation defragmenter fragmented



In a fragmented disk, a file is stored in noncontiguous sectors

7. After you create, delete and modify a lot of files, the hard disk becomes…….. with bits and pieces spread all over the disk.
8. ……..slows down the speed at which data is accessed because the disk drive has to work harder to find the parts of a file stored in many different locations.
9. To reorganize your hard disk, you can use a disk optimizer or…….; this will reorder your files into contiguous clusters.



In a defragmented disk, a file is stored in neighbouring sectors

Unit 12 OPTICAL BREAKTHROUGH

1 Warm-up

Before listening try to answer these questions.

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

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

2 Listening

Read the sentences below, and as you listen put a cross (X) next to those which contain a technical mistake. Then listen again and correct these sentences.

1. A CD-ROM disk is very different from a compact music disk.
2. You need a hard disk drive to read CD-ROM disks.
3. The data on a CD-ROM is read with a laser beam.
4. A typical CD-ROM disk can hold 100 MB.
5. The data on a CD-ROM can be changed or 'written' to.
6. A CD-ROM is a good way of storing large amounts of information (images, sounds, applications, etc.).
7. CD-ROM drives cannot play audio CDs.

A CD-ROM

3 Reading

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.

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 a 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 (rewritable) disks can be erased and re-used, 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-R and DVD rewritable disks.
- **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 55 more than 5-2 GB; (ii) 3.5" floptical disks have a capacity of 230 MB to 1.3 GB. They are ideal for back-up and portable mass storage.

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		

4 Discourse cohesion

Reference signals

A Read these sentences and clauses and look back at the text in Task 3 to find out what the words in bold refer to.

1. ... **they** are secure and stable ... (line 8)
2. ... **which** represents a lot of savings in distributing materials ... (line 29)
3. ... **you** cannot write anything onto a CD-ROM disk, (line 35)
4. You can only ‘read' **it** .. (line 36)
5. Magneto-optical (MO) drives use **both** a laser and an electromagnet to ... (line 65)

Connectors and modifiers

B 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

5 Speaking

Which of the products in the 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 ...

I agree/disagree with you. CD-ROMs ...

In a big company, it would be a good idea to ...

Besides, ...

However; ... is good for an encyclopedia because ...

Well, that depends on …

Products available

Hard disk drive
Superfast 8 ms hard drive. Capacity ranges from 6 to 80 GB.

Iomega'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.

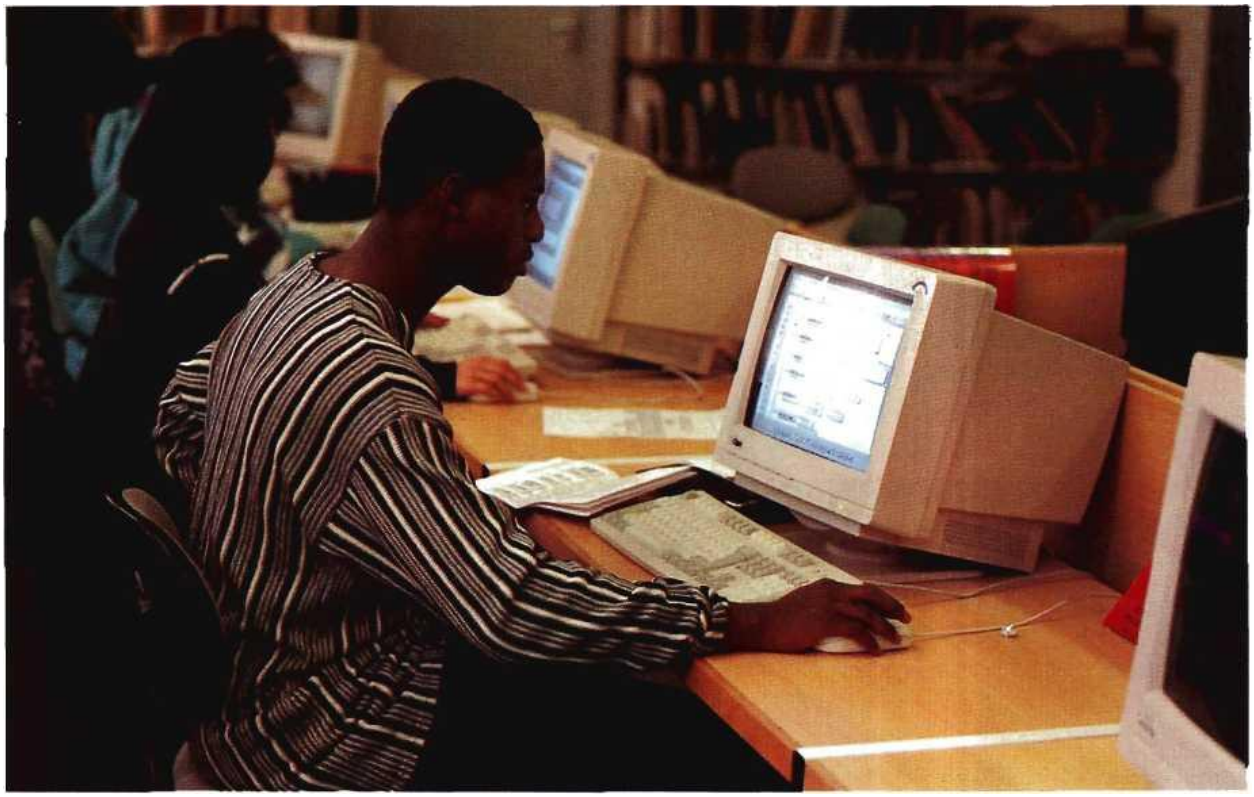
CD-ROM drive
Each CD disk holds 650 MB.

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 5.2 GB of storage capacity. Can be erased and written on like a hard disk.
Rewritable 3.5" floptical disks with a storage capacity of 1.3 GB.

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.



Students using CD-ROMs

6 Crossword

Read the clues and complete the crossword.

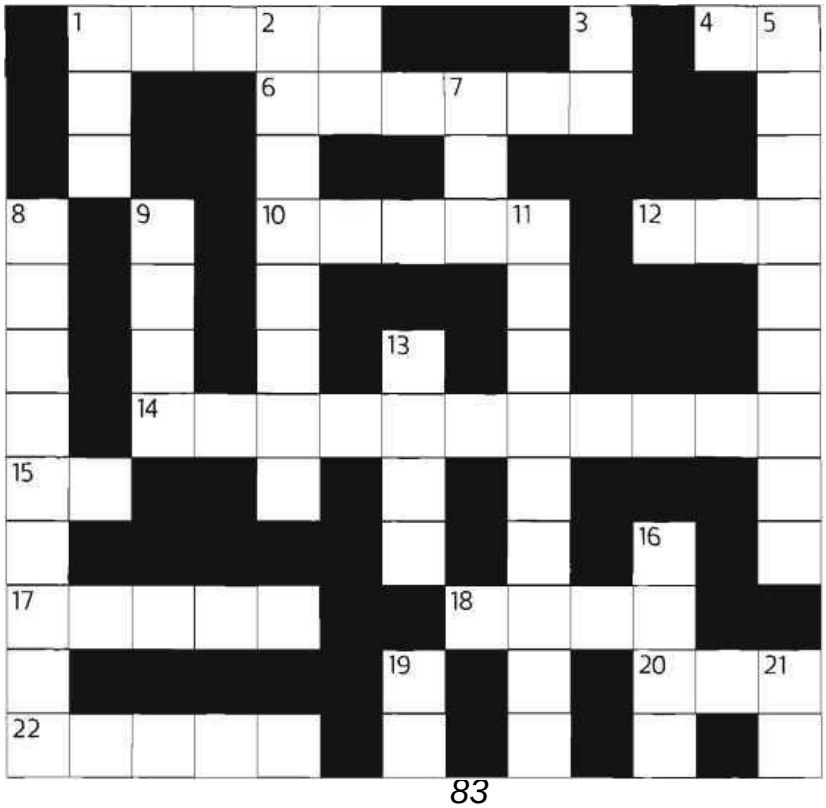
Across

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'. (3)
14 Thousandth of a second. (11)

15 The type of computer with a 286 processor introduced by IBM in 1984. (2)
17 Concentric ring marked on the surface of a disk when the disk is formatted. (5)
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

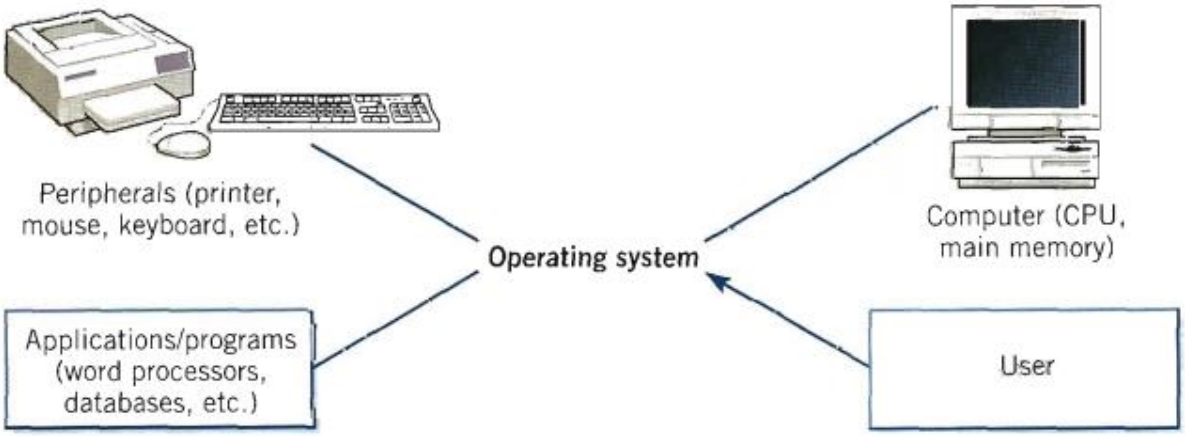
1 Acronym for ‘local area network’. (3)
2 Opposite of ‘indelible’. (8)
3 Abbreviation of ‘high density’ or ‘hard disk’. (2)
5 Way of storing a lot of information in a removable form. (9)
7 Abbreviation of ‘optical character recognition’. (3)
8 All disks must be ‘initialized’ or……. when used for the first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



Unit 13 OPERATING SYSTEMS

1 Warm-up

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



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 (I)..... 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 and 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.

2 Reading

Read the text and find:

1 the text-based operating system used in older PCs.
2 the most secure and reliable version of the Windows family.
3 the OS designed for handheld computers.
4 the function of the Finder in Macintosh computers..
5 the meaning of 'multi-tasking'.
6 the OS written in C language and used on minicomputers and workstation
7 the OS that is freely redistributable under the GNU general public licence
8 the OS originally developed to run on SPARC workstations

Operating systems	
MS-DOS 	This operating system was developed by Microsoft in 1981 for all IBM PC compatibles. Today it's only used in old PCs. In the text-based OS, you communicate with the computer by typing commands that exist within its library. For example, some basic DOS commands include: DIR (show a list of all the files in a directory), COPY (make a duplicate of a file), DEL (delete files)
	Most home PCs use Windows. Here are the most recent versions: With Window 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 advancements such as USB and multimedia extensions Window 2000 is built upon the Window NT architecture and designed for business uses Window Millennium is designed for home use. It includes new

	system safeguards and support for DVD, music players and mobile computers Window XP is an update to all Windows versions, with a new visual design. It's more secure and reliable. It offers support the latest technologies
Pocket PC (Microsoft) 	The OS is developed for handheld computers (or palmtop) that use a stylus or a small keyboard for input
Mac OS	The Mac OS combines the elegance of Macintosh the power of UNIX. Large parts of the Mac OS are 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. With the new Mac OS, you can create CDs and record DVDs. It also offers Internet capabilities support for Java, and AirPort technology for wireless connections
OS/2 Warp (IBM) 	This is the PC world's most technically sophisticated operating system. It provides true multi-tasking, allowing a program to be divided into 'threads', many of which can 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 OS, designed by Bell Laboratories for minicomputers and workstations, has been widely adopted by many corporate installations. From the very first, it is designed to be a multi-tasking system. It is written in C language. It has become an operating environment for software development, available for any type of machine, from IBM PCs to Macs to Cray supercomputers. Unix is the most commonly used system for advanced CAD programs.
Linux (Linus Torvalds)	Protected under the GNU general public licence, Linux is the open source, cooperatively-developed POSIX-based, multi-

	tasking operating system. Linux is used as a high value, fully-functional UNIX workstation for application ranging from Internet Servers to reliable work group computing. Linux is available for Intel,Alpha and Sun SPARC platforms
Solaris	This is a Unix-based operating system developed by Sun Microsystems. Originally designed to run on SPARC workstations, today Solaris also run on many Pentium servers. It supports multi-processing many CPUs and processes on a single system. It includes Java technology, which allows Web pages to display animation, play music and interact with information

3. Language work

A Here are some common nouns in computing. Divide them into countable and uncountable nouns. Look at the HELP box and use dictionary if necessary 1 window 2 robotics 3 hardware 4 program 5 hacker 6 hacking 7 system 8 software 9workstation ***B These sentences contain typical errors. Correct them.*** 1 We are having a terrivel weather 2 Can you give me an advice? 3 I need some informations. 4 The news were very depressing. 5 I like the furnitures. 6 Much people use the Web today	**HELP BOX** **Countable and uncountable nouns** • **Countable** nouns are people or things that we can count. They have a singular and a plural form. They must have determiner (a, *one, my, this*...) in the singular, though this is not necessary in the plural E.g *computer, website, bookmark* • **Uncountable** (mass) nouns are things that we can't count They have no plural form E.g *information, pirating, storage* • They are partly distinguished by the determiners they take. *Many, few, a few* go with countable nouns *We didn't take many pictures* *I have few jobs to do* *Much, little, a little, a great deal* only go with uncountable nouns *We didn't do much shopping* *I have little work to do*
C Complete this text with a, an, the (or nothing to at all) as	

necessary	
At school we have(1)…….computer in every classroom. We use (2)…….computer to do (3)…….projects and to study (4)…….music and languages. The teachers use PCs to print articles, songs or activities for use in class. This year, they are preparing (5)…….exchange with a college in Norfolk. We all use it to get (6)…….information from (7)…….Internet. At home I use my computer to send and receive (8)…….email and to play (9)…….computer games. I have (10)…….ink-jet printer.	*Some, any, no, enough* with both countable and uncountable nouns. *We listened to some music.* *Did you buy any CDs?* I don't have enough money. • Some words are countable in most languages, but uncountable in English and are used with a singular verb: *Advice, damage, equipment, furniture, research, luggage, news, progress, homework, weather*

4. Listening

A Read the information in the box and then listen to four advertisements from a radio programme about computers

System utilities are small programs which improve a system's performance and help users take advantage of the computer's capabilities. They are often desk accessories that can be called up while you're working in another application. They can also be INITs, i.e system extensions which are activated when you turn on the computer, control devices which you adjust the control panel, or even stand-alone programs that run when you need them. Utilities are available for back-up, file research, virus protection, disaster recovery, and so on.

Number these system utilities in the order in which you can hear them

□ screen saver
□ virus detector
□ crashed disk rescuer and data recovery

□ multimedia player

B Listen again. Which utility would you use for each of these requirements?

1. To play and organize multimedia on your PC……..
2. To diagnose and repair damaged disks……..
3. To automatically bank out the screen after a specific interval of inactive time (so that the image does not burn into the screen)……..
4. To protect your system against computer virus……..

Unit 14 THE GRAPHICAL USER INTERFACE

1 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:

1 Window
2 Scroll bars
3 Menu bar
4 Pull-down menu
5 Pointer
6 Toolbar buttons
7 Disk icons
8. Folders
9. Program icons
10. Document icons
11. Printer icon
12. Dock icon

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.

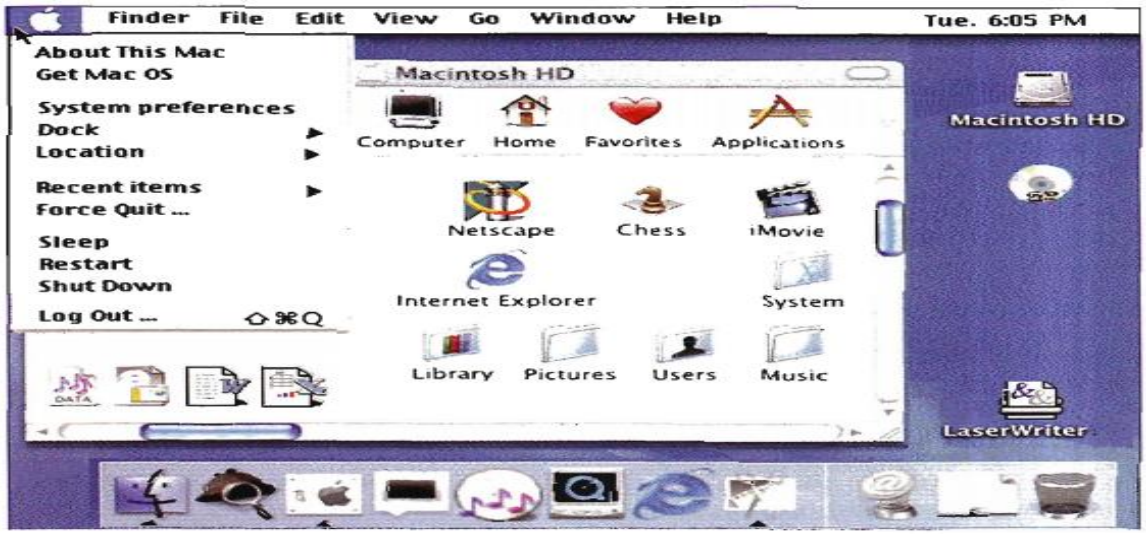
• **the pointer**: an arrow, controlled by the mouse, that allows you to move around the screen.

.toolbar buttons: found at the top of a window, then they take you to the Home folder and others

• **icons**: graphic images (or intuitive symbols) used to represent an object or task.

• **folders**: containers for documents and applications. They are similar to the subdirectories of a PC platform.

.dock: set of icons at the bottom of the screen that give you instant access to the things you use most.



2 Reading

A Read the article below and decide which of the expressions in the box best describe a Graphical User Interface.

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

GUIs

The term **user interface** refers to the standard procedures the user follows to interact with a par-ticular 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.

Macintosh computers — with a user interface based on graphics and intuitive tools — were designed with a single clear aim: to facilitate inter-action with the computer. Their interface is called WIMP: **Window, Icon, Mouse** and **Pointer** (as shown in Fig. 1) and software products for the Macintosh have been designed to take full advan-tage 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 applica-tions with a high level of consistency.

Today, the most innovative GUIs are the Macintosh, Microsoft Windows and OS/2's graphical Presentation Manager. 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 acces-sories. 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 com-patibility 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 inter-face stimulate users to be more creative and pro-duce high quality results, which has a major impact on the general public.

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

1 user interface (line 1) 2 commands (line 8) 3 tools (line 29)
4 program developer (line 39) 5 platform (line 48)
6 desktop (line 49) 7 file finder (line 51) 8 nested folders (line 55)

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 your run a program on a computer with a graphical interface?
6 Can you give two reasons for the importance of user-friendly interfaces?

3 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**. (See box below.)

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

HELP box

Ways of reducing sentences

• Transforming a relative clause into an *-ing* participle clause e.g. *Icons are graphic images that represent tasks ... — Icons are graphic images **representing** tasks.*

• 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 thought 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 machines were designed to facilitate the user's interaction with the computer.

Unit 15 A WALK THROUGH WORD PROCESSING

1 Before you read

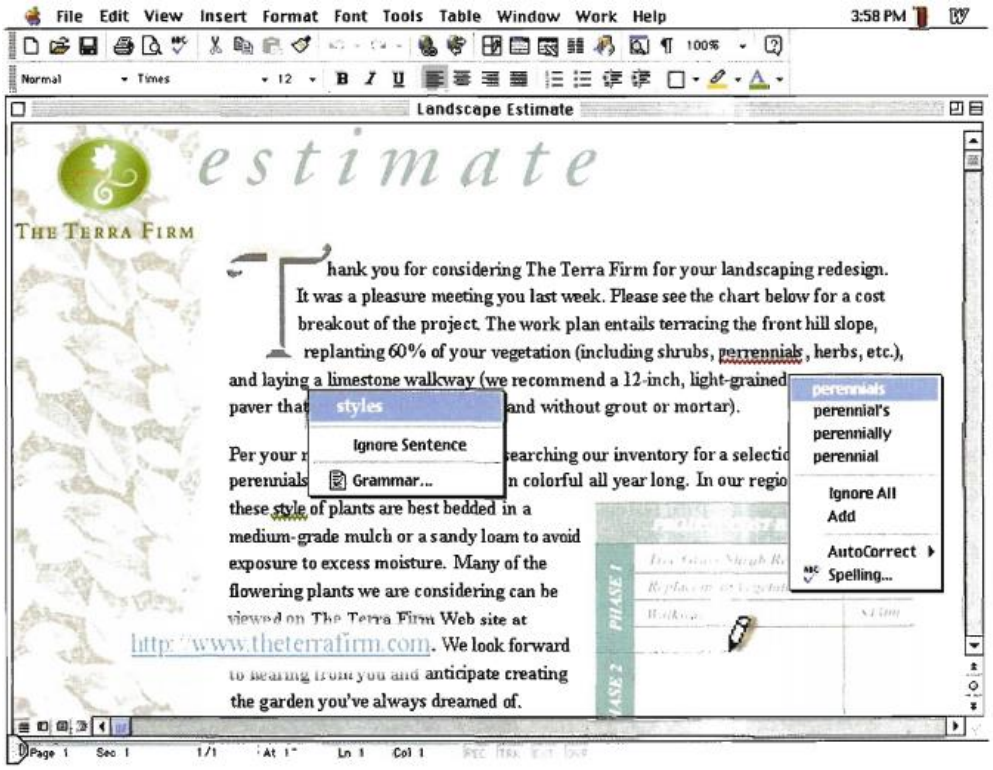
Try to answer these questions.

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.

2 Reading

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

A screen from Microsoft Word for the Macintosh Word for Window works the same way WordPerfect. Lotus Word Pro and Nisus Writer also have multiple typefaces, windows, pull-down menus and other graphical tools



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 associat-ed 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 infor-mation. 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, how-ever. 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, para-graph 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 'wizzy-wig'). WYSIWYG shows **bold,** italic, underline and other type style charac-teristics 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 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 proces-sors are **automatic hyphenation and mail merging.** Automatic **hyphenation** is the split-ting 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 processor splits the word, adds a hyphen at the end, and places the rest on the next line. This happens extremely fast and gives text a more polished and professional look.

Mail merge applications are largely responsible for the explosion of 'personalized' mail. Form let-ters 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.

(Adapted from *Understanding Computers, N. Shedroff et al. Sybex, 1993*)

B Look at the words in the box 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.

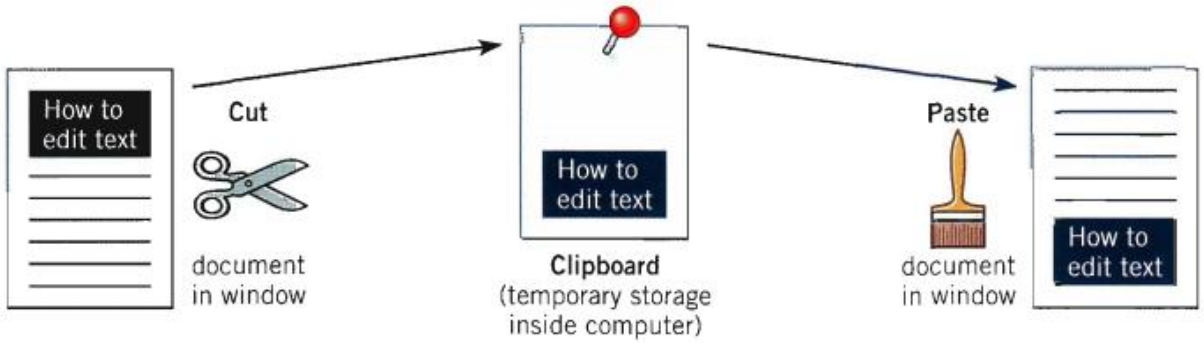
5 The ..... menu of a word processor allows you to set margins, page numbers, spaces between columns and paragraph justifications.
6 .....,.....:.. enables you to combine two files, one containing names and addresses and the other containing a standard letter.
7 An '..... is the distance between the 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……..

C Find the words and expressions that mean the same.

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

3 Writing

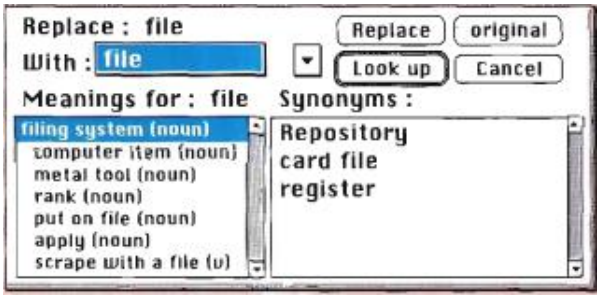
Moving text is a process of cutting and pasting, as if you -were using scissors and glue. The picture below is an attempt to represent this process. Write a short description of the process.

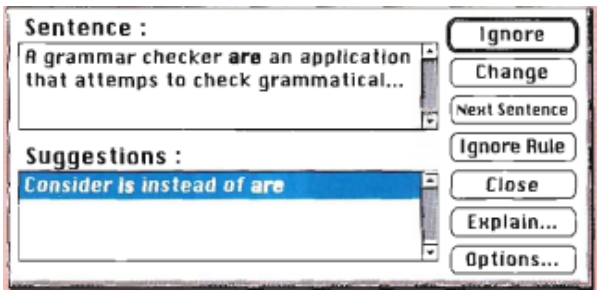


3 Writing tools

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 him or her to make any changes; it sometimes even suggests possible correct spellings.	
Like a conventional thesaurus, this database of words contains definitions and suggestions of words with similar and opposite meanings. A word may be spelled 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.	

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. 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.	

(Texts adapted from Understanding Computers, by N. Shedroff et al. Sybex, 1993)

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

5 Speaking

Work in pairs. Read the table below which is a summary of 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... ?

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 Centring 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 Non-contiguous text selection permits you to collect portions Of text at random and bring them together on one of eight Editable clipboards.	✓	
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 create HTML pages for the Web		✓

Unit 16 SPREADSHEETS

1 Looking at a spreadsheet

Look at Figure 1 and try to answer the questions.

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 the cell?
4 What will happen if you change the value of a cell?

	A	B	C	D	E
1		2001	2002		
2	Sales	$890	$982		
3	Stocks/Shares	487	760		
4	Interest	182	324		
5	Total Revenue	1559	2066		
6					
7	Payroll	894	904		
8	Publicity	399	451		
9	Services	438	372		
10	Total Expenses	1731	1727		
11					
12	TOTAL	-172	339		
13					
14					

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

2 Listening

A Listen to Lucy Boyd, a software developer, talking about spreadsheet programs and Figure 1 and check your answers to Task 1.

B Listen again and mark the boxes 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.	☐ ☐ ☐ ☐ ☐ 

C Look at the spreadsheet in Figure 1 again and mark the boxes with a Y or an X.

6 The value of the cell C12 is the result of applying the formula 'C5 - CIO'.

7 The cell B5 is the result of adding the values of the cells B2 and B3.

8 If you type the value '800' in C3, the values in cells C5 and C12 will be recalculated.

3 Vocabulary

Match the terms in the box with the explanations below.

a formula	**b cell**	**c sales**	**d payroll**	**e share(s)**
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. /7per cent ~ 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 per cent 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 ~s. 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 ~.	

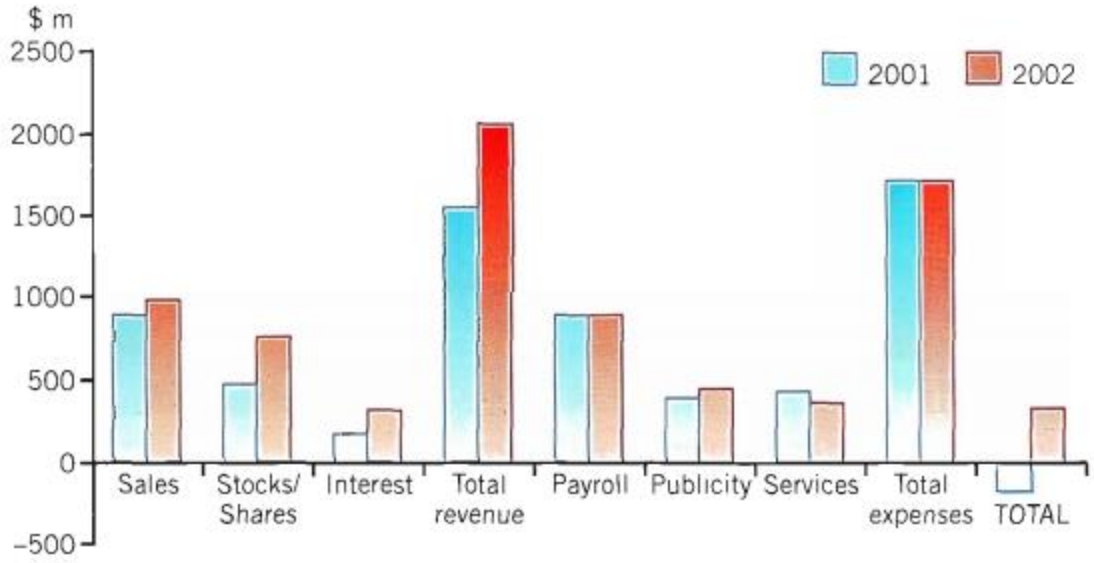
4 Graphic representation

A Look at the graph on the next page and, with the help of a partner, check that it is an exact visual representation of the spreadsheet in Figure 1. The values are expressed in millions of dollars.

B Can you calculate the net profits of this firm during the period 2001-2?

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

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



5 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.

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

Name: Redwood Comprehensive School
Springbank Road, Easthill

Invoice

Telephone: 436171

Date: 12 March 2003

				Total
Ulysses Classic	256 MB of RAM, 60 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	128 MB RAM, 40 GB HD	3	1,190	3,570
Laser SAT	PostScript	1	825	825
Scanner JUP	Flatbed. Includes OCR	2	675	1,350
			Subtotal	£ 21,950
			17.5%	3,841
Ulysses Computers, Inc.				£ 25,791

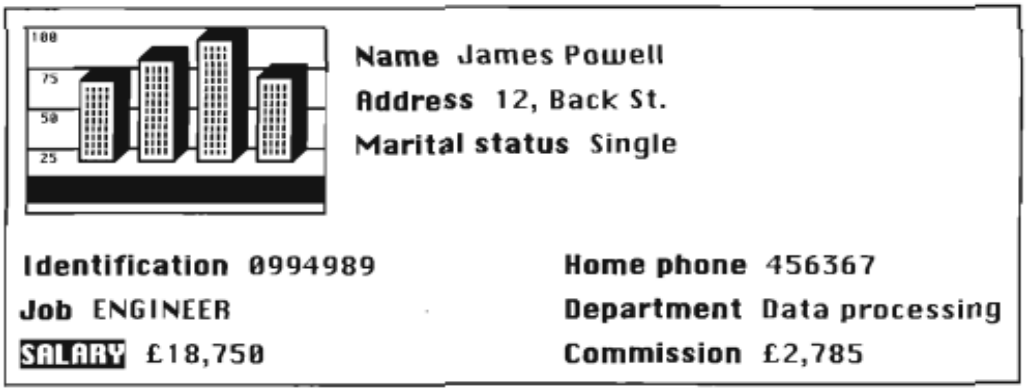
B Have you got a spreadsheet program at work or school? If so, try to produce a similar invoice.

Unit 17 DATABASES

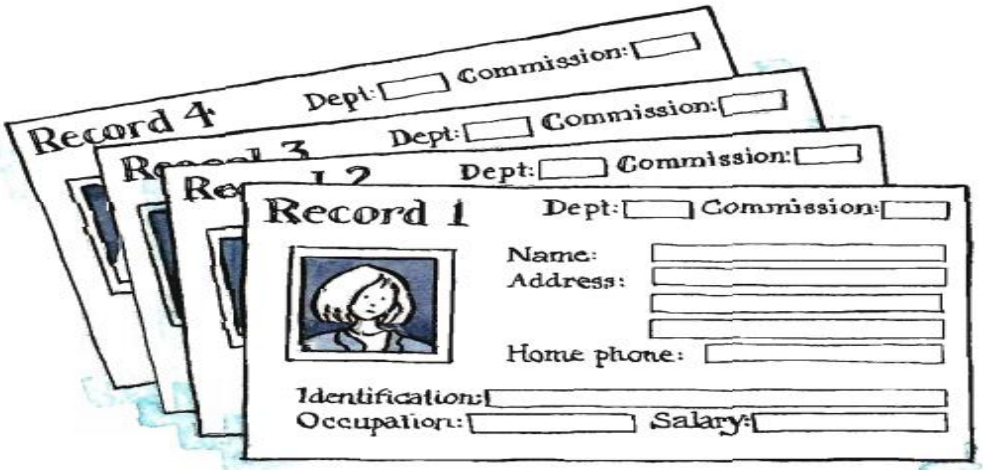
1 Warm-up

Companies often use databases to store information about customers, suppliers and their own personnel. Figure 1 shows a 'record' from one company's 'Employee' file. Study it 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 these terms mean in your language: file, record, field?



Record from Employee file in database. This record holds ten fields (the illustration is one)



A database file stores information in fields grouped on records

2 Reading

A Here is part of an article about databases. First, read it all the way through. Underline the basic features of a database and compare your ideas with a partner.

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 equiv-alent of an indexed filing cabinet. Let us look at some features and applications of a computer database:

• Information is entered on a database via **fields.** Each field holds a separate piece of information, and the fields are collected togeth-er into **records.** For example, a record about an employee might consist of several fields which give his/her name, address, telephone number, age, salary, and length of employment with the company. Records are grouped togeth-er into **files** which hold large amounts of infor-mation. 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 your 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 that spend more than £7,000 per month, the program would search on the name field and the money field simultaneously.

If we had to summarize the most relevant advantages of a database program over a card index system, we would say that it is much faster to consult and update, 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 facili-ties, 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 advan-tage. 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 his commission, you could protect the commission field.

Other features like mail merging, layout design and the ability to import and export data are also very useful.

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 .....

3 Puzzle

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

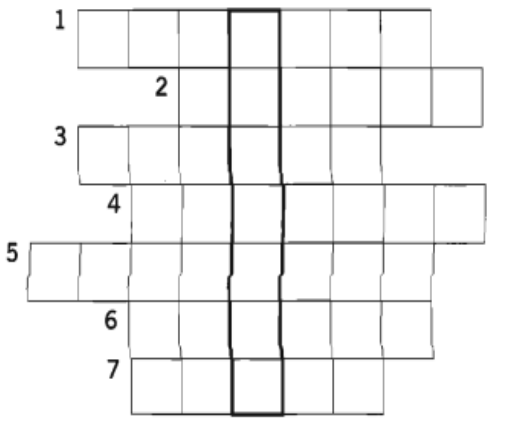
1 In order to personalize a standard letter you can use 'mail.....' (a technique which consists of combining a database with a document made with a word processor).
2 Records can be automatically ..... into any order.
3 You can decide how many fields you want to have on a ..... .
4 Files can easily be ..... 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 .....
.

4 Language work: Plurals

A Look at the Help Box and then write the plural of these words:

1 slot
2 key
3 directory
4 businessman
5 fax
6 mouse
7 floppy
8 virus

B Refer back to the text and find six plurals pronounced /iz/.



Plurals

• In most cases, the plural in English is written with an 's'. record —> records
- The plural is written with 'es' after's', 'sh', 'x', or 'ch'. address -> addresses box -> boxes
- With nouns which end in a consonant + 'y', the 'y' becomes 'i' and 'es' is added. technology -> technologies
- But if the 'y' follows a vowel, only 's' is added. day —> days

• Special plural forms:

man **->** men
child —> children
analysis -> analyses
formula -» formulae/formulas

• Pronunciation of the 's'.

- /s/ after one of the sounds /p/, /t/, /k/, /f/ or /6/. chips, amounts
- /iz/ after one of the sounds /s/, /z/, /J/, /tj/, /ds/. processes, cartridges
- Izl in most other cases. drives, customers, files

C Put these plurals in the correct pronunciation column. Then listen and check your answers.

passwords	laptops	budgets	images	fields	taxes
graphics	expenses	folders	interfaces	disks	pixels

/s/	/iz/	/z/

5 Listening

A Listen to Helena Davies, an IT trainer, explaining how to use mail merging to some employees. Number these steps in the order that you hear them.

- Activate the Mail Merge command (Print Merge in some programs). This combines the main document and the data document.

- Click 'Print' and the program generates a single letter for each record in the data document.

- Create the data document with a database program or with the right spreadsheet software. This document contains rows with names, addresses and other information that will be merged with the standard letter.

- Create the main document with a word processor. Type the standard letter and insert the appropriate field names into it.

B Look at the illustration of mail merging and identify the three types of documents involved in this example of mail merging.

	A	B	C	D	E	F
1	Title	First name	Last name	Street	City	Postcode
2	Mr	Fred	Jones	15 The Calls	Leeds	LS2 6JU
3	Mrs	Diana	Read	18 Union Street	Glasgow	G1 3TA
4	Ms	Carol	Taylor	75 Windmill Street	London	W1P 1HH
5	Mr	Jack	Gordon	7 Piccadilly Street	York	YO1 1PN

The data document contains the standard letter

«DATA Mailing»
«Title» «First name» «Last name»
«Street»
«City» «Postcode»
Dear **«Title» «Last name»,**

We are pleased to inform you that an updated version of Top Project is now available. To obtain your copy, simply call us and we'll send you, absolutely free, the new version of the program.
We also enclose a catalogue with the new range of SunRise machines and the latest software products. There are special offers for all our clients, including a book about budgeting and balancing. To order by phone, call 01332 8430477.
Yours sincerely,

Barry Stephens,
Sales Manager,
Sunrise Computers,
19 Park Avenue, Derby

The main document contains the standard letter

Mr. Fred Jones
15 The Calls Leeds LS2 6JU

Dear Mr. Jones, We are pleased to inform updated version of Top Project is now available. To obtain your copy, simply call us and we'll send you absolutely free, the new version of the program.
We also enclose a catalogue with new range of SunRise machines and the latest software are special offers for all our clients including a book about budgeting and balancing. To call 01332 843047
Yours sincerely,
Barry Stephens,
Sales Manager,
Sunrise Computers,
19 Park Avenue,
Derby

Mrs. Diana Read
18 Union Street Glasgow G1 3TA

Dear Mrs. Read, We are pleased to inform updated version of Top Project is now available. To obtain your copy, simply call us and we'll send you absolutely free, the new version of the program.
We also enclose a catalogue with new range of SunRise machines and the latest software. There are special offers for all our clients including a book about budgeting and balancing. To call 01332 843047
Yours sincerely,
Barry Stephens, Sales Manager, Sunrise Computers,
19 Park Avenue,
Derby

Ms. Carol Taylor
75, Windmill Street London W1P1HH

Dear Ms. Taylor, We are pleased to inform updated version of Top Project is now available. To obtain your copy, simply call us and we'll send you absolutely free, the new version of the program.
We also enclose a catalogue with new range of SunRise machines and the latest software. There are special offers for all our clients including a book about budgeting and balancing. To call 01332 8430477
Yours sincerely,
Barry Stephens, Sales Manager, Sunrise Computers,
19 Park Avenue,
Derby

Merging the main document and the data document generates personalized versions of the letter

6 Writing

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

Unit 18 FACES OF THE INTERNET

1 Get ready for listening

Try to answer the question

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/windows/ie/

2 Listening

Peter Morgan, the director of Text Link, is talking to a journalist about the Internet. Listen and complete the journalist's notes.

- To connect to the Internet you need
  (1)..... (2)..... (3).....
- One cable of the modem is connected to the (4)..... of your computer and the other to the (5) ..... .
- To get your Internet identify you need to have an account with a (6)..... , A company that offers connection for an annual fee.
- Services offered by Internet (7)..... (10).....
  (8)..... (11).....
  (9).....
- The Web is a huge collection of (12)..... stored on computers all over the world.

3 Reading

A Which Internet utility (1 to 7) would you use to do each of these tasks (a to g)?

Read the text to check your answers.

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

E-mail

E-mail 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 e-mail. The e-mail you receive is stored on the server of your ISP until you next connect and download it to your hard disk.

Web browser

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

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 destination 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

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

Internet telephone and video chatting are based on IRC protocol. 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.

A videoconferencing system combines data, voice and video.

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 groups.
4 Usenet is
  a a big system of public discussion groups.
  b a newsgroups.
5 an intranet is
  a like a small version of the Internet inside a company.
  b a commercial online service.

4 Speaking

A Ask your partner these questions.

1 What web site do you visit to chat with friends?
2 Which chat channels are you interested in?
3 Do you talk with strangers during web chats?
4 Do you use your real name or a nickname?
5 How long do you usually spend at the terminal?

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