

UNIVERSIDAD TECNOLÓGICA NACIONAL

Facultad Regional de Avellaneda

Carrera: Técnico Superior en Programación

Asignatura: Inglés II

Infotech English for computer users

Cambridge – Professional English

Student Book

Santiago Remacha Esteras

Lic. Mónica Z. Estrany

Condiciones de cursada y de aprobación

Los alumnos que cursen bajo la modalidad “Regular” podrán tener sólo 4 (cuatro) inasistencias durante la cursada; quien tuviera más, deberá justificarlas con certificado médico o laboral y carta en Secretaría.

Para aprobar la materia se requiere:

- Rendir los dos parciales y/o recuperatorios con nota superior a 6 (seis) de promedio, lo cual significa que han aprobado la cursada y los habilita para rendir la evaluación final;
- La mencionada nota los habilita para presentar un Trabajo práctico Integrador a fin de tratar de acceder a la condición de Aprobación directa. Este trabajo práctico deberá ser presentado en tiempo y forma, según lo dispuesto por la docente.
- Si el promedio de ambos parciales es 8 (ocho) o más estarán bajo la condición de “Aprobación directa”, por lo cual no deben rendir la evaluación final.
- En caso de que el promedio de ambos parciales sea de 4 (cuatro) o 5 (cinco), deberán presentar un trabajo práctico, según lo dispuesto por la docente, lo cual les permitirá llegar a la nota de aprobación de cursada (6 –seis) o, si el promedio es igual o mayor a 8 (ocho) no deberán rendir final.

Alumnos bajo la condición de cursada “Libre”:

- Deberán presentar en Secretaría la nota correspondiente, dicho trámite sólo podrá realizarse en fecha de la segunda clase;
- Deberá rendir ambos parciales y/o recuperatorios en las fechas establecidas.
- Si el promedio de ambos es 8 (ocho) o más, no rendirán final, dado que estarán bajo la condición de “Aprobación directa”;
- En caso de que la nota no alcance el puntaje antes referido y sea de 6 (seis) o 7 (siete), deberán presentar, en la fecha indicada por la docente, las fotocopias de clase con todos los ejercicios realizados, esto les permitirá subir la nota para no ir a final. En el caso de no presentarlo o que aún con la presentación de las fotocopias no alcanzaran a promediar con 8 (ocho) o más, deberán rendir final.
- Si se tuviera un aplazo en alguno de los parciales (1, 2 o 3) se perderá la condición de “Libre” y deberán asistir a clase.

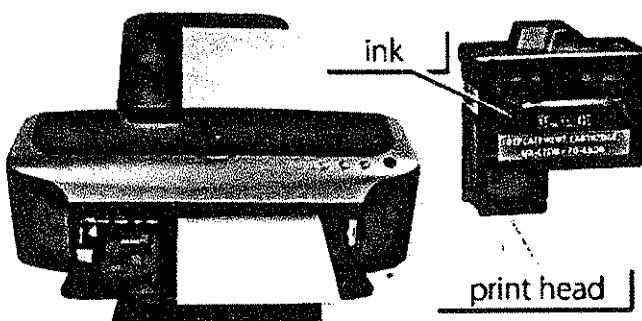
Todos los alumnos deberán presentar sus libretas para la firma en las fechas establecidas.

Choosing a printer

1 Types of printer

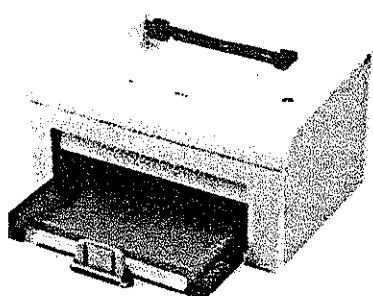
A How many types of printer can you think of? Make a list.

B Read the article on page 38 and then label the types of printer (1–5). Which types of printer aren't pictured?



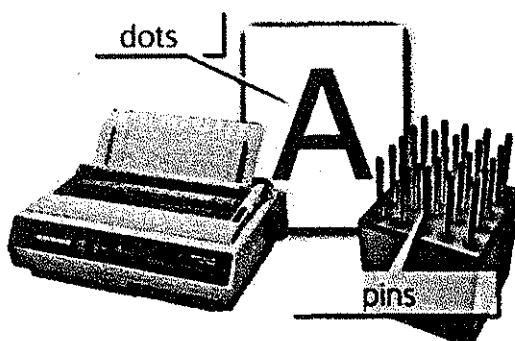
The quality (resolution) of the images goes up to 2,400 dots per inch (dpi)

1 _____



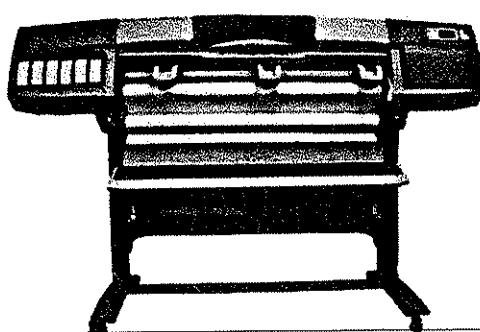
Provides high quality output: a resolution of 1,200–2,400 dpi

2 _____



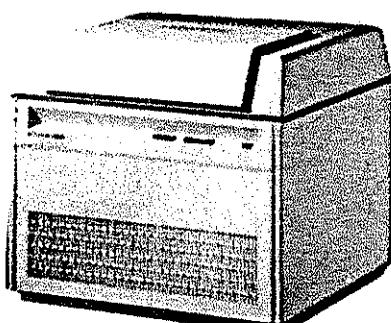
The resolution depends on the number of pins

3 _____



Provides high quality for linework (lines and curves)

4 _____



Provides the highest resolution: more than 3,000 dpi

5 _____

Unit 5

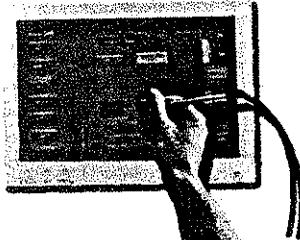
Type, click and talk!

1 Interacting with your computer

Read the description of input devices and then label the pictures (1–8) with words from the text.

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

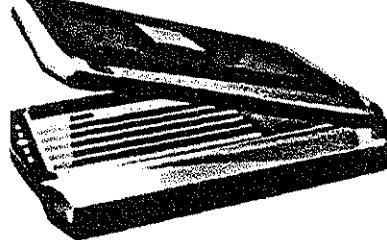
interact with a computer by using one of these: a **light pen**, a **scanner**, a **trackball**, a **graphics tablet**, a **game controller** or a **microphone**.



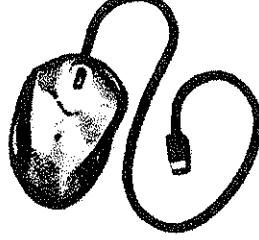
1 _____



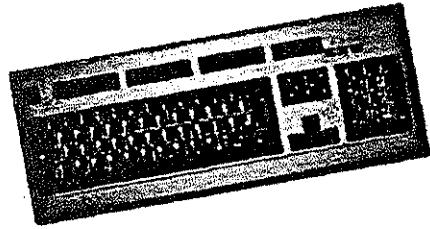
2 _____



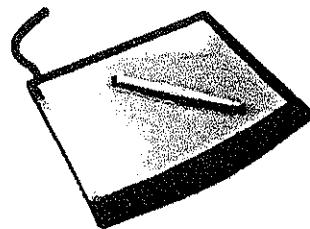
3 _____



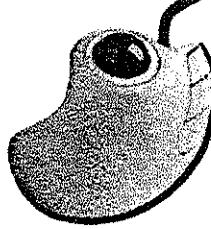
4 _____



5 _____



6 _____



7 _____



8 _____

2 Describing input devices

A  Listen to a computer technician describing three input devices. Write which devices he's talking about.

1 _____ 2 _____ 3 _____

B  Listen again and complete these extracts.

- 1 This device is _____ enter information into the computer.
- 2 ... it may also _____ function keys and editing keys _____ special purposes.
- 3 This is a device _____ the cursor and selecting items on the screen.
- 4 It usually _____ two buttons and a wheel.
- 5 ... the user _____ activate icons or select items and text.
- 6 It _____ detecting light from the computer screen and is used by pointing it directly at the screen display.
- 7 It _____ the user _____ answer multiple-choice questions and ...

WHICH TYPE OF PRINTER SHOULD I BUY?

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

To begin with, you should take into account that printers vary in cost, speed, print quality, and other factors such as noise or printing method. Technology is evolving so quickly that there is always a printer for every application or need.

Dot-matrix printers use pins to print the dots required to shape a character. They can print text and graphics; however, they produce relatively low resolution output – 72 to 180 dots per inch (dpi). They are used to print multi-part forms, self-copying paper and continuous-form labels. They are slower than laser printers (see below) but much cheaper.

Inkjet printers operate by projecting small ink droplets onto paper to form the required image. Colour and hues are created by the precise mixing of cyan, magenta, yellow and black inks. Inkjets are fairly fast, quiet, and not as expensive as laser printers. Nevertheless, you can still expect high quality results because there are some inkjet printers on the market with a resolution of 2,400 dpi.

Laser printers produce output at great speed and with a very high resolution of 1,200–2,400 dpi. They scan the image with a laser beam and transfer it to paper with a special ink powder called toner. They are constantly being improved. In terms of speed and image quality, laser printers are preferred by experts for various reasons; for instance, they have a wider range of scalable fonts than inkjets, can emulate different language systems, and can produce high-quality graphics; however, they are still expensive for home users.

Thermal transfer printers are used to produce colour images by transferring a wax-based ink onto the paper. They are popular for printing bar codes, labels and medium-resolution graphics.

Imagesetters produce very high-resolution output (up to 3,540 dpi) on paper or on the actual film for making the printing plates. In addition, they are extremely fast. Imagesetters are most often used in desktop publishing (DTP). Although they produce the highest quality output, they have one important disadvantage: they are too expensive for homes or small offices.

In modern lithographic printing, images are created on a DTP computer and then output directly to the printing plates, without requiring film as an intermediate step. This technology is called **computer to plate**, or **CTP**, and the machine used is called a **platesetter**.

Finally, we have **plotters**. 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. Nowadays, traditional plotters are being replaced with wide-format inkjets.

C Find words in the article with the following meanings.

- 1 designs and images used in magazines, books, etc. (lines 10–15) _____
- 2 output quality, measured in dots per inch (lines 10–15) _____
- 3 a particular colour within the colour spectrum (lines 15–20) _____
- 4 an ink powder used in laser printers and copiers (lines 25–30) _____
- 5 set of characters that can be resized (enlarged or reduced) without introducing distortion (lines 30–35) _____
- 6 a rectangular pattern of black lines of magnetic ink printed on an object so that its details can be read by a computer system (lines 35–40) _____
- 7 surface that carries a reproduction of the image, from which the pages are printed (lines 45–50) _____
- 8 in-between; middle (lines 50–55) _____

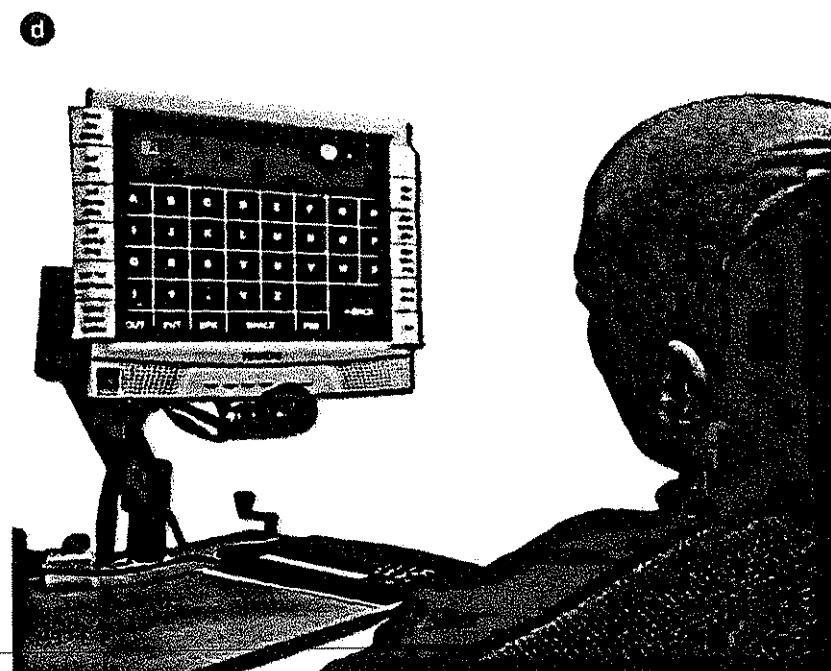
Devices for the disabled

1 Assistive technology

A In pairs, look at the words in the box and use as many of them as you can to describe the photos. You will not need all the words.

blind person
motor-impaired person
screen magnifier
Braille printer
adaptive switch
touch screen

adapted keyboard
on-screen keyboard
voice recognition system
screen-pointing device
screen reader
pneumatic switch (sip and puff)



2 Language work: connectors 1

A Look at the HELP box and then put the words in **italics** from the article on page 38 into the correct column of the table.

Giving examples	Listing/Sequencing	Giving reason/cause

B Try to add some more connectors to each column. How do you say these connectors in your language?

HELP box

Connectors 1

Connectors are linking words and phrases which join ideas and help us organize our writing. Connectors can be used for giving examples, listing or sequencing, and giving reason or cause.

... *for instance*, they have a wider range of ...

To begin with, you should take into account that printers vary in cost ...

Some common connectors appear in *italics* in the article on page 38. For more on other uses of connectors, see Unit 11.

C Write a paragraph describing the printer(s) you use at home or at work. Try to use some connectors. Think about these aspects: type, speed, resolution, print quality, memory, cost, print consumables (ink cartridges etc.).

3 Choosing the right printer

A In pairs, choose the most suitable printer for each of these situations. Give reasons for your choices.

- 1 You want to print documents, web pages and occasional photographs at home.
- 2 A small company needs a printer which will be shared by various users on a local area network (LAN).
- 3 A professional team of architects and engineers need to create accurate representations of objects in technical drawings and CAD.
- 4 A graphic arts business needs a printer to produce catalogues, brochures and other publications.

B In pairs, describe the features of your ideal printer.

25
30
35
40
45
50
55

Is can be

4

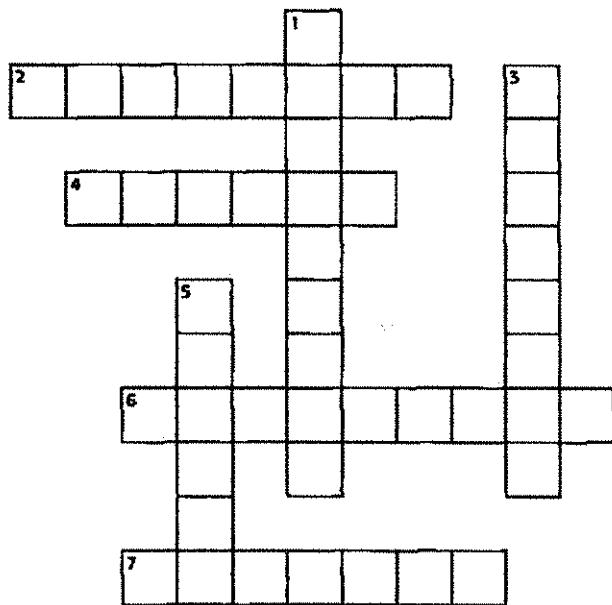
B Complete the crossword with words from the text on pages 43–44.

ACROSS

- 2 An _____ keyboard presents a graphic representation of a keyboard on the desktop screen and allows people with mobility impairments to type data using a joystick or a pointing device.
- 4 Visual _____ allow deaf users to be notified of incoming mail or error messages without hearing a tone.
- 6 A screen _____ makes the computer screen more readable for users with poor vision.
- 7 A system of reading and writing using raised dots, which enables blind people to read by touch.

DOWN

- 1 Unlike a standard telephone, a _____ has a small screen and a keyboard that transcribes a spoken voice as text. It is used for text communication via a telephone line, ideal for people who have hearing or speech difficulties.
- 3 A Braille _____ is an impact printer that prints text as Braille, by punching dots onto paper.
- 5 A speech synthesizer is used in conjunction with a screen _____ to convert screen contents into spoken words.



HELP box

Noun phrases

A noun phrase is a phrase that has a noun as its head. This noun can be accompanied by a modifier that gives information about the head.

modifier	head
speech	recognition
compatible	computer

A noun phrase can function as the subject or object of a verb. It can contain the following range of modifiers:

- adjectives
I have a portable computer.
= a computer which is portable
- present participles
I use this drawing program.
= a program that draws
- 's genitive
The files are on the director's computer.
= the computer which belongs to the director
- nouns
I need to buy a colour scanner.
= a scanner which uses colour

3 Language work: noun phrases

A Look at the HELP box and then the noun phrases 1–6. Decide what type of modifier (a–d) is placed before the 'head' in each case.

- | | |
|----------------------------|----------------------|
| 1 disabled worker | a adjective |
| 2 rehabilitation engineer | b present participle |
| 3 employee's abilities | c 's genitive |
| 4 adapted keyboard | d noun |
| 5 voice-activated computer | |
| 6 pointing device | |

B Explain the noun phrases in A.

Example:

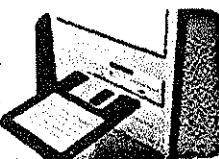
disabled worker = *a worker who is disabled*

1 Types of magnetic drive

A Look at the pictures and descriptions below and find the following.

- 1 the name of the hard drive on a PC platform
- 2 the type of hard drive that plugs into a socket at the back of a computer
- 3 the system that works in sequential format
- 4 the size and storage capacity of a floppy disk

A 3.5" floppy drive and diskette



A floppy disk drive uses 3.5" disks, which can store 1.44MB of data; it is usually assigned to the A: drive. Floppy drives are becoming increasingly rare.

The inside of a hard drive



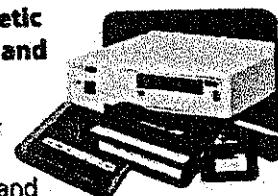
Most PCs have one internal hard drive, usually called C: drive. It is used to store the operating system, the programs and the user's files in a convenient way. A hard drive can hold hundreds of gigabytes of data.

A portable external hard drive



External hard drives are connected to the USB or FireWire port of the computer. They can be as small as a wallet but can have as much capacity as internal drives; they are typically used for backup or as secondary storage.

Magnetic tapes and drive



A tape drive reads and writes data on tapes. It is sequential-access – i.e. to get to a particular point on the tape, it must go through all the preceding points. Tapes can hold hundreds of gigabytes of data and are used for data collection, backup and archiving.

B Complete these sentences with words from the box.

capacity storage archiving hold secondary

- 1 There are basically three types of magnetic _____ device available to the computer user – hard drives, diskettes and tapes.
- 2 The _____ of a 3.5" floppy disk is only 1.44MB.
- 3 Hard drives can _____ hundreds of times more data than floppy disks.
- 4 A portable hard drive is a good choice for _____ storage.
- 5 Magnetic tapes are used for _____ information that you no longer need to use regularly.

2 Buying a portable hard drive

A Sue (see Unit 4) wants to buy a new drive. Listen to her conversation with the sales assistant. Does she buy anything?

B Listen again and answer these questions.

- 1 What is the storage capacity of the Iomega eGo portable hard drive?
- 2 How much information can be stored on the Edge DiskGo model?
- 3 Which hard drive is good for mobile professionals?
- 4 How much does the Iomega eGo drive cost?
- 5 How much does the Edge DiskGo cost?



The Iomega eGo portable hard drive.

B In pairs, discuss what you should or shouldn't do to protect your data. Use the suggestions below.

Example: discs on top of each other (stack)

You shouldn't stack discs on top of each other. / Don't stack discs on top of each other.

- 1 your anti-virus program regularly, since new viruses are created everyday (update)
- 2 discs in a protective case (store)
- 3 passwords and security devices to protect confidential information (use)
- 4 on discs with permanent marker pens (write)
- 5 the disc into the disc drive carefully (insert)
- 6 floppies or hard drives near magnets; they can damage the data stored on them (leave)

Note: disc (optical media); disk (magnetic storage media)

5 Word building

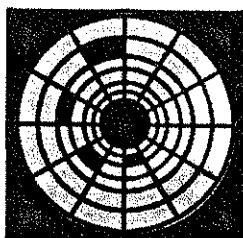
Look at the words in the boxes. Are they nouns, verbs, adjectives or adverbs? Write *n*, *v*, *adj* or *adv* next to each word and then complete the sentences below. For more about word building, see Unit 12.

magnet	magnetic	magnetically
magnetism	magnetize	magnetized

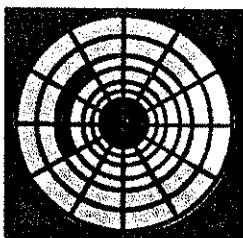
- 1 _____ is the science of magnetic phenomena and properties.
- 2 Floppy disks and hard drives are _____ storage devices.
- 3 Data is recorded on a disk in the form of _____ spots called *bits*.

fragment	fragmentation
defragmenter	fragmented

- 4 After you create, delete and modify a lot of files, the hard drive becomes _____, with bits and pieces spread all over the disk.
- 5 _____ 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.
- 6 To reorganize your hard drive, you can use a disk optimizer or _____; this will reorder your files into continuous clusters.



In a fragmented disk, a file is stored in non-continuous sectors



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

6 Explaining hard drive precautions

A A friend has sent you an email explaining that she has just lost all of the information on her PC because of a head crash. Write a reply explaining the following.

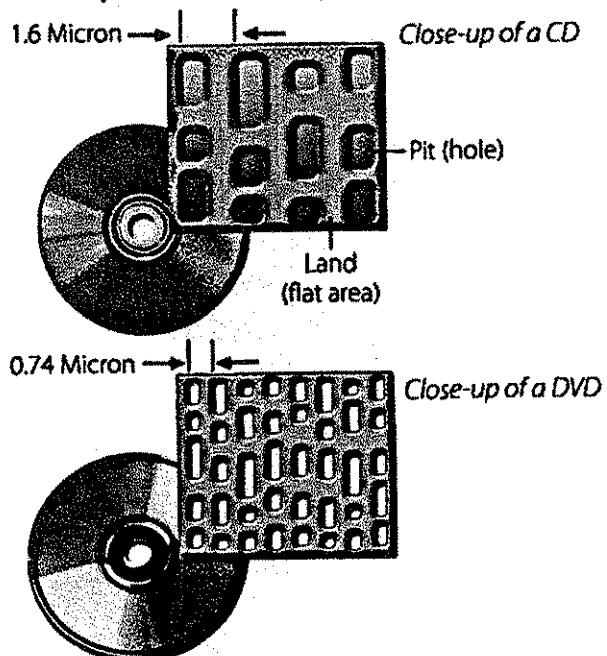
- Why the head crash happened
- What precautions she should take with her new PC to avoid similar problems in the future
- What steps she could take to back up her files

Optical discs and drives

Optical discs can store data at much higher densities than magnetic disks. They are therefore ideal for multimedia applications where images, animation and sound occupy a lot of disc space. Furthermore, optical discs are not affected by magnetic fields, meaning that they are secure and stable, and can be transported through airport metal detectors without damaging the data. However, optical drives are slower than hard drives.

CDs and DVDs

At first sight, a **DVD** is similar to a **CD**. Both discs are 120 mm in diameter and 1.2 mm thick. They also both use a **laser beam** to read data. However, they are very different in internal structure and data capacity. In a DVD, the **tracks** are very close together, thus allowing more tracks. The **pits** in which data is stored are also smaller, so there are more pits per track. As a result, a CD can hold 650-700MB, whereas a basic DVD can hold 4.7GB. In addition, a DVD can be **double-sided** and **dual layer**, with a capacity of 17GB.



CDs come in three different formats:

- **CD-ROMs (read-only memory)** are read-only units, meaning you cannot change the data stored on them (for example, a dictionary or a game).
- **CD-R (recordable)** discs are write-once devices which let you duplicate music CDs and other data CDs.
- **CD-RW (rewritable)** discs enable you to write onto them many times, just like a hard disk.

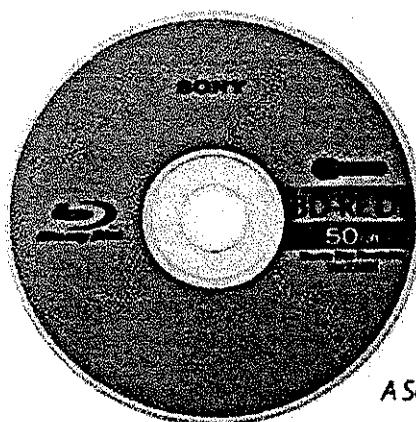
DVDs also come in several formats:

- **DVD-ROMs** are used in DVD computer drives. They allow for data archiving as well as interactive content (for example, an encyclopedia or a movie).
- **DVD-R or DVD+R** can only be recorded on once.
- **DVD-RW or DVD+RW** discs can be erased and reused many times. They are used to back up data files and to record audio and video.

The DVD drive used in computers is also called a **DVD burner** because it records information by burning via a laser to a blank DVD disc. However, a **DVD recorder** typically refers to a standalone unit which resembles a video cassette recorder. New DVD recorders can play all CD and DVD formats. There are also **portable DVD players** – handheld devices which let you watch movies or TV, play games and listen to music, wherever you are. They come with a built-in DVD drive and widescreen (rectangular 16:9 format) LCD display. They usually support **multi-format playback** – that is, they can play many file formats, including DVD-video, DivX, CD audio discs, MP3 music and JPEG images.

HD-DVD and Blu-ray discs

These two competing formats are expected to replace current DVD as the standard for watching movies at home. On one side are Toshiba, Microsoft and the DVD Forum, who support the **High Definition-DVD (HD-DVD)**. Sony, Panasonic, Samsung, JVC and many movie studios are behind the **Blu-ray** format.



A Sony Blu-ray disc

A Blu-ray disc has a capacity of 25GB (single layer), 50GB (dual layer) and 100GB (four layer). Unlike DVDs, which use a red laser to read and write data, Blu-ray uses a blue-violet laser, hence its name. Blu-ray discs can record and play back high-definition television and digital audio, as well as computer data.

B Read the text again and make notes about the features of CDs, DVDs and Blu-ray discs.

	Capacity and formats	Possible uses
CD		
DVD		
Blu-ray		

3 Language work: connectors 2

A Look at these extracts from the text and put the words in *italics* into the correct column of the table.

- 1 They are *therefore* ideal for multimedia applications ...
- 2 Furthermore, optical discs are not affected by magnetic fields.
- 3 However, they are very different in internal structure and data capacity.
- 4 As a result, a CD can hold 650–700MB, whereas a basic DVD can hold 4.7GB.
- 5 In addition, a DVD can be double-sided and dual layer ...

Indicating addition	Making contrasts	Explaining the results or effects of something

B Look at the HELP box and check your answers. How do you say these connectors in your language?

C Choose the correct word in brackets to complete these sentences.

- 1 (Although/Consequently) CDs and DVDs are similar in size and shape, their data structure is very different.
- 2 DVDs hold more data than CDs. The pits burnt into the disc are smaller than on a CD, and the tracks are closer together. (On the other hand / As a result), DVDs can have up to four recording layers.
- 3 A Blu-ray disc drive costs a lot of money (but/so) you should use it carefully.
- 4 Blu-ray is expected to replace DVD over the coming years (because/besides) it offers much greater storage capacity.
- 5 Both Blu-ray (and / in addition) HD-DVD devices are backward-compatible with current CDs and DVDs, meaning you can play your old discs on the new players.
- 6 Sony has invested millions of dollars in the development of Blu-ray technology. The success of Blu-ray is (whereas/therefore) vital for the company's future.

HELP box

Connectors 2

In addition to the uses of connectors covered in Unit 8, we also use connectors for the following purposes:

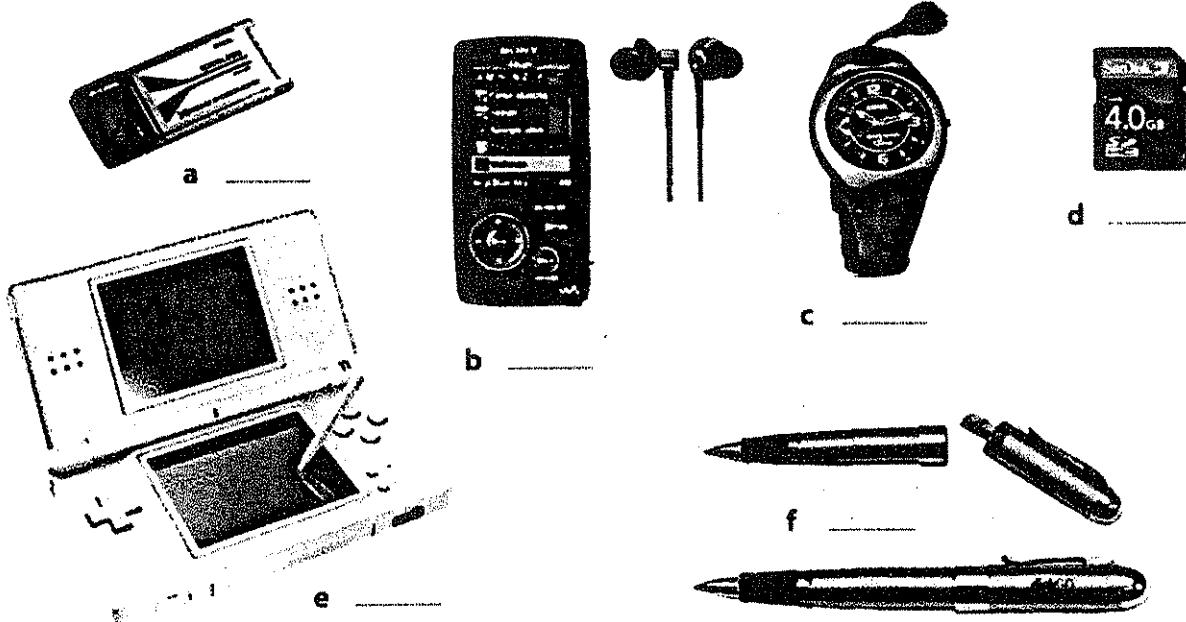
- Indicating addition
furthermore *in addition*
besides *moreover*
and
- Making contrasts
however *whereas*
although *but*
on the other hand
- Explaining the results or effects of something
therefore *as a result*
so *thus*
consequently *because*

Flash memory

1 Flash-based gadgets

Flash memory is used in many handheld devices. Match the descriptions (1–6) with the pictures (a–f).

- 1 This handheld console lets you play games stored on ROM game cards, which have a small amount of flash memory to save user data, for example high scores.
- 2 This flash memory card is used as 'digital film' to store images on a digital camera.
- 3 This wireless LAN card allows laptop and PDA users to access the Internet from any Wi-Fi access point.
- 4 This USB flash pen drive is the latest mobile drive for your computer.
- 5 It looks like an ordinary watch, but this USB drive from Edge Tech can store up to 1GB of flash memory. It will let you save and transfer your photos, songs and data files easily.
- 6 This flash-based player provides everything you need to play music and store data on the go. It also comes with a built-in FM radio and voice recorder.



2 Memory in a flash!

A Look at the title of the text on page 58. Why is it a suitable title for an article about flash memory? Read the first paragraph of the text to find out.

B Read the whole text and answer these questions.

- 1 What is flash memory?
- 2 What are the differences between RAM memory and flash memory?
- 3 What can devices which use multi-level cell technology do?
- 4 What are the differences between flash drives and external hard drives?
- 5 What is the advantage of using U3 technology in flash drives?
- 6 How much data can a flash memory card hold?
- 7 What is the name of the flash card created by Sony for its digital cameras?

Memory in a flash!

Flash memory is a type of **non-volatile** memory that can be electronically erased and reprogrammed. Its name was invented by Toshiba to express how much faster it could be erased – ‘in a flash’, which means ‘very quickly’.

Unlike RAM, which is **volatile**, flash memory retains the information stored in the chip when the power is turned off. This makes it ideal for use in digital cameras, laptops, network switches, video game cards, mobile phones and portable multimedia players. In addition, it offers fast read access times (although not as fast as RAM), with transfer rates of 12MB per second. Unlike ROM chips, flash memory chips are rewritable, so you can update programs via software.

Inside the chip, data is stored in several floating gate transistors, called **cells**. Each cell traditionally stores one bit of data (1 = erased and 0 = programmed). New devices have a multi-level cell structure so they can store more than one bit per cell. The chips are constructed with either **NOR** or **NAND** gates. NOR chips function like a computer’s main memory, while NAND works like a hard drive. For example, in a camera, NOR flash contains the camera’s internal software, while NAND flash is used to store the images.

Flash memory is used in several ways:

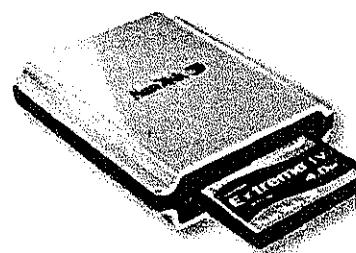
- Many PCs have their BIOS (basic input/output system) stored on a flash memory chip so it can be updated if necessary.
- Modems use flash memory because it allows the manufacturer to support new protocols.
- **USB flash drives** are used to save and move MP3s and other data files between computers. They are more easily transported than external hard drives because they use **solid-state** technology, meaning that they don’t have fragile moving parts that can break if dropped. However, USB flash drives have less storage capacity than hard drives.

■ New **U3 smart drives** allow users to store both applications and data. They have two drive partitions and can carry applications that run on the host computer without requiring installation.

■ **Flash memory cards** are used to store images on cameras, to back up data on PDAs, to transfer games in video consoles, to record voice and music on MP3 players or to store movies on MP4 players. They are as small as a stamp, and capacity can range from 8MB to several gigabytes. The only limitation is that flash cards are often not interchangeable between devices. Some formats include: CompactFlash, Secure Digital, MultiMedia Card, miniSD card, and xD-Picture Card. Sony has its own product called the Memory Stick, used in its digital still cameras, video camcorders and the PlayStation Portable. The photos stored in a digital camera can be offloaded to a computer via cable or wirelessly. Another option is to have a **flash card reader** permanently connected to your PC; you simply eject the card from the camera and put it into the reader instead of having to plug the camera in.

The future of hard drives may be **hybrid** hard drives.

Hybrid hard drives combine a magnetic hard disk and flash memory into one device. This allows computers to boot, or start, more quickly, and also reduces power consumption.



SanDisk’s card readers read and write to just about every flash memory card.

C Find words or phrases in the text with the following meanings.

- 1 permanent; able to hold data without power (lines 1–5)
- 2 able to be rewritten many times (lines 10–15)
- 3 different sections of a disk drive or storage area (lines 40–45)
- 4 to make a copy of a file so that the original is not lost (lines 45–50)
- 5 transferred to another device (lines 60–65)
- 6 a peripheral device that reads and writes flash memory cards (lines 60–65)
- 7 a product that integrates two different technologies (lines 65–70)

3 Language work: word building

A Look at the HELP box and then, using affixation, conversion and compounding, try to make as many words as you can from *blog*, *mail* and *print*. Use a dictionary and the Internet to help you.

blog	mail	print
<i>blogger</i> (a person who writes a blog)	<i>to mail</i> (the verb form)	<i>printout</i> (the pages produced by the printer)

B Choose the correct word in brackets to complete this description of a digital voice recorder. Use a dictionary to help you.



Olympus WS-320M digital voice recorder

Slim, attractive, and highly functional, the Olympus WS-320M digital voice recorder packs 1GB of internal flash memory into its 1 (lighted/lightweight/lighten) housing, letting you record up to 277 hours of high-quality audio in WMA format. It's ideal for 2 (record/recordable/recording) notes or long lectures, interviewing people, or capturing song ideas before they disappear. As an added bonus, the WS-320M can store up to 266 WMA or MP3 songs for high-quality stereo 3 (player/playback/playoff).

The WS-320M features five separate file 4 (folds/folding/folders), capable of holding 199 files each, so you can organize nearly 1,000 files by subject, theme or other category. Users also have the choice of four recording modes: HQ for high-quality audio, LP and SP for extended recording times, and ST HQ for stereo recording. And thanks to the voice 5 (activation/activate/active) option, users don't need to press a single button to start recording – the WS-320M will record as soon as the built-in microphone picks up sound.

Perhaps the most convenient feature, however, is the built-in USB 6 (connector/connect/connected), which eliminates the need for a USB cable. Once this is connected, you can 7 (downloadable/download/upload) music files, images or documents from your PC, in effect turning the recorder into a small hard drive. You can even transfer voice recordings to your computer for 8 (store/storage/storeroom) or multimedia use.

HELP box

Word building

We can create new words from existing words in three main ways:

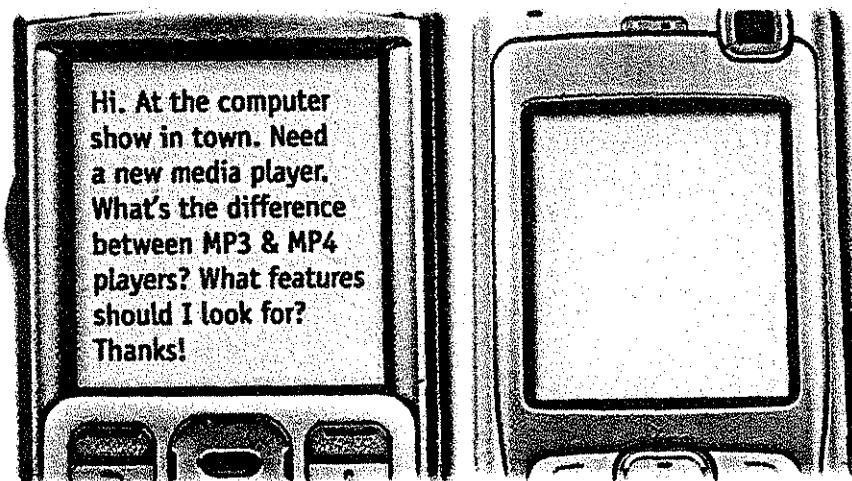
- Affixation (adding a prefix or suffix)
 - Adding a prefix:
volatile → **non-volatile**
 - date* → **update**
- Conversion (turning a noun into a verb, or a verb into a noun, etc.)
 - network* (noun) → **to network** (verb)
 - We **networked** all the PCs in the office.
 - We created a **network** of all the PCs in the office.
- Compounding (putting two or more words together)
 - hand + held* → **handheld**
 - I bought a new **handheld** last week.

Compounds can be written as two separate words (*flash card*), as two words joined with a hyphen (*solid-state*), or as one word (*handheld*). Unfortunately, there are no rules, and some compounds even change spelling over time. For example, *web site* began as two words, then became hyphenated (*web-site*) and is now written as one word – **website**. Always check your dictionary or Google if you are not sure.

In pronunciation, compounds normally have the main stress on the first part, and the secondary stress on the second part, for example '**video game**'.

D In pairs, choose a flash-based device that you own and describe it. Use the *Useful language* box and the features and questions from the listening text to help you.

E You have received a text from a friend at a computer show. Write a short reply.



Useful language

It has a storage capacity of ...

It features ... and ...

It supports multiple formats: ... and ...

You can ... and ...

Its battery life is ...

5 Vocabulary revision

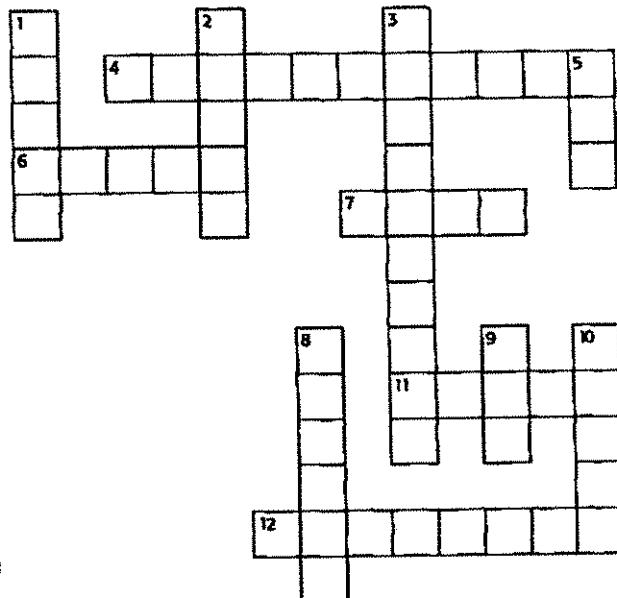
Solve the clues and complete the puzzle. Look at Units 10–12 to help you.

Across

- 4 Thousandth of a second, abbreviated to ms, used to measure the access time of hard drives.
- 6 Floating gate transistors are called _____ in flash memory technology.
- 7 Prefix meaning *very large* or *one thousand million*.
- 11 Acronym for *light amplification by stimulated emission of radiation*.
- 12 Capable of being deleted.

Down

- 1 Concentric ring on the surface of a disc when the disc is formatted.
- 2 _____ memory retains its data when the power is switched off.
- 3 CD-RW means Compact Disc _____.
- 5 Abbreviation of *digital versatile disc*.
- 8 To write information on a disk or storage area.
- 9 Type of external bus or connector that plugs into the computer.
- 10 The physical mechanism that accepts, reads and writes data on a disk.



GUI operating systems

- The term **user interface** refers to the standard procedures that the user follows in order to interact with a computer. In the late 1970s and early 80s, the way users accessed computer systems was very complex. They had to memorize and type a lot of commands just to see the contents of a disk, to copy files or to respond to a single prompt. In fact, it was only experts who used computers, so there was no need for a user-friendly interface.
- In 1984, Apple produced the Macintosh, the first computer with a mouse and a **graphical user interface (GUI)**. Macs were designed with one clear aim: to facilitate interaction with the computer. A few years later, Microsoft launched Windows, another operating system based on graphics and intuitive tools. Nowadays, computers are used by all kinds of people, and as a result there is a growing emphasis on accessibility and user-friendly systems.
- A **GUI** makes use of a **WIMP** environment: **windows**, **icons**, **menus** and **pointer**. The background of the screen is called the **desktop**, which contains labelled pictures called **icons**. These icons represent **files** or **folders**. Double-clicking a folder opens a window which contains **programs**, **documents**, or more nested folders. When you are in a folder, you can launch a program or document by double-clicking the icon, or you can drag it to another location. When you run a program, your PC opens a window that lets you work with different tools. All the programs have a high level of consistency, with similar toolbars, menu bars, buttons and dialog boxes. A modern OS also

provides access to networks and allows multitasking, which means you can run several programs – and do various tasks – at the same time.

The most popular operating systems are:

- The **Windows** family – designed by Microsoft and used on most PCs. The most recent version is Windows Vista.
- **Mac OS** – created by Apple and used on Macintosh computers.
- **Unix** – a multi-user system, found on mainframes and workstations in corporate installations.
- **Linux** – open-source software developed under the GNU General Public License. This means anybody can copy its source code, change it and distribute it. It is used in computers, appliances and small devices.
- **Windows Mobile** – used on most PDAs and smartphones (PDAs incorporating mobile phones).
- **Palm OS** – used on Palm handheld devices.
- **RIM** – used on BlackBerry communication devices. Developed by Research In Motion.
- The **Symbian OS** – used by some phone makers, including Nokia and Siemens.

These computer platforms differ in areas such as device installation, network connectivity or compatibility with application software.

D Translate these terms and expressions into your own language. Use a dictionary or the Internet to help you.

- 1 user interface (line 1) _____
- 2 procedures (line 2) _____
- 3 commands (line 6) _____
- 4 tools (line 16) _____
- 5 desktop (line 21) _____
- 6 nested folders (line 25) _____
- 7 launch a program (line 26) _____
- 8 source code (line 45) _____

Unit 15

Spreadsheets and databases

1 Spreadsheet programs

A In pairs, discuss these questions.

- 1 What is a spreadsheet?
- 2 What are spreadsheets used for?

B Look at the worksheet and label a, b and c with column, row and cell. Then answer these questions.

- 1 What types of data can be keyed into a cell?
- 2 What happens if you change the value of a cell?

c _____

This worksheet shows the income and expenses of a company. Amounts are given in \$millions. The terms **worksheet** and **spreadsheet** are often used interchangeably. However, technically, a **worksheet** is a collection of cells grouped on a single layer of the file. A **spreadsheet** refers to both the computer program that displays data in rows and columns, and to the table which displays numbers in rows and columns.

	A	B	C	D	E	F
1		2007	2008			
2	Sales	656	562			
3	Stocks/Shares	487	768			
4	Interest	182	224			
5	Total Revenue	1325	2054			
6						
7	Payroll	894	924			
8	Publicity	399	451			
9	Services	418	372			
10	Total Expenses	1721	1727			
11						
12	TOTAL	-472	333			

C Listen to Lucy Boyd giving a training course on basic Excel and check your answers to A and B.

D Listen again and decide whether these sentences are true or false. Correct the false ones.

- 1 A spreadsheet 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 formulae.
- 3 You cannot change the width of columns.
- 4 Spreadsheet programs can generate a variety of charts and graphs.
- 5 Spreadsheets cannot be used as databases.

E Look at the worksheet above and decide whether these sentences are true or false. Correct the false ones.

- 1 The value of the cell C12 is the result of applying the formula C5-C10.
- 2 The value of cell B5 is the result of adding the value in cells B2 and B3.
- 3 If you type the value 800 in C3, the value in cells C5 and C12 will be recalculated.

F In pairs, discuss the advantages and disadvantages of showing the information above as a graph, rather than as a worksheet.



2

An invoice, a business letter and a fax

A Spreadsheets are also used to generate invoices. Complete the invoice below with words from the box. If you have a spreadsheet program, try to produce a similar invoice.

Quantity	Description	Price	VAT (value added tax)	Product	Grand total	Compa
	Name: Ruth Atkinson			(1) _____		
	Address: 38 High Street, Galway			Media Market		
	Telephone: 5 742 9165			Fax: 1 662 2367		
	Date: 16 May 2008					
(2) _____	(3) _____	(4) _____	(5) _____			
Ulysses Classic	2GB of RAM, 1TB HD	4	850€	3,400€		
Flat LCD screen	Colour 19"	4	170€	680€		
Portable Ulysses	2GB of RAM, 250GB HD	2	975€	1,950€		
D5 database	DBMS, relational database	1	245€	245€		
Antidote JP	Anti-virus, anti-spyware	6	60€	360€		
Laser printer CQ	2,400 dpi, PostScript	1	230€	230€		
			Sub-total	6,865€		
			(6) _____	(21%)	1,441€	
			(7) _____		8,306€	

B Look at this letter which accompanies the invoice. Complete the letter with phrases from the box.

Yours sincerely	I am writing to	Dear Ms Atkinson	We would be grateful if you could
		I am enclosing	Please contact us

16 May 2008

Ruth Atkinson
38 High Street
Galway

(1) _____

(2) _____ confirm that we have sent you four desktop PCs plus screens, two laptops and a laser printer, along with a D5 database, and an anti-virus program for each of the computers. Please allow two weeks for delivery.

(3) _____ two copies of your invoice.

(4) _____ make your payment by cheque or directly to our bank account through the Internet.

We are also delighted to inform you that we are offering our clients an online course called *A paperless office*, free of charge. (5) _____ if you require any further information.

(6) _____

Ian Pegg

Databases

A **database** is a collection of related data, and the software used in databases to store, organize and retrieve the data is called the **database management system**, or **DBMS**. However, we often use the word *database* to cover both meanings. A database can manage any type of data, including text, numbers, images, sound, video and hyperlinks (links to websites).

Information is entered into the database via **fields**. Each field holds a separate piece of information, and the fields are grouped together in **records**. Therefore, a record about an employee might consist of several fields which give their name, address, phone number, date of birth, salary and length of employment with the company.

Records are grouped together into **files** which hold large amounts of information. Files can easily be **updated** – you can always change fields, add new records or delete old ones. An electronic database is much faster to consult and update than a card index system and occupies a lot less space. With the right software, you can keep track of stock, sales, market trends, orders and other information that can help your company stay successful.

A database program lets you create an **index** – a list of records ordered according to the content of certain fields. This helps you to **search** the database and **sort**

records into numerical or alphabetical order very quickly. Modern databases are **relational** – that is, they are made up of related files: customers and orders, vendors and purchases, students and tutors, etc. Two database files can be related as long as they have a common field. A file of students, for example, could include a field called *Tutor ID* and another file with details of the tutors could include the same field. This key field can be used to relate the two files. Databases like Oracle, DB2 and MySQL can manage these relationships.

A database **query** function allows you to extract information according to certain conditions or criteria. For example, if a managing director wanted to know all the customers that spend more than €8,000 per month, the program would search on the name field and the money field simultaneously.

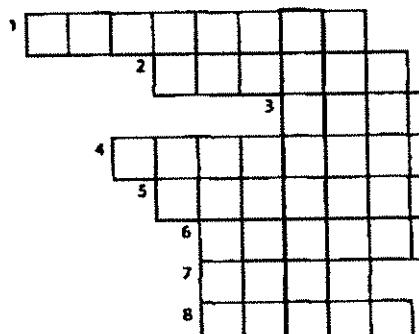
The best database packages also include **network** facilities, which can make businesses more productive. For example, managers of different departments can have direct access to a common database. Most aspects of the program can be protected by user-defined passwords and other **security devices**. For example, if you wanted to share an employee's personal details but not their commission, you could protect the commission field.

D Complete these statements about databases using information from the text

- 1 A database management system is used to _____
- 2 Information is entered into a database via _____
- 3 Each field holds _____
- 4 Updating a file means _____
- 5 Some advantages of a database program over a manual filing system are: _____
- 6 Access to a common database over a network can be protected by using _____

E Solve the clues and complete the puzzle.

- 1 A collection of data stored in a PC in a systematic way.
- 2 A unit of a database file made up of related fields.
- 3 A single piece of information in a record.
- 4 A _____ database maintains separate, related files, but combines data elements from the files for queries and reports.
- 5 Some companies have several computers sharing a database over a _____.
- 6 To look for specific information, for example the name of an employee.
- 7 To classify records into numerical or alphabetical order.
- 8 A tool that allows you to extract information that meets certain criteria.



F In pairs, discuss what fields you would include in a database for your

4 Language work: plurals

A Look at the HELP box and then write the plural of these words.

- | | |
|---------------------|----------------|
| 1 client _____ | 5 fax _____ |
| 2 key _____ | 6 salary _____ |
| 3 query _____ | 7 mouse _____ |
| 4 businessman _____ | 8 virus _____ |

HELP box

Plurals

- In most cases, we form the plural in English by adding -s.
record → *records*
- If a word ends in -s, -sh, -x or -ch, we add -es.
address → *addresses*
index → *indexes*
- If a word ends in a consonant + y, the y becomes i and we add -es.
company → *companies*
facility → *facilities*
- However, if the y follows a vowel, we add only -s.
birthday → *birthdays*

- There are several irregular plural forms:
man/woman → *men/women*
child → *children*
analysis → *analyses*
formula → *formulae* (or *formulas*)
criterion → *criteria*
mouse → *mice*
- The -s is pronounced as:
/s/ after one of these sounds: /p/, /t/, /k/, /f/ or /θ/ (e.g. *amounts*, *hyperlinks*)
/z/ after one of these sounds: /s/, /z/, /ʃ/, /tʃ/ or /dʒ/ (e.g. *businesses*, *devices*, *images*)
/ɪz/ in most other cases (e.g. *files*, *fields*, *customers*, *columns*)

B Put the plurals into the correct pronunciation column.

databases	passwords
laptops	graphs
orders	switches
taxes	networks
tables	packages
spreadsheets	systems

/s/	/z/	/ɪz/

5 Software at home and at work

 In pairs, find out as much as you can about the software your partner uses at home or at work. Ask about spreadsheet programs, databases, word processors, videoconferencing, business accounting, email, and web browsers. Look at the Useful language box to help you.

Useful language

What kind of spreadsheet program do you use?

What do you use it for?

Do you use it at home or at work?

What's your favourite ...?

What features do you like most about it?

How do you ...?



Now visit www.cambridge.org/elt/ict for an online task.

3 Language work: questions

A Look at the HELP box and then make a question about Sue Clarke for each of her answers.

- 1 _____
I'm 23 years old.
- 2 _____
I'm an online researcher.
- 3 _____
I use the Internet to find information requested by clients.
- 4 _____
I've been doing this job for six months.
- 5 _____
I graduated from university in 2006.



Sue

HELP box

Questions

- In questions, we normally place the auxiliary verb before the subject.
Are there other ways of accessing the Internet?
- If there is no other auxiliary, we use **do/does** (present simple) or **did** (past simple).
Did the Internet become popular quickly?
- There are many question words in English which we use to find out more information than just yes or no.
People
Who created the Internet?
Things
What does TCP/IP mean?
Which email program is the best?

Place

Where can you find newsgroups?

Time

When was it created?

How often are web pages updated?
How long has broadband existed?

Reason

Why do you need a modem?

Quantity

How much does broadband access cost?
How many newsgroups are there?

Manner

How do you get online?

Others

How fast are today's internet connections?
How old is the Internet?



B In pairs, make questions using these prompts. Then practise asking and answering the questions.

Example: When / first / use the Internet *When did you first use the Internet?*

- 1 What type of internet connection / have at home?
- 2 How fast / your internet connection?
- 3 How much / pay for broadband access?
- 4 How often / access the Internet?
- 5 Which email program / use?
- 6 Who / send email to?
- 7 Do / use your mobile phone to access the Internet?
- 8 Do / use the Internet in public spaces using Wi-Fi?
- 9 Do / play games online?

4 Email features

A Read the text and find the following.

- 1 the place where your ISP stores your emails
- 2 the type of program used to read and send email from a computer
- 3 the part of an email address that identifies the user of the service
- 4 the line that describes the content of an email
- 5 the computer file which is sent along with an email message
- 6 facial symbols used to indicate an emotion or attitude
- 7 the name given to junk mail

B Write a reply to Celia's email below.

Email features

When you set up an account with an Internet Service Provider, you are given an **email address** and a **password**. The mail you receive is stored on the **mail server** of your ISP – in a simulated mailbox – until you next connect and download it to your hard drive.

There are two ways to get email over the Internet. One is by using a **mail program** (known as an **email client**) installed on your computer, for example Eudora or Outlook Express. The other way is to use **web-based email**, accessible from any web browser. Hotmail and Gmail are good examples.

You can make the message more expressive by including **emoticons**, also called **smileys**. For example, ;‐) for wink, ;‐‐ for happy, ;‐o for surprised, ;‐D for laughing, etc. You may also like to add a **signature file**, a pre-written text file appended to the end of the message. The name given to unsolicited email messages is **spam**.

The anatomy of an email

The header

To: name and address of the recipient

From: name and address of the sender

Cc: carbon copy sent to another person

Bcc: blind carbon copy

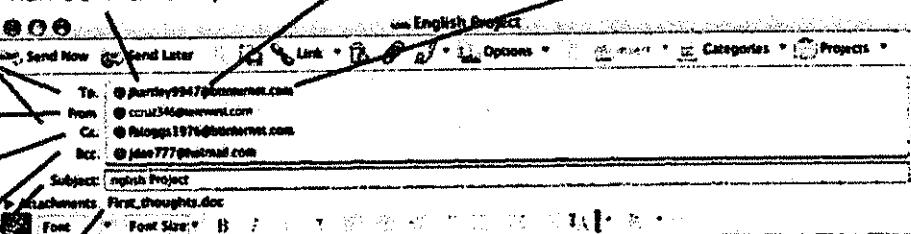
Subject: topic of the message

Attachment: files added to the message

The username (a person's name or nickname)

The @ sign, which means at

The domain name or network address – that is, the mail server where the account is located. The final part adds information about it, for example **com** = company, **uk** = United Kingdom, **fr** = France, etc.



Hi John,

I have to prepare a project for my English class about the history of the Internet and how it's used in our day-to-day lives. Do you have any thoughts about what I should include? I've included my first thoughts here as an attachment. Could you send me some more ideas?

All the best,

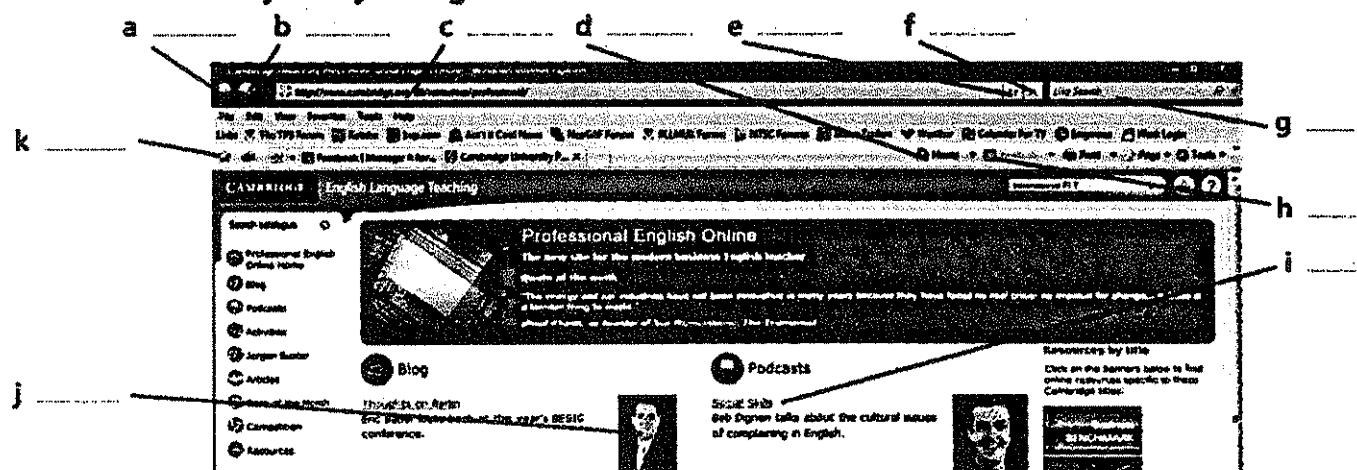
Celia

The body contains the message itself

Unit 17 The Web

1 A typical web page

A Look at the screenshot of a typical web page. How many of the features (a–k) can you say in English?



A screenshot from Internet Explorer 7, a leading web browser.

B Read the text and label the features on the screenshot with the terms in bold

A typical web page

At the top of the page is the **URL address**. URL means Uniform Resource Locator – the address of a file on the Internet. A typical URL looks like this:
<http://www.bbc.co.uk/radio/>.

In this URL, **http://** means Hypertext Transfer Protocol and tells the program to look for a web page. **www** means world wide web. **bbc.co.uk** is the domain name of the server that hosts the website – a company based in the UK; other top-level domains are **.com** (commercial site), **.edu** (education), **.org** (organization) or **.net** (network); **radio** is the directory path where the web page is located. The parts of the URL are separated by **.** (dot), **/** (slash) and **:** (colon). Some sites begin **ftp://**, a file transfer protocol used to copy files from one computer to another.

The toolbar shows all the navigation icons, which let you **go back one page** or **go forward one page**. You can

also **go to the home page** or **stop the current transfer** when the circuits are busy.

Tab buttons let you view different sites at the same time, and the built-in **search box** helps you look for information. If the **feed button** lights up, it means the site offers RSS feeds, so you can automatically receive updates. When a web page won't load, you can **refresh the current page**, meaning the page reloads (downloads again). If you want to mark a website address so that you can easily revisit the page at a later time, you can add it to your **favourites** (favorites in American English), or bookmark it. When you want to visit it again you simply click **show favourites**.

On the web page itself, most sites feature **clickable image links** and **clickable hypertext links**. Together, these are known as **hyperlinks** and take you to other websites when clicked.

C



Listen to three internet addresses and write them down.

- 1 _____
- 2 _____
- 3 _____

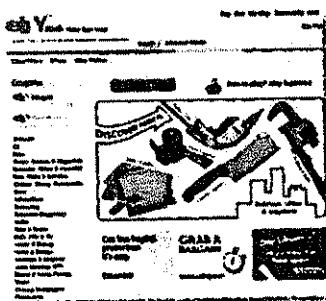
2 The collectives of cyberspace

A Read the article and find websites for the following tasks.

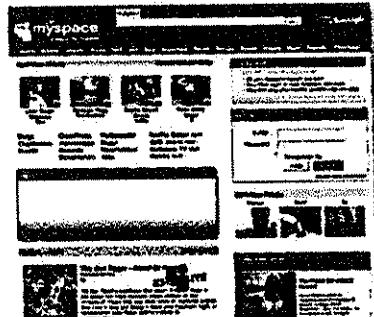
- 1 to search for information on the Web
- 2 to buy books and DVDs
- 3 to participate in political campaigns
- 4 to view and exchange video clips
- 5 to manage and share personal photos using tags
- 6 to buy and sell personal items in online auctions
- 7 to download music and movies, sometimes illegally

Tour the Collectives of Cyberspace

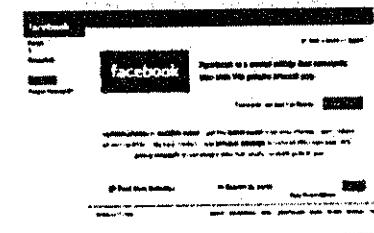
The Internet isn't just about email or the Web anymore. Increasingly, people online are taking the power of the Internet back into their own hands. They're posting opinions on online journals – weblogs, or blogs; they're organizing political rallies on MoveOn.org; they're trading songs on illegal file-sharing networks; they're volunteering articles for the online encyclopedia Wikipedia; and they're collaborating with other programmers around the world. It's the emergence of the 'Power of Us'. Thanks to new technologies such as blog software, peer-to-peer networks, open-source software, and wikis, people are getting together to take collective action like never before.



eBay, for instance, wouldn't exist without the 61 million active members who list, sell, and buy millions of items a week. But less obvious is that the whole marketplace runs on the trust created by eBay's unique feedback system, by which buyers and sellers rate each other on how well they carried out their half of each transaction. Pioneer e-tailer Amazon encourages all kinds of customer participation in the site – including the ability to sell items alongside its own books, CDs,



DVDs and electronic goods. MySpace and Facebook are the latest phenomena in social networking, attracting millions of unique visitors a month. Many are music fans, who can blog, email friends, upload photos, and generally socialize. There's even a 3-D virtual world entirely built and owned by its residents, called Second Life, where real companies have opened shops, and pop stars such as U2 have performed concerts.



Some sites are much more specialized, such as the photo-sharing site Flickr. There, people not only share photos but also take the time to attach tags to their pictures, which help everyone else find photos of, for example, Florence, Italy. Another successful example of a site based on user-generated content is YouTube, which allows users to upload, view and share movie clips and music videos, as well as amateur videoblogs. Another example of the collective power of the Internet is the Google search engine. Its mathematical formulas surf the combined judgements of millions of people whose websites link to other sites. When you type Justin Timberlake into Google's search box and go to the star's official website, the site is listed first because more people are telling you it's the most relevant Justin Timberlake site – which it probably is.

Skype on the surface looks like software that lets you make free phone calls over the Internet – which it does. But the way it works is extremely clever. By using Skype, you're automatically contributing some of your PC's computing power and Internet connection to route other people's calls. It's an extension of the peer-to-peer network software such as BitTorrent that allow you to swap songs – at your own risk if those songs are under copyright. BitTorrent is a protocol for transferring music, films, games and podcasts. A podcast is an audio recording posted online. Podcasting derives from the words iPod and broadcasting. You can find podcasts about almost any topic – sports, music, politics, etc. They are distributed through RSS (Really Simple Syndication) feeds which allow you to receive up-to-date information without having to check the site for updates. BitTorrent breaks the files into small pieces, known as chunks, and distributes them among a large number of users; when you download a torrent, you are also uploading it to another user.

Adapted from BusinessWeek online

HELP box**Collocations 2**

A collocation is a pair or group of words that are often used together. For example, we say ***make phone calls***, not ***do phone calls***.

Here are some common types of collocation:

- verb + noun (see Unit 1)
surf the Web **download music**
- verb + particle
hack into a computer **log onto a bank account**

- adverb + adjective
highly sensitive information
freely available on the Web
- adjective + noun
mathematical formulas **up-to-date information**

The word **online** often collocates with other words and can function as adjective or adverb.

Adjective: *They post opinions on online journals.*

Adverb: *A podcast is an audio recording posted online.*

4 E-commerce and online banking

A Listen to two extracts from a monthly podcast called **Money Matters**. What is each speaker talking about?

Speaker 1

Speaker 2

B Listen again and make notes under these headings.

Speaker 1

Things people buy online

Speaker 2

Things you can do with online banking

Steps for buying online

Biggest issue with online banking

Precautions

Precautions

C Complete the extracts with words from the box

authorization	fake	internet auction	shopping cart	browse	log in	steal
---------------	------	------------------	---------------	--------	--------	-------

- 1 Occasionally I also buy things on sites such as eBay, where people offer and sell things to the highest bidder.
- 2 First you enter a site dedicated to e-commerce and their products.
- 3 Then you put the items you want to buy into a virtual – a program that lets you select the products and buy with a credit card.
- 4 You may have to with a username and a password ...
- 5 ... for some transactions, you will be required to use a TAN, a transaction number.
- 6 Be aware of **phishing** – you may receive emails claiming to be from your bank and asking for personal information or account details in an attempt to your identity.

D Listen again and check your answers.

B Read the article again and match the sentence beginnings (1–5) with the correct endings (a–e).

- | | |
|--|--|
| 1 A weblog , or blog, is an electronic journal | a web pages on a particular subject. |
| 2 A peer-to-peer system allows | b for downloading files over the Internet. |
| 3 You can use a search engine to find | c users to share files on their computers. |
| 4 BitTorrent is a peer-to-peer protocol used | d about fresh, new content on your favourite websites. |
| 5 RSS keeps you constantly informed | e that displays in chronological order the postings of one or more people. |

C Find words in the article with the following meanings.

- 1 open-source, editable web pages (lines 5–10) _____
- 2 the same as *electronic retailer*, or online store (lines 10–15) _____
- 3 a blog that includes video (lines 25–30) _____
- 4 a program that allows you to make voice and video calls from a computer (lines 30–35) _____
- 5 an audio broadcast distributed over the Internet (lines 35–40) _____

D  Write a short article (80–120 words) for your school/university/work newsletter about the latest internet phenomena (MySpace, eBay, etc.). Talk about any other sites you think are important or will be important in the future.

3 Language work: collocations 2

A Look at the HELP box on page 87 and then match the words on the left (1–6) with the words on the right (a–f) to make collocations. There may be more than one possible answer.

- | | |
|------------|----------------|
| 1 online | a friends |
| 2 take | b photos |
| 3 email | c action |
| 4 upload | d website |
| 5 portable | e encyclopedia |
| 6 official | f player |

B In pairs, make sentences using the collocations above.

C Find the collocations in these sentences and say what type they are.

- 1 Once you are online , you can browse the Web, visit chat rooms or send and receive emails.
- 2 Instant messaging can be a great way to communicate with friends.
- 3 This software may not be fully compatible with older operating systems.
- 4 Most webcams plug into a USB port.
- 5 This highly addictive game will keep you playing for hours.
- 6 Companies are starting to use virtual reality on their websites.

5 Language work: the prefixes e- and cyber-

Look at the HELP box and then complete these sentences.

- 1 A is an employee who uses his company's internet connection during work hours to chat with friends, play games, etc.
- 2 An is a postcard sent via the Internet.
- 3 An is a small magazine or newsletter published online.
- 4 In a you can use computers with internet access for a fee.
- 5 Examples of include internet fraud, digital piracy, theft of confidential information, etc.
- 6 In the future, all elections will be carried out using
- 7 You can now sign legal documents online using an
- 8 will revolutionise the way we take exams.
- 9 can be used on some websites instead of real money to make purchases. It reduces the risk of fraud.
- 10 An is like the paper version, but in digital form.

HELP box

The prefixes e- and cyber-

- The **e-** prefix means *electronic*, and we add it to activities that take place on computers or online, for example **e-business/e-commerce** – business conducted over the Internet. Other examples include: **e-card, e-learning, e-zine, e-voting, e-signature, e-assessment, e-cash, e-book and e-pal**.

There are often spelling variations, with or without a hyphen, so always check your dictionary.

- The **cyber-** prefix comes from *cybernetics*, and we use it to describe things related to computer networks, for example **cybercafé** – an internet café. Other examples include: **cybercrime, cyberspace, cyberslacker and cyberspace**.

6 What do you use the Web for?



In pairs, discuss these questions. Give reasons for your answers.

- 1 What is your favourite search engine to find information on the Web? Why?
- 2 Do you download music or video clips from the Web? Do you pay for them?
- 3 Do you buy things online? Is it better to buy online or go to a shop?
- 4 Have you ever listened to the radio or watched TV online?
- 5 Do you use the Web to do school/university assignments or projects? How?



Security and privacy on the Internet

There are many benefits from an open system like the Internet, but one of the risks is that we are often exposed to **hackers**, who break into computer systems just for fun, to steal information, or to spread viruses (see note below). So how do we go about making our online transactions secure?

Security on the Web

Security is crucial when you send confidential information online. Consider, for example, the process of buying a book on the Web. You have to type your credit card number into an order form which passes from computer to computer on its way to the online bookstore. If one of the intermediary computers is infiltrated by hackers, your data can be copied.

To avoid risks, you should set all security alerts to high on your web browser. Mozilla Firefox displays a lock when the website is secure and allows you to disable or delete **cookies** – small files placed on your hard drive by web servers so that they can recognize your PC when you return to their site.

If you use online banking services, make sure they use **digital certificates** – files that are like digital identification cards and that identify users and web servers. Also be sure to use a browser that is compliant with **SSL** (Secure Sockets Layer), a protocol which provides secure transactions.

Email privacy

Similarly, as your email travels across the Net, it is copied temporarily onto many computers in between. This means that it can be read by people who illegally enter computer systems.

The only way to protect a message is to put it in a sort of virtual envelope – that is, to encode it with some form of **encryption**. A system designed to send email privately is Pretty Good Privacy, a **freeware** program written by Phil Zimmerman.

Network security

Private networks can be attacked by intruders who attempt to obtain information such as Social Security numbers, bank accounts or research and business reports. To protect crucial data, companies hire security consultants who analyse the risks and provide solutions. The most common methods of protection are **passwords** for access control, **firewalls**, and **encryption** and **decryption** systems. Encryption changes data into a secret code so that only someone with a key can read it. Decryption converts encrypted data back into its original form.

Malware protection

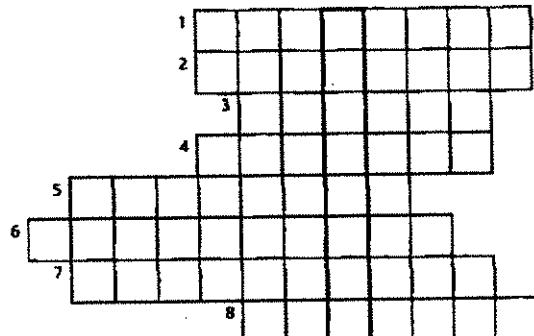
Malware (malicious software) are programs designed to infiltrate or damage your computer, for example **viruses**, **worms**, **Trojans** and **spyware**. A virus can enter a PC via a disc drive – if you insert an infected disc – or via the Internet. A worm is a self-copying program that spreads through email attachments; it replicates itself and sends a copy to everyone in an address book. A Trojan horse is disguised as a useful program; it may affect data security. Spyware collects information from your PC without your consent. Most spyware and adware (software that allows pop-ups – that is, advertisements that suddenly appear on your screen) is included with 'free' downloads.

If you want to protect your PC, don't open email attachments from strangers and take care when downloading files from the Web. Remember to update your **anti-virus software** as often as possible, since new viruses are being created all the time.

Note: Originally, all computer enthusiasts and skilled programmers were known as **hackers**, but during the 1990s, the term hacker became synonymous with **cracker** – a person who uses technology for criminal aims. Nowadays, people often use the word hacker to mean both things. In the computer industry, hackers are known as *white hats* and crackers are called *black hats* or *darkside hackers*.

C Solve the clues and complete the puzzle.

- Users have to enter a to gain access to a network.
- A protects a company intranet from outside attacks.
- A is a person who uses their computer skills to enter computers and networks illegally.
- can infect your files and corrupt your hard drive.
- You can download from the Net; this type of software is available free of charge but protected by copyright.
- Encoding data so that unauthorized users can't read it is known as
- This company uses techniques to decode (or decipher) secret data.
- Most is designed to obtain personal information without the user's permission.



Computer graphics

Computer graphics are pictures and drawings produced by computer. There are two main categories:

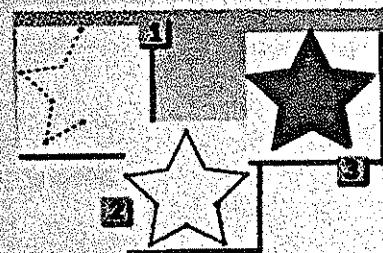
Raster graphics, or **bitmaps**, are stored as a collection of pixels. The sharpness of an image depends on the density of pixels, or **resolution**. For example, text or pictures that are scaled up – that is, made bigger – may show **jagged edges**. Paint and photo-editing programs like Adobe Photoshop focus on the manipulation of bitmaps. Popular raster formats are **JPEG**, **GIF** and **TIFF**.

Vector graphics represent images through the use of geometric objects, such as lines, curves and polygons, based on mathematical equations. They can be changed or scaled without losing quality. Vector data can be handled by drawing programs like Adobe Illustrator, Corel Draw or Macromedia Freehand. **EPS** is the most popular file format for exchanging vector drawings.



► *Bitmap graphics are composed of pixels, each of which contains specific colour information*

► *Vector graphics consist of points, lines and curves which, when combined, can form complex objects*



Almost all computer users use some form of graphics. Home users and professional artists use image-editing programs to manipulate images. For example, you can add **filters** (special effects) to your favourite photos, or you can **composite** images. Compositing is combining parts of different images to create a single image.

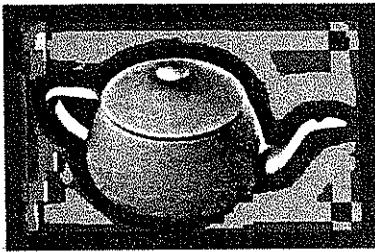
Graphic artists and designers use drawing programs to create freehand drawings and illustrations for books or for the Web. Businesspeople use presentation graphics to make information more interesting visually – graphs and diagrams can be more effective ways of communicating with clients than lists of figures. Electrical engineers use graphics to design circuits in order to present data in a more understandable form. Mechanical engineers use **CAD** (Computer Aided Design) software to develop, model and test car designs before the actual parts are made. This can save a lot of time and money.

CAD is also used in the aerospace, architecture and industrial sectors to design everything from aeroplanes and buildings to consumer products. Designers start a project by making a **wireframe**, a representation showing the outlines of all edges in a transparent drawing. They then specify and fill the surfaces to give the appearance of a 3-D solid object with volume. This is known as **solid modelling**. Next, they add paint, colour and filters to achieve the desired 'look and feel': this is called **texturing** the object. Finally, they **render** the object to make it look real. Rendering includes lighting and shading as well as effects that simulate shadows and reflections.



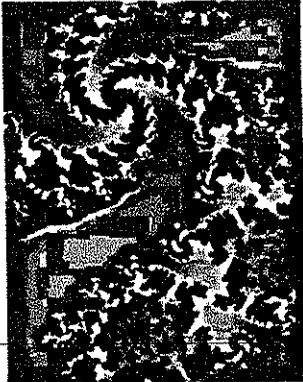
► *A wireframe model of a teapot*

► *Smooth shading – part of the rendering process*



Computer art, or **digital art**, is used in adverts and TV programmes. Artists and scientists use special graphic applets to create amazing **fractals**. Fractals are geometrical patterns that are repeated at small scales to generate irregular shapes, some of which describe objects from nature. Government agencies use **GIS** (Geographic Information Systems) to understand geographic data and then plan the use of land or predict natural disasters. Cartographers use GIS to make detailed maps. Animators use **computer animation** software to create animated cartoons or add effects in movies and video games.

► *A fractal*



D Match the words (1–6) with the definitions (a–f).

- | | |
|--------------|--|
| 1 resolution | a special effects that can be applied to pictures |
| 2 jagged | b a technique that generates realistic reflections, shadows and highlights |
| 3 filters | c geometrical figures with special properties |
| 4 wireframe | d irregular or uneven |
| 5 rendering | e the number of pixels in an image |
| 6 fractals | f the drawing of a model by using features like edges or contour lines |

E  In pairs, discuss which application of computer graphics you think is the most important or useful. Give reasons for your answers.

2 Language work: the -ing form

A Look at the HELP box and decide if the -ing forms in these sentences are gerunds, present participles or adjectives. Write g, pp or a.

- 1 PCs generate graphics by performing mathematical calculations on data.
- 2 Businesspeople use graphics to make information more interesting visually.
- 3 Graphs and diagrams can be more effective ways of communicating with clients than lists of figures.
- 4 She is designing a logo for the company.
- 5 If you need to make a presentation, I suggest using PowerPoint.
- 6 The Internet is a network linking other networks.

B Correct the mistakes in these sentences. There are seven mistakes in total.

- 1 Computer animation is the process of create objects which move across the screen.
- 2 Texturing involves add paint, colour and filters to drawings and designs.
- 3 You can open the colour palette by click on the corresponding icon.
- 4 CAD programs are very fast at to perform drawing functions.
- 5 A lot of time and money is saved by test a car design before to make the product.
- 6 To render refers to the techniques used

HELP box

The -ing form

We use the -ing form in three ways:

- 1 *Rendering includes lighting and shading.*
- 2 *We are designing a new car on computer.*
- 3 *They use special applets to create amazing fractals.*
- In 1, **rendering** is a gerund (see below), acting as the subject. **Lighting** and **shading** are also gerunds, acting as the objects. A gerund refers to an activity or process.
- In 2, **designing** is a present participle. This is used in continuous tenses (in the above example, the present continuous) and reduced relative clauses.
... *a representation showing the outlines of all edges.*
(= which shows the outlines ...)
- In 3, **amazing** is an adjective.

We use gerunds in the following ways:

- As the subject of a verb
Compositing is combining parts of different images to create a single image.
- As the complement of the subject
Compositing is combining parts of different images ...
- As the object of a verb
I enjoy editing pictures.
- After a preposition
Designers start a project by making a wireframe.
- As the complement of a verb
This course involves painting and drawing in various media.
- Some verbs are followed by the gerund, not by the infinitive (e.g. **avoid**, **fancy**, **finish**, **give up**, **hate**, **imagine**, **involve**, **keep**, **look forward to**, **mind**, **connect** etc.)

3 Multimedia magic!

A Read the text and match the headings (1–4) with the gaps at the start of each paragraph (a–d).

- 1 Sound, Music, MIDI
- 2 Products full of pictures, action and sound
- 3 Creating and editing movies
- 4 The potential of multimedia

Multimedia magic!

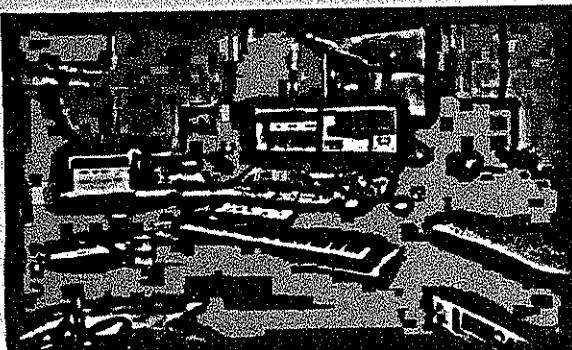
a

Multimedia applications are used in all sorts of fields. For example, museums, banks and estate agents often have information kiosks that use multimedia; companies produce training programs on optical discs; businesspeople use Microsoft PowerPoint to create slideshows; and teachers use multimedia to make video projects or to teach subjects like art and music. They have all found that moving images and sound can involve viewers emotionally as well as inform them, helping make their message more memorable.

The power of multimedia software resides in **hypertext**, **hypermedia** and **interactivity** (meaning the user is involved in the programme). If you click on a hypertext link, you can jump to another screen with more information about a particular subject. Hypermedia is similar, but also uses graphics, audio and video as hypertext elements.

b

As long as your computer has a **sound card**, you can use it to capture sounds in digital format and play them back. Sound cards offer two important capabilities: a built-in stereo synthesizer and a system called **MIDI**, or **Musical Instrument Digital Interface**, which allows electronic musical instruments to communicate with computers. A **Digital Audio Workstation (DAW)** lets you mix and record several tracks of digital audio.



MIDI allows your computer to communicate with electronic keyboards and other devices

You can also listen to music on your PC, or transfer it to a portable **MP3** player. MP3 is short for **MPEG audio layer 3**, a standard format that compresses audio files. If you want to create your own MP3 files from CDs, you must have a **CD ripper**, a program that extracts music tracks and saves them on disk as MP3s.

Audio is becoming a key element of the Web. Many radio stations broadcast live over the Internet using **streaming audio technology**, which lets you listen to audio in a continuous stream while it is being transmitted. The broadcast of an event over the Web, for example a concert, is called a **webcast**. Be aware that you won't be able to play audio and video on the Web unless you have a **plug-in** like RealPlayer or QuickTime.

c

Video is another important part of multimedia. **Video computing** refers to recording, manipulating and storing video in **digital format**. If you wanted to make a movie on your computer, first you would need to capture images with a **digital video camera** and then transfer them to your computer. Next, you would need a **video editing** program like iMovie to cut your favourite segments, re-sequence the clips and add transitions and other effects. Finally, you could save your movie on a DVD or post it on websites like YouTube and Google Video.

d

Multimedia is used to produce dictionaries and encyclopedias. They often come on DVDs, but some are also available on the Web. A good example is the Grolier Online Encyclopedia, which contains thousands of articles, animations, sounds, dynamic maps and hyperlinks. Similarly, the Encyclopedia Britannica is now available online, and a concise version is available for iPods, PDAs and mobile phones. Educational courses on history, science and foreign languages are also available on DVD. Finally, if you like entertainment, you'll love the latest multimedia video games with surround sound, music soundtracks, and even film extracts.

B Correct the technical mistakes in these sentences.

- 1 Multimedia training software is distributed on magnetic disks.
- 2 You need to have MIDI on your computer to hear speech and music.
- 3 A stereo synthesizer allows your computer to communicate with electronic musical instruments.
- 4 A CD ripper converts CDs to live streams.
- 5 The Encyclopedia Britannica is only available on DVD.

C Match the words (1–5) with the definitions (a–e).

- | | | | |
|---|---------------|---|--|
| 1 | hypertext | a | the process of manipulating video images |
| 2 | hypermedia | b | text with links which take you to other pages |
| 3 | streaming | c | a technique for playing sound and video files while they're downloading |
| 4 | webcast | d | a live event broadcast over the Internet |
| 5 | video editing | e | a form of enriched multimedia which allows an interactive and dynamic linking of visual and audio elements |

4 Language work: conditional sentences

A Look at the HELP box and then complete these sentences with the correct form of the verbs in brackets.

- 1 If you (bring) _____ your digital video camera, we can make a movie on my PC.
- 2 You won't be able to play those video files if you (not have) _____ the correct plug-in.
- 3 If the marketing manager (have) _____ PowerPoint, she could make more effective presentations.
- 4 If I could afford it, I (buy) _____ a new game console.
- 5 If I had the money, I (invest) _____ in some new multimedia software.

HELP box

Conditional sentences

We use conditional sentences to express that the action in the main clause can only take place if a certain condition is fulfilled (see below for examples). They are introduced by **if**, **unless** and **as long as**. **Unless** means *if not* and **as long as** means *provided/providing (that)*.

You won't be able to play audio and video on the Web unless you have a plug-in like RealPlayer or QuickTime.
(= if you don't have a plug-in ...)

There are two types of conditional sentence.

- The first conditional (for real or possible situations)

If A happens B will happen
(present simple) (will in positive or negative + verb)

If you like entertainment, you will love the latest multimedia video games.

In the main clause, we can also have a modal (for example, **can** or **must**) or an imperative.

If you want to create your own MP3 files from your CDs, you must have a CD ripper.

- The second conditional (for more hypothetical situations).

If A happened B would happen
(past simple) (would in positive or negative + verb)

If you wanted to make a movie on your computer, first you would / you'd need to ...

In the main clause, we can also use other modals (e.g. **could**, **should**, **might**), depending on the meaning.

If the verb **be** appears in the **if** clause, we often use **were** instead of **was**, even if the pronoun is **I**, **he**, **she** or **it**.

If I were you, I'd get a new MP3 player.

3 Computer languages

A Read the text. How many high-level computer languages are mentioned?

Computer languages

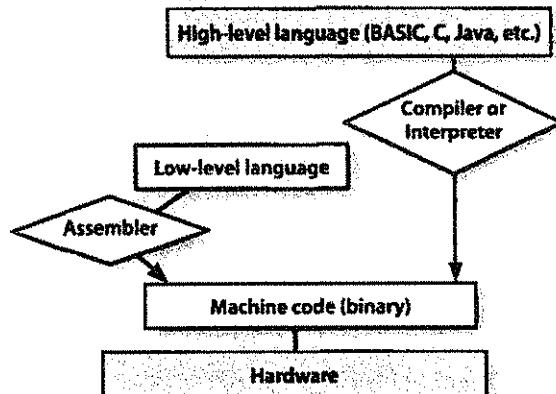
Unfortunately for us, computers can't understand spoken English or any other natural language. The only language they can understand directly is **machine code**, which consists of 1s and 0s (binary code).

Machine code is too difficult to write. For this reason, we use symbolic languages to communicate instructions to the computer. For example, **assembly languages** use abbreviations such as ADD, SUB, MPY to represent instructions. The program is then translated into machine code by a piece of software called an **Assembler**. Machine code and assembly languages are called **low-level languages** because they are closer to the hardware. They are quite complex and restricted to particular machines. To make the programs easier to write, and to overcome the problem of intercommunication between different types of computer, software developers designed **high-level languages**, which are closer to the English language.

Here are some examples:

- **FORTRAN** was developed by IBM in 1954 and is still used for scientific and engineering applications.
- **COBOL (Common Business Oriented Language)** was developed in 1959 and is mainly used for business applications.
- **BASIC** was developed in the 1960s and was widely used in microcomputer programming because it was easy to learn. **Visual BASIC** is a modern version of the old BASIC language, used to build graphical elements such as buttons and windows in Windows programs.
- **PASCAL** was created in 1971. It is used in universities to teach the fundamentals of programming.
- **C** was developed in the 1980s at AT&T. It is used to write system software, graphics and commercial applications. **C++** is a version of C which incorporates object-oriented programming: the programmer concentrates on particular things (a piece of text, a graphic or a table, etc.) and gives each object functions which can be altered without changing the entire program. For example, to add a new graphics format, the programmer needs to rework just the graphics object. This makes programs easier to modify.
- **Java** was designed by Sun in 1995 to run on the Web. Java applets provide animation and interactive features on web pages. (See Unit 25)

Programs written in high-level languages must be translated into machine code by a **compiler** or an **interpreter**. A compiler translates the source code into **object code** – that is, it converts the entire program into machine code in one go. On the other hand, an interpreter translates the source code line by line as the program is running.



It is important not to confuse **programming languages** with **markup languages**, used to create web documents. Markup languages use instructions, known as **markup tags**, to format and link text files. Some examples include:

- **HTML**, which allows us to describe how information will be displayed on web pages.
- **XML**, which stands for **EXtensible Markup Language**. While HTML uses pre-defined tags, XML enables us to define our own tags; it is not limited by a fixed set of tags.
- **VoiceXML**, which makes Web content accessible via voice and phone. VoiceXML is used to create voice applications that run on the phone, whereas HTML is used to create visual applications (for example, web pages).

```

<xml>
< name> Andrea Finch </name>
< homework> Write a paragraph describing
the C language </homework>
</xml>
  
```

In this XML example we have created two new tags: <name> and <homework>

5 Language work: the infinitive

A Look at the HELP box and then make sentences using these prompts.

- 1 not easy / write instructions in COBOL
It's not easy to write instructions in COBOL.
- 2 expensive / set up a data-processing area
- 3 advisable / test the programs under different conditions
- 4 unusual / write a program that works correctly the first time it's tested
- 5 important / use a good debugger to fix errors
- 6 easy / learn Visual BASIC

B Choose the correct words (a–c) to complete these sentences.

- 1 We use high-level languages because machine code is too difficult _____, understand and debug.
a read b reading c to read
- 2 I went on the course _____ how to be a better programmer.
a learn b to learn c for to learn
- 3 I'm not interested in _____ that computer language.
a learn b learning c to learn
- 4 He refuses _____ the project with me.
a do b doing c to do
- 5 The engineers warned the employees not _____ the cables.
a touch b touching c to touch
- 6 They may not _____ to the conference.
a come b coming c to come
- 7 Spyware can make your PC more slowly.
a perform b performing c to perform
- 8 This program is too slow the simulation.
a do b to do c for doing

HELP box

The infinitive

The infinitive with *to* is used in the following ways:

- To express purpose
We use symbolic languages to communicate instructions to the computer.
(= *in order to communicate ...*)
- Not: ... **for** to communicate
- After adjectives
BASIC was widely used in the past because it was easy to learn.
- Machine code is too **difficult** to write.
(= *not easy enough to write*)
- After certain verbs (e.g. afford, demand, plan, agree, expect, promise, appear, hope, refuse, arrange, learn, try, decide, manage)
A lot of companies are now trying to develop voice applications for web access.

- After the object of certain verbs (e.g. advise, encourage, allow, expect, tell, ask, invite, want, enable, order, warn)
HTML allows us to describe how information will be displayed on web pages.

The bare infinitive (without *to*) is used in the following ways:

- After modal verbs (e.g. can, could, may, might, will, would, must, should)
Unfortunately, computers can't understand spoken English.
- High-level languages **must** be translated into machine code.
- After the object with the verbs make and let
Programs make computers perform specific tasks.

more slowly.

a

b performing

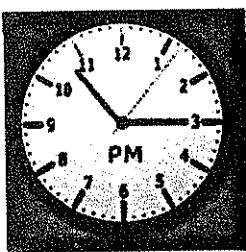
c to perform

Unit 25 Java™

1 Java applets

A Match the examples of Java programs, known as *applets*, (a–e) with the descriptions (1–5).

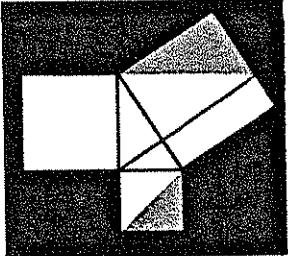
- 1 This Land Rover applet allows you to change the look of the vehicle.
- 2 The Pythagoras theorem applet gives the proof of the Pythagorean theorem without words. It allows you to manipulate triangles and go through the steps of the geometrical proof.
- 3 The Jman for Java applet permits medical researchers to view sequential MRI (Magnetic Resonance Images) of the brain.
- 4 An analogue clock applet displays the time according to the web user's computer and lets you set the colours and style of the hands and numbers.
- 5 A banner applet displays graphic images on websites in order to advertise products or services.



a _____



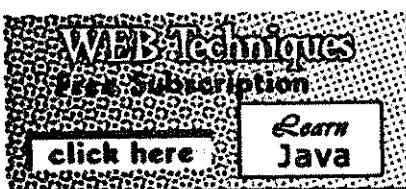
c _____



e _____



b _____



d _____

B Match the terms (1–5) with the definitions (a–e).

- 1 Java
 - 2 applet
 - 3 plug-in
 - 4 platform-independent
 - 5 object-oriented programming
- a an auxiliary program that enables web browsers to support new content, for example animation
 - b software that can run on any operating system
 - c an island in Indonesia, coffee (in American slang), and a programming language for internet applications
 - d a computer programming technique that allows the creation of objects that interact with each other and can be used as the foundation of others; used to create graphical user interfaces
 - e a small Java application, usually designed to run automatically within a web page



The Java logo

2 The Java language

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

- 1 Java was invented by Microsoft.
- 2 With the interpreter, a program is first converted into Java bytecodes.
- 3 Java is not compatible with most computing platforms.
- 4 The Java language is single-threaded, one part executing at a time.
- 5 Java has no competitors.
- 6 Flash files are called *animations*.

The Java language

Java is a programming language developed by Sun Microsystems, specially designed to run on the Web. Java programs (called **applets**) let you watch animated characters and moving text, play music, and interact with information on the screen (for example, control animations and select options).

Characteristics of the Java language

Java is an **object-oriented** language, similar to C++, but more dynamic and simplified to eliminate possible programming errors. A Java program is both compiled and interpreted (see Unit 24). First, the source code (a file with a **.java** extension) is compiled and converted into a format called bytecode (a file with a **.class** extension), which can then be executed by a Java interpreter (see Fig. 1). Compiled Java code can run on most computers because there are Java interpreters, known as **Java Virtual Machines**, for most operating systems.

Java is **multi-threaded**, meaning a Java program can have multiple threads (parts) – that is, many different things processing independently and continuously. This enables the program to make the best use of available CPU power.

Why is Java popular?

Most programmers like Java because it allows them to write applets which make web pages more interactive and attractive. They can create graphical objects (for example, bar charts and diagrams) and new controls (for example, check boxes and push buttons with special properties). A web page that uses Java can have sounds that play in real time, music that plays in the background, cartoon-style animations, real-time video and interactive games.

The Java Micro Edition platform (**Java ME**) is used in mobile devices. It provides flexible tools to create applications that run on mobile phones, PDAs, TV set-top boxes and printers. Nowadays, most phones are configured to use Java games.

Alternatives to Java

One alternative to Java is Microsoft's **C#**, pronounced 'C sharp', a **.NET** language based on C++ with elements from Visual Basic and Java. There are no substantial differences between C# and Java. When software developers do measurements on pieces of code, sometimes Java is faster, sometimes C# is.

Another competitor is Adobe **Flash** technology, which supports graphics, a scripting language called ActionScript, and the streaming of audio and video. Flash is used to create animation and advertisements, to integrate video into web pages, and to develop rich internet applications such as portals. **Flash files**, traditionally called **flash movies**, have a **.swf** file extension. They may be an object on a web page or be played in the stand-alone Flash Player.

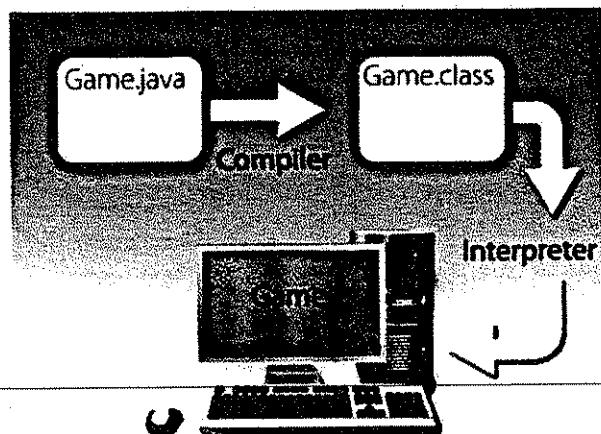


Fig. 1

B Match the words (1–6) with the words (a–f) to make technical terms from the text.

- | | | | |
|---------------|-------------|----------|------------|
| 1 Java | 4 web | a applet | d system |
| 2 operating | 5 source | b page | e object |
| 3 programming | 6 graphical | c code | f language |

C Complete the sentences with words from the box.

interpreted animated configured used pronounced object-oriented compiled

- 1 Java lets you watch characters on web pages.
- 2 Java is an language, similar to C++ but more dynamic.
- 3 First, the source code of a Java program is into an intermediate format called *bytecode*. This is then by any system possessing a Java interpreter.
- 4 The Java ME platform is widely in mobile devices.
- 5 Nowadays, most mobile phones are to use Java games.
- 6 Microsoft's C# is a simplified version of C and C++ for the Web. It's 'C sharp'.

3 Language work: the -ed form

A Look at the HELP box and then put these verbs into the correct column.

stopped	asked
described	decided
produced	called
watched	executed
published	object-oriented
programmed	persuaded
configured	converted
arranged	designed

/t/	/d/	/d/

HELP box

The -ed form

We use the -ed form in the following ways:

- To make the past simple (affirmative) of regular verbs

Sun Microsystems developed Java in 1995.

Remember that not all verbs in the past simple end in -ed. See page 166 for a list of irregular verbs. See Unit 19 for more about the past simple.

- To make the past participle of regular verbs

Flash is used to create animation.

- To make the adjectival form of some verbs

Java applets let you watch animated characters.

The -ed is pronounced as:

- /t/ after voiceless sounds: /p/, /k/, /θ/, /s/, /f/, /ʃ/ or /tʃ/. (e.g. *developed*, *talked*, *pronounced*)
- /d/ after voiced sounds: /b/, /g/, /ð/, /z/, /v/, /dʒ/, /ɪ/, /r/; nasal consonants: /m/, /n/, /ŋ/; and vowels (e.g. *compiled*, *designed*, *simplified*)
- /d/ after /t/ or /d/ (e.g. *interpreted*, *multi-threaded*)

Appendix: a model CV

Curriculum vitae

Personal information

Name: María Quintana

Address: Avda Séneca, 5, Madrid 28040

Telephone: 00 34 91 5435201

Email: mquintana0782@telefonica.net

Date of birth: 28/07/82

Education and Training

2006	Online diploma in web-based technology for business, www.elearnbusiness.com
2005	Course in web design at the Cybernetics College, London: HTML, Java and Macromedia Dreamweaver
2004	Course in computer hardware and networking at the Cybernetics College, London
1999–2004	Degree in Computer Science and Engineering, University of Madrid

Work experience

January 2006 – present	Part-time Webmaster at www.keo.es ; responsible for updating the site and using Adobe Flash to create animations
May 2005 – December 2006	IT consultant at Media Market, specializing in e-commerce and IT strategies

IT skills

Knowledge of multiple computer platforms (Windows, Mac and Linux); strong database skills (including the popular open source MySQL database); complete understanding of graphics formats and Cascading Style Sheets

Personal skills

Social and organizational skills

Good communication skills

Languages

Spanish mother tongue; English (Cambridge CAE); Arabic (fluent)

Hobbies and Interests

Web surfing, listening to music and travelling

References

Miguel Santana, Manager, keo.es

Sam Jakes, Lecturer, Cybernetics College

Dear Mr Scott,

I am writing to apply for the position of Senior Programmer, which was advertised on 28th March in *The Times*.

I graduated in May 2002 and did a work placement with British Gas as part of my degree. Before taking my present job I worked for a year with NCR. I stayed in this job (1) _____ March 2004.

(2) _____ the last three years I have been working as a software engineer for Intelligent Software. I have designed four programs in COBOL for commercial use, and (3) _____ January I have been writing programs in C for use in large retail chains. These have been very successful and we have won several new contracts in the UK and Europe on the strength of my team's success.

Two years (4) _____ I spent three months in Spain testing our programs and also made several visits to Italy, so I have a basic knowledge of Spanish and Italian. I now feel ready for more responsibility and more challenging work, and would welcome the opportunity to learn about a new industry.

I enclose my curriculum vitae. I will be available for an interview at any time.

I look forward to hearing from you.

Yours sincerely,

Sarah Brown

Sarah Brown

HELP box

for, since, ago, until

- We use **for** to refer to a period of time.
I've lived in Liverpool for five years.
- We use **since** to refer to a point in time.
I've been unemployed since May 2005.
- We use **ago** with the past simple to say when something happened. We put **ago** after the time period.
I got married five years ago.
- We use **until** to mean up to a certain time.
I stayed at high school until I was 18.

B Look at the HELP box and then complete the letter with **for, since, ago** or **until**.

4 A job interview



Chris Scott, the Personnel Manager at Digitum-UK, is interviewing Sarah Brown. Listen to part of the interview and complete his notes.

Name: Sarah Brown

Qualifications:

Degree in (1) _____
(Aston University)

Languages: Basic Spanish and Italian

Work experience:

NCR: (2) _____ (one year)

Software for:

(3) _____

Programs for:

(4) _____

Database knowledge:

(5) _____

Present job: Works for Intelligent Software writing programs in COBOL and C.

Reasons for applying:

(6) _____

5 Language work: the present perfect

A Look at the HELP box and then choose the correct words in brackets to complete these sentences.

- 1 He ('s never liked / 's never been liking) Maths.
- 2 They ('ve worked / 've been working) on the project all day.
- 3 John ('s used / 's been using) the computer for hours – he looks really tired.
- 4 How many emails (have you written / have you been writing) today?
- 5 She ('s written / 's been writing) this essay since 9 o'clock.
- 6 They ('ve interviewed / 've been interviewing) five candidates today.

HELP box

Present perfect simple

We form the present perfect simple with **have/has + past participle**.

*I've used Microsoft Access for many years.
I haven't used Microsoft Access for years.*

We use this tense to talk about:

- States that started in the past and continue to the present.
Since 2006, I've been a computer operator for PromoPrint.
- Past actions that continue to the present, where we put an emphasis on quantity (*how many*).
I have designed four programs in COBOL.
- Personal experiences, especially with **ever** and **never**.
*Have you ever worked with databases?
I've never worked with databases.*

Present perfect continuous

We form the present perfect continuous with **have/has been + present participle**.

Since January I've been writing programs in C.

We use this tense to talk about:

- Actions which started in the past and are still happening.
For the last three years I've been working as a software engineer for Intelligent Software.
- Past actions that continue to the present, where we put an emphasis on duration (*how long*).
She's been working all morning.

Contrast with the past simple

We use the past simple to talk about events that happened at a specific time in the past that are now finished.

I graduated in May 2003.

Not: *I have graduated in ...*

I stayed in this job until March 2004.

Two years ago, I spent three months in Spain.

B Put the verbs in brackets into the present perfect simple or past simple.

- 1 She (be) a software engineer since 2004.
- 2 After graduation I (work) for a year with NCR.
- 3 (you ever work) as an IT consultant?
- 4 I (lose) my PDA.
- 5 I (send) my CV last Monday. Have you received it yet?

2 Language work: the passive

A Look at the HELP box. How do you make the passive in your language? How different is it to English?

HELP box

The passive

We form the passive with the verb **be** + the past participle of the main verb. When we mention the agent, we use **by**.

The passive is often used in technical writing to give an objective tone.

- Present simple passive

Information is transmitted by devices such as the telephone, radio, TV or ...

- Present continuous passive

New technologies are being devised to allow you to watch TV on your mobile.

- Past simple passive

The term cyborg was invented by M Clynes and N Kline in 1960.

- Past continuous passive

My TV was being repaired, so I couldn't watch the match.

- Present perfect passive

It has been predicted that about one third of all work could eventually be performed outside the workplace.

- Past perfect passive

The system had been infected by a virus.

- Future simple passive

In the next few years, GPS chips will also be incorporated into most mobile phones.

- Modal verbs in the passive

It has been predicted that about one-third of all work could eventually be performed outside the workplace.

B Read the article and underline all the examples of the passive. What tenses are they?

A HACKER has been sent to jail for fraudulent use of credit card numbers. Nicholas Cook, 26, was arrested by police officers near a bank cashpoint last month.

Eight months earlier, he had been caught copying hundreds of computer

programs illegally. After an official inquiry, he was accused of software piracy and fined £5,000.

It is reported that in the last few years Cook has been sending malware (malicious software) to phone operators and attacking mobile phones to steal business and personal

information. Cook has now been sentenced to three years in prison for stealing passwords and obtaining money by credit card fraud.

Government officials say that new anti-hacking legislation will be introduced in the EU next year.

C Complete these sentences with the passive form of the verbs in brackets.

- 1 Microprocessors (make) _____ of silicon.
- 2 Call centres (use) _____ to deal with telephone enquiries.
- 3 In recent years, most mobile phones (equip) _____ with Bluetooth.
- 4 GPS (develop) _____ in the 1970s as a military navigation system.
- 5 Sorry about the mess – the computers (replace) _____ at the moment.
- 6 In the near future, the Internet (access) _____ more frequently from PDAs and mobile phones than from desktop computers.
- 7 Networks (can connect) _____ via satellite.
- 8 I had to use my laptop this morning while my PC (fix) _____.

3 Language work: phrasal verbs

A Look at the HELP box. Do you have the equivalent of phrasal verbs in your language? How do you say the phrasal verbs in the HELP box?

HELP box

Phrasal verbs

- The meaning of some verbs with particle (often called phrasal verbs) can be easily understood from its two parts.

Look at the photos.

A network consists of two or more ...

Separate networks are linked over a public network, the Internet.

- However, many phrasal verbs have an idiomatic meaning, not predictable from the meaning of its parts.

carry (= transport); **carry out** (= execute)

Computers carry out the programs ...

- Certain particles have similar meanings, regardless of the verb (**on/off**, **in/out**, etc.).

turn on / switch on

(= start the operation of something)

turn off / switch off

(= stop the operation of something)

- Other common phrasal verbs in computing include:

plug into (= connect)

Plug one end of the phone cord into the phone jack.

set up (= establish)

What do I need to set up a wireless LAN?

sign up (= register, enrol in a service)

Once connected, you can sign up for RSS feeds, newsletters, etc.

try out (= test or use experimentally)

You can try out new software on their site.

find out (= learn, discover)

Search the Web to find out more information about WiMAX.

take up (= occupy)

Fibre optic cables take up less space than copper cables.

make up (= constitute, form)

Several LANs connected together make up a WAN.

fill in (= write the necessary information)

You need to fill in this online form.

- When the verb has a preposition associated with it, the preposition must precede the object:

*You can look for information on the Web.
(not: look information for)*

*Hackers might break into your PC.
(not: break your PC into)*

When the particle is an adverb, it can precede or follow the direct object:

*You need to type in your username /
... type your username in.*

*You can look up words in a dictionary /
... look words up in a dictionary.*

Turn on the computer. /

Turn the computer on.

If the direct object is a pronoun, the particle must follow it

*You need to type it in.
(not: type in it)*

B Complete these sentences with the correct form of a phrasal verb from the HELP box.

- To join the club, _____ this form and send it to our office.
- The CPU _____ all the basic operations on the data.
- Digital music _____ a lot of space – about 10 MB for every minute of stereo sound.
- Thousands of networks _____ the Internet.
- You can use newsgroups to about the latest trends, customer needs, etc.

C Match the questions (1–6) with the answers (a–f).

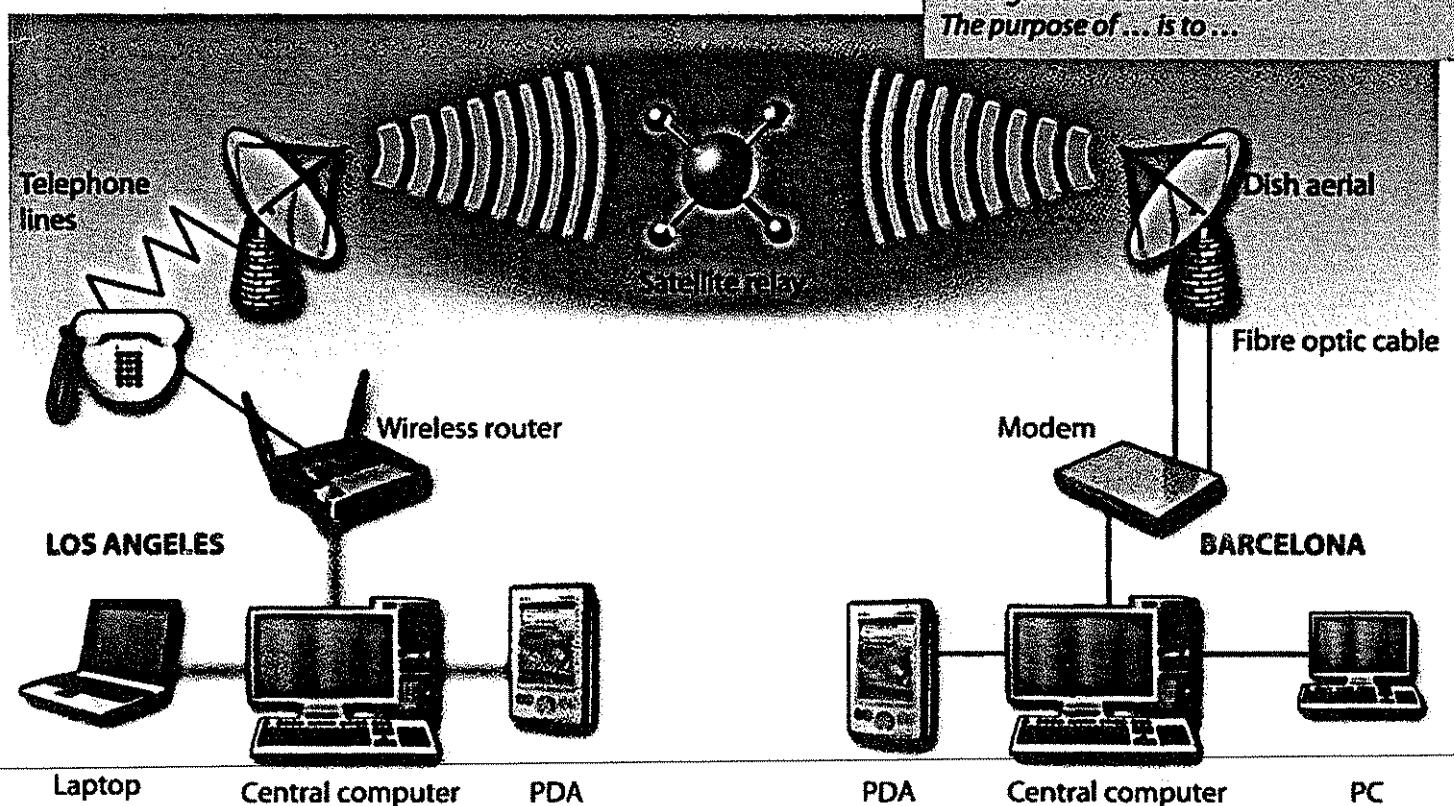
- 1 Why was the hacker arrested?
 - 2 Is it OK to **log on** to my bank account using public computers in a cybercafé?
 - 3 How do I **set up** an internet connection at home?
 - 4 Can I download software from your site?
 - 5 How can I add video to instant messaging?
 - 6 What do I need to do to **sign up** for a *Yahoo!* email account?
- a Yes, but always remember to **log off** after you've ended your session.
 - b Yes, you can even **try** the programs **out** for a period before you buy them!
 - c Because he **broke into** a computer system and stole confidential data.
 - d Simply install this program and **plug** the webcam **into** your computer.
 - e You need to install the software for your router. Follow the instructions provided by your ISP, probably in the form of a .pdf file on a CD.
 - f You have to create a username and password and then give some personal details.

4 WANs and satellites

A Prepare a description of the network below to present to the rest of the class. Use PowerPoint if possible. Use the **Useful language** box, the **HELP** box on page 143 and the text on pages 141–142 to help you.

Useful language

The diagram represents/shows ...
 This network is made up of/consists of ...
 Two networks are connected via ...
 The computers are linked up to ...
 The satellite receives signals from ...
 The signals are sent on to ...
 The purpose of ... is to ...



B Present your description to the rest of the class.

D In pairs, discuss these questions. Give reasons for your answers.

- 1 Which is your favourite game platform? What advantages and disadvantages does it have over other game platforms?
- 2 Which game platform would you most like to own?
- 3 Do you play games on your mobile phone? What is the experience like?

2 Game genres

A How many different game genres can you think of? In pairs, make a list and then read the text to see how many genres from your list are mentioned.



Game genres

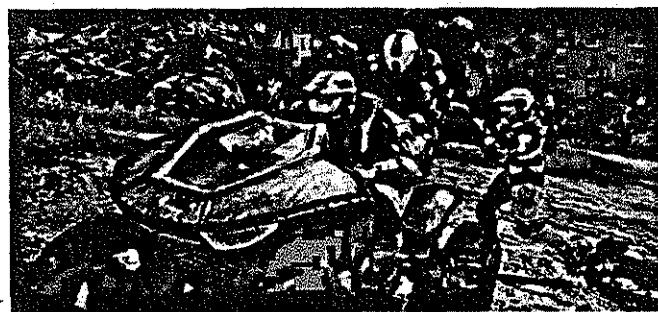
There are so many different genres and mixes of genres that it's difficult to put each game into a specific category. In the following article we'll cover the basic genres that differentiate between games.

5 **The First-person shooter (FPS) and Action** genres are currently the most popular. Games like *Half-Life*, *Halo* and *Call of Duty* are the most popular games in the FPS category. For Action, innovative titles like the *Grand Theft Auto* series, *Gears of War* and *Splinter Cell* are huge successes.

10 The **Role-playing game (RPG)** genre has remained strong throughout the entire history of console and PC gaming. Current hits like *Final Fantasy XII*, *Oblivion* and the *Knights of the Old Republic* series are all based on RPG roots. The recent development of *massively multiplayer online RPGs* has been made possible by widespread broadband access, allowing gamers to play internationally with thousands of people across the globe in a constant virtual world.

15 **Adventure games and Puzzle games** remain strong despite being limited in scope and technology. The new concept of *party games* – where people play together in multiplayer mode – has recently injected new life into this genre. Titles like *Zelda* and *WarioWare* are familiar names.

20 **Sports games** are an increasingly popular portion of the gaming industry. Electronic Arts (EA) have been making games licensed from the NBA, NFL and MLB for over a decade. Another sector of the Sports industry is the entire racing sub-genre. Massive hits like the *Burnout* and *Need for Speed* series are hugely exciting, and the crashes can be realistic and terrifying.



Halo 3 is very popular on the Xbox console; millions of people also play the game online

25 The **Simulation** genre has enjoyed wild success, including the best-selling PC games of all time: *The Sims* & *The Sims 2*. The entire *Sims* series, designed by Maxis, is dominant in this genre. Jet fighter and flying sims are also important types of simulation game.

30 **Strategy** is a genre mainly restricted to PC, largely because the mouse and keyboard are central to gameplay. There are a few good Strategy games for console, however. Big names in Strategy include *Warcraft III*, *Starcraft*, *Command and Conquer* and *Warhammer 40,000*.

35 Finally, we have the **Fighting** genre. Developed from early hit games like *Street Fighter II*, Fighting games have enjoyed a renaissance as they've been updated fully to include 3-D characters and arenas. Titles like *Dead or Alive*, *Tekken* and *Soul Calibur* are big favourites.

40 So what kind of game player are you? Chances are that if you're a PC gamer, you prefer FPS, RPG, Simulation, and Strategy games. The console gamer typically enjoys Sports, Racing, Fighting, RPGs, and a few FPS titles. Of course, many people own both a console and a PC, therefore combining the best of both worlds.

B These statements about gaming are all false. Read the text again and correct them.

- 1 Role-playing games are currently the most popular.
- 2 Massively multiplayer online RPGs have been made possible by widespread internet access.
- 3 *Oblivion* is an Action game.
- 4 *The Sims* series is the least popular in the Simulation category.
- 5 Strategy games are mainly restricted to game consoles.
- 6 *Warcraft* belongs to the Fighting genre.
- 7 Console gamers typically prefer Simulation and Strategy games.

C Find words or phrases in the text with the following meanings.

- 1 now; at this time or period (lines 5–10) _____
- 2 existing or happening in many places and/or among many people (lines 15–20) _____
- 3 in spite of; notwithstanding (lines 20–25) _____
- 4 more and more (lines 25–30) _____
- 5 a smaller category within a particular genre (lines 30–35) _____
- 6 big successes (lines 30–35) _____
- 7 sold in very large numbers (lines 35–40) _____
- 8 modernized (lines 45–50) _____

D  In pairs, discuss these questions. Give reasons for your answers.

- 1 What is your favourite and least favourite genre of game?
- 2 What are your favourite games? Describe them to your partner.

3 Language work: adverbs

A Look at the HELP box on page 148 and then complete these sentences with the adverbial form of the words in brackets.

- 1 Simulation games are (wide) _____ used in both universities and businesses.
- 2 Massively multiplayer online RPGs have (recent) _____ become more popular, mainly due to faster internet connections.
- 3 Strategy is a genre (main) _____ restricted to PC.
- 4 Video games often come with a clear set of motivation tools, such as scores and moving to higher levels when a player performs (good) _____.
- 5 Cheap PCs don't process data (fast) _____ enough to support high-end games.

B Are the words in bold adjectives or adverbs? Write **adj or **adv**.**

- 1 Atari's platform was the most popular **early** video game console, and many developers emulated Atari games to attract customers. _____
- 2 The chess game ended **early**, at the 24th move. _____
- 3 On the TPS Report gaming blog, you will find reviews, a forum and a **monthly** podcast. _____
- 4 The podcast is broadcast **monthly**. _____
- 5 You have to work **hard** to succeed in the gaming industry. _____
- 6 Some experts say that **hard** work makes people happy. _____

HELP box

Adverbs

- We use adverbs to give information about an action. Adverbs of manner, time and place describe how, when or where something happens.

*They've been updated **fully** to include 3-D characters. (= manner, i.e. how)*

*The Action genre of games is **currently** the most popular. (= time, i.e. when)*

*... allowing gamers to play **internationally** ... (= place, i.e. where)*

We also use adverbs to modify adjectives.

*Sports games are an **increasingly** popular portion of the gaming industry.*

- We usually form an adverb by adding **-ly** to an adjective.

*typical → **typically***

*The console gamer **typically** enjoys Sports, ...*

- With adjectives ending in **-y**, we change the **y** to **i** before adding the ending **-ly**.

*easy → **easily***

*The Nintendo Wii connects **easily** to the Internet.*

- Note that not all words that end in **-ly** are adverbs. These words are adjectives: **friendly, deadly, lovely, lonely**.

- The adverb from **good** is **well**.

*His French is very **good**. He speaks French **well**.*

- Some words have the same form as an adjective and an adverb (e.g. **fast, hard, early, late, daily, monthly**).

*New games require a **fast** processor. (= adjective)*

*The processor speed tells you how **fast** your PC executes instructions. (= adverb)*

4 Present and future trends in gaming

A  Listen to an interview with Matt Robinson, the administrator of the TPS Report gaming blog. How many game platforms does he mention?

B  These statements about video games are all false. Listen to the interview again and correct them.

- 1 Video games are popular because they are fun and addictive.
- 2 Well-known Hollywood actors appear in video games.
- 3 The Nintendo Wii is aimed at hardcore gamers.
- 4 It's free to play *World of Warcraft*.
- 5 Holography is an advanced form of photography that uses lasers to produce two-dimensional images.
- 6 In the future, gesture recognition systems will produce photo-realistic images.