



**BAC+2**

INFORMATIQUE, ORIENTATION  
DÉVELOPPEMENT D'APPLICATIONS

**Cours: Anglais 4**

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# I. COMPUTING

## UNITS

# **MODULE 2**

## **Faces of the internet**

*UNIT 4: The web (Q1)*

*UNIT 5: Internet security (Q2)*

# UNIT 5

## Internet security

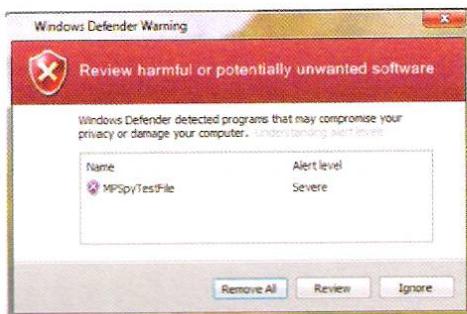
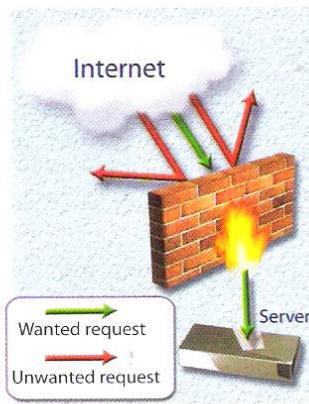
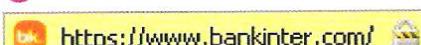
### **1** *On alert*

**A**  **In pairs, discuss these questions.**

- 1 What is a hacker?
- 2 How easy do you think it is to infiltrate the Internet and steal sensitive information?
- 3 How can you protect your computer from viruses and spyware?

**B** **Match the captions (1–4) with the pictures (a–d).**

- 1 A secure website can be recognized in two ways: the address bar shows the letters *https* and a closed padlock or key is displayed at the bottom of the screen.
- 2 You have to type your username and password to access a locked computer system.
- 3 This program displays a message when it detects spyware and other unwanted software that may compromise your privacy or damage your computer.
- 4 Private networks use a software and/or hardware mechanism called a firewall to block unauthorized traffic from the Internet.

**a****b****c****d**

### **2** *Security and privacy on the Internet*

**A**  **Read the text quickly and see how many of your ideas from 1A Question 3 are mentioned.**

**B** **Read the text more carefully and answer these questions.**

- 1 Why is security so important on the Internet?
- 2 What security features are offered by Mozilla Firefox?
- 3 What security protocol is used by banks to make online transactions secure?
- 4 How can we protect our email and keep it private?
- 5 What methods are used by companies to make internal networks secure?
- 6 In what ways can a virus enter a computer system?
- 7 How does a worm spread itself?

## 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.

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

## 3 Safety online for children



**A Listen to an interview with Diana Wilson, a member of the Internet Safety Foundation. Which answers (a or b) best describe what she says?**

- 1 Parents should make children aware of
  - a the benefits and risks of the Internet.
  - b the risks of the Internet.
- 2 A web filter program can be used to
  - a prevent access to sites with inappropriate content.
  - b rate web content with labels (similar to the way movies are rated).
- 3 If kids spend too much time online or suffer from internet addiction, parents should
  - a stop them using the Internet.
  - b look for help from specialists.



**B Listen again and complete the interviewer's notes.**

### Risks

Manipulation of children

Invasions of (1) .....

Distribution of indecent or

(2) ..... material

Violence and racist (3) .....

### Solutions

There are websites (4) ..... at children.

Internet (5) ..... programs let parents block objectionable websites.

Websites should (6) ..... their content with a label, from child-friendly to over 18 only.

## 4 The history of hacking

**A Read Part 1 of the text and answer these questions.**

- 1 Which hacking case inspired the film *War Games*?
- 2 When did *Captain Zap* hack into the Pentagon?
- 3 Why was Nicholas Whitely arrested in 1988?
- 4 How old was the hacker that broke into the US defence computer in 1989?

### The history of hacking – Part 1

**1971** – John Draper discovered that a whistle offered in boxes of Cap'n Crunch breakfast cereal perfectly generated the 2,600Hz signal used by the AT&T phone company. He started to make free calls. He was arrested in 1972 but wasn't sent to prison.

**1974** – Kevin Mitnick, a legend among hackers, began hacking into banking networks and altering the credit reports of his enemies. He didn't expect that his most famous exploit – hacking into the North American Defense Command in Colorado Springs – would inspire the film *War Games* in 1983.

**1981** – Ian Murphy, a 23-year-old known as *Captain Zap* on the networks, hacked into the White House and the Pentagon.

**1987** – The IBM international network was paralysed by a hacker's Christmas message.

**1988** – The Union Bank of Switzerland almost lost £32 million to hackers. Nicholas Whitely was arrested in connection with virus spreading.

**1989** – A fifteen-year-old hacker cracked the US defence computer.

**1991** – Kevin Poulsen, known as *Dark Dante* on the networks, was accused of stealing military files.



**B** In pairs, discuss which of the cases in Part 1 you had heard of. Which do you think is the most important?

## 5

## Language work: the past simple

**A** Look at the HELP box and then complete Part 2 of the text with the past simple form of the verbs in the box.

show	spread	steal	launch	attempt	overwrite	be	infect	affect
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### The history of hacking – Part 2

- 1992 – David L Smith (1) ..... prosecuted for writing the Melissa virus, which was passed in Word files sent via email.
- 1997 – The German Chaos Computer Club (2) ..... on TV how to obtain money from bank accounts.
- 2000 – A Russian hacker (3) ..... to extort \$100,000 from online music retailer CD Universe. A Canadian hacker (4) ..... a massive *denial of service* attack against websites like Yahoo! and Amazon. The *ILoveYou* virus, cleverly disguised as a love letter, (5) ..... so quickly that email had to be shut down in many companies. The worm (6) ..... image and sound files with a copy of itself.
- 2001 – The *Code Red* worm (7) ..... tens of thousands of machines.
- 2006 – Hackers (8) ..... the credit card details of almost 20,000 AT&T online customers. However, subscribers to its service (9) (not) .....

### HELP box

#### Past simple

- We use the past simple to talk about a complete action or event which happened at a specific time in the past.

Past —————— Now  
He **began** hacking in 1974.

- We form the past simple of regular verbs by adding **-ed** to the infinitive.

John Draper **discovered** that a whistle ...

We form questions and negatives using **did/didn't**.

When **did** Captain Zap **hack** into the Pentagon?  
He **didn't expect** that his most famous exploit ...

- There are many verbs which are irregular in the past simple.

*Kevin Mitnick began hacking into ...*

For a list of irregular verbs, see page 166.

We form questions and negatives for irregular verbs in the same way as for regular verbs. The exception is **be** (see below).

*When did Kevin Mitnick begin hacking into ...?*

*He didn't begin hacking until 1974.*

- We form the past passive with the past simple of **be** + the past participle.

*IBM international was paralysed by hackers.*

*He wasn't sent to prison.*

*Why was Nicholas Whately arrested in 1998?*

**B** Read these landmarks in the history of the Internet and prepare at least five questions in the past simple.

Example: *What happened in 1969? What did Ray Tomlinson do in 1971?*

- 1969** – The US Defense Department establishes ARPANET, a network connecting research centres.
- 1971** – Ray Tomlinson of BBN invents an email program to send messages across a network. The @ sign is chosen for its *at* meaning.
- 1981** – IBM sells the first IBM PC. BITNET provides email and file transfers to universities.
- 1982** – TCP/IP is adopted as the standard language of the Internet.
- 1988** – Jarkko Oikarinen develops the system known as Internet Relay Chat (IRC).
- 1991** – CERN (*Conseil Européen pour la Recherche Nucléaire*) creates the World Wide Web.
- 1998** – The Internet 2 network is born. It can handle data and video at high speed but is not a public network.
- 1999** – Online banking, e-commerce and MP3 music become popular.
- 2001** – Napster, whose software allows users to share downloaded music, maintains that it does not perpetrate or encourage music piracy. However, a judge rules that Napster's technology is an infringement of music copyright.
- 2004** – Network Solutions begins offering 100-year domain registration.
- 2006** – Americans spend over \$100 billion shopping online.

**C**  In pairs, ask and answer your questions.

## 6 Internet issues

**A**  In small groups, look at the list of cybercrimes and discuss these questions.

- 1 Which crimes are the most dangerous?
- 2 Is it fair or unfair to pay for the songs, videos, books or articles that you download? Should copyright infringement be allowed online?
- 3 What measures can be taken by governments to stop cybercrime?
- 4 Do you think governments have the right to censor material on the Internet?
- 5 Personal information such as our address, salary, and civil and criminal records is held in databases by marketing companies. Is our privacy in danger?

### Cybercrimes

- **Piracy** – the illegal copy and distribution of copyrighted software, games or music files
- **Plagiarism and theft of intellectual property** – pretending that someone else's work is your own
- **Spreading of malicious software**
- **Phishing (password harvesting fishing)** – getting passwords for online bank accounts or credit card numbers by using emails that look like they are from real organizations, but are in fact fake; people believe the message is from their bank and send their security details
- **IP spoofing** – making one computer look like another in order to gain unauthorized access
- **Cyberstalking** – online harassment or abuse, mainly in chat rooms or newsgroups
- **Distribution of indecent or offensive material**

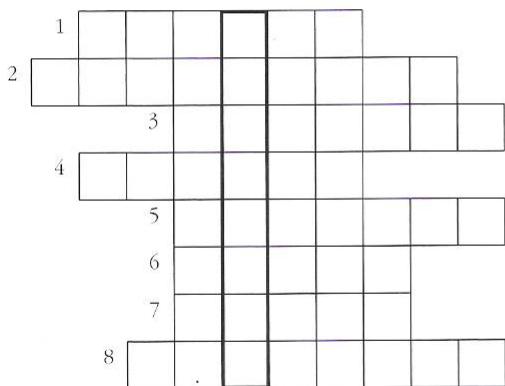
## UNIT 5: EXERCISES

### Vocabulary review: Graphics software

- 1 Complete the sentences with a term from the list. Then write the words in the crossword.

pixel icons images shading designer  
interface palette graphs

- 1 Graphic ..... let us visualize the effects of the PC's processor on our work.
- 2 A good user ..... often uses windows, pop-up menus and graphics to make communication with machines easier.
- 3 The total number of colours available is called the colour .....
- 4 Business people present information visually in ..... and diagrams.
- 5 Rendering techniques are used to make the image look realistic. They include ..... , light sources and reflections.
- 6 Each dot on the screen is called a picture element or .....
- 7 We use visual symbols or ..... to represent objects or tasks.
- 8 A Web page ..... uses pictures, image maps and animation to make pages more effective.



### Language work: The -ing form

Look at the box. Identify the -ing forms and decide whether they are a gerund, a present participle or an adjective.

- 1 Computer animation is the process of creating objects which move across the screen.
- 2 The lady carrying the books is the deputy head.
- 3 Climbing that mountain was exhausting.
- 4 A WAN is a network linking nodes over long distances.
- 5 She was printing the report.
- 6 Newspapers are full of depressing news nowadays.
- 7 Advertising on the web is becoming fashionable.

#### Fill in the blanks with a suitable gerund.

- 1 Have you finished ..... yet?
- 2 That film is not worth .....
- 3 I'm thinking of ..... a webcam.
- 4 I look forward to ..... from you soon.
- 5 My best friend enjoys .....
- 6 I don't mind .....
- 7 Sarah can't imagine ..... abroad. She is very happy in England.

### The -ing form

The -ing form appears in three different constructions. Don't confuse them.

- 1 **Smoking** is bad for your health.
- 2 'What are you **doing**?' 'We are **searching** for information about the Beatles.'
- 3 This video game is very **exciting**.

In 1, **smoking** is a **gerund** acting as the subject of the sentence. A **gerund** refers to an activity or process.

In 2, **doing** and **searching** are **present participles**.

This form is used in:

- progressive tenses
- reduced relative clauses

The girl **writing** on the board is very clever. (= who is writing ...)

In 3, **exciting** is an **adjective**.

### Uses of the gerund

A gerund can be used in the following ways:

a As the subject of a verb

*Text handling and DTP publishing have improved in the last few years.*

b As the complement of the subject

*My favourite hobby is skiing.*

c As the object of a verb

*I have never done any programming in Java.*

d As the object of a preposition

*CAD programs are widely used in engineering.*

e As the complement of a verb

*I like reading magazines about computers.*

Some verbs are followed by the -ing form, not by the infinitive. Here are the most common:

avoid	give up	look forward to
deny	hate	mind
enjoy	imagine	postpone
fancy	involve	resist
finish	keep	suggest

f After certain expressions

it's no use	it's not worth
can't stand	can't help
get used to	be used to
there's no point in	

Complete these sentences with the -ing form of an appropriate verb from the list.

do	protest	scale	test
visit	perform	laugh	spend

- 1 She had to postpone ..... her homework. She felt ill.
- 2 He likes ..... Internet music sites.
- 3 It's no use ..... . It won't help much.
- 4 I can't help ..... at it.
- 5 ..... is making an object larger or smaller.
- 6 There is no point in ..... all that money.
- 7 PCs generate graphics by ..... mathematical calculations on data.
- 8 A lot of time and money are saved by ..... a car design before making the product.

### Writing: About you

5 Look at the box. Use the -ing form or the infinitive. Write about something that you ...

- have stopped doing
- must remember to do
- remember doing when you were a child
- would like to do
- can't stand doing
- are used to doing
- like doing

I have stopped ...

### Changes in meaning

Some verbs take *to-infinitive* or *-ing* form with a change in meaning:

**forget + to-infinitive** = not remember

*I'm sorry, I forgot to post the letter.*

**forget + -ing form** = forget a past action

*I'll never forget flying over Canada.*

**remember + to-infinitive** = remember to do

*Remember to turn off the PC.*

**remember + -ing form** = recall a past action

*She doesn't remember driving that night.*

**stop + to-infinitive** = pause temporarily

*They stopped to send a fax.*

**stop + -ing form** = finish

*They stopped sending faxes.*

**need + to-infinitive** = it's necessary

*She needs to work harder.*

**need + -ing form** = passive meaning

*The monitor needs repairing. (= to be repaired)*



"During the time  
you've been creating  
the computer model,  
we've built it."

# **MODULE 3**

## **Creative software**

***UNIT 6: Multimedia***

***UNIT 7: Web design***

# UNIT 6

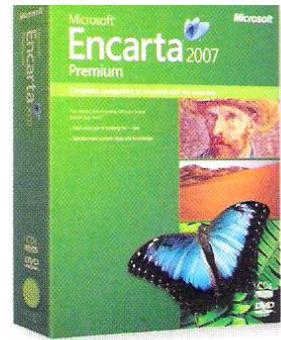
## Multimedia

### **1 Multiple forms of media**



**In pairs, discuss these questions.**

- 1 What different types of content are combined in multimedia applications?
- 2 How many products can you think of that incorporate multimedia? Make a list.



### **2 Components and system requirements**

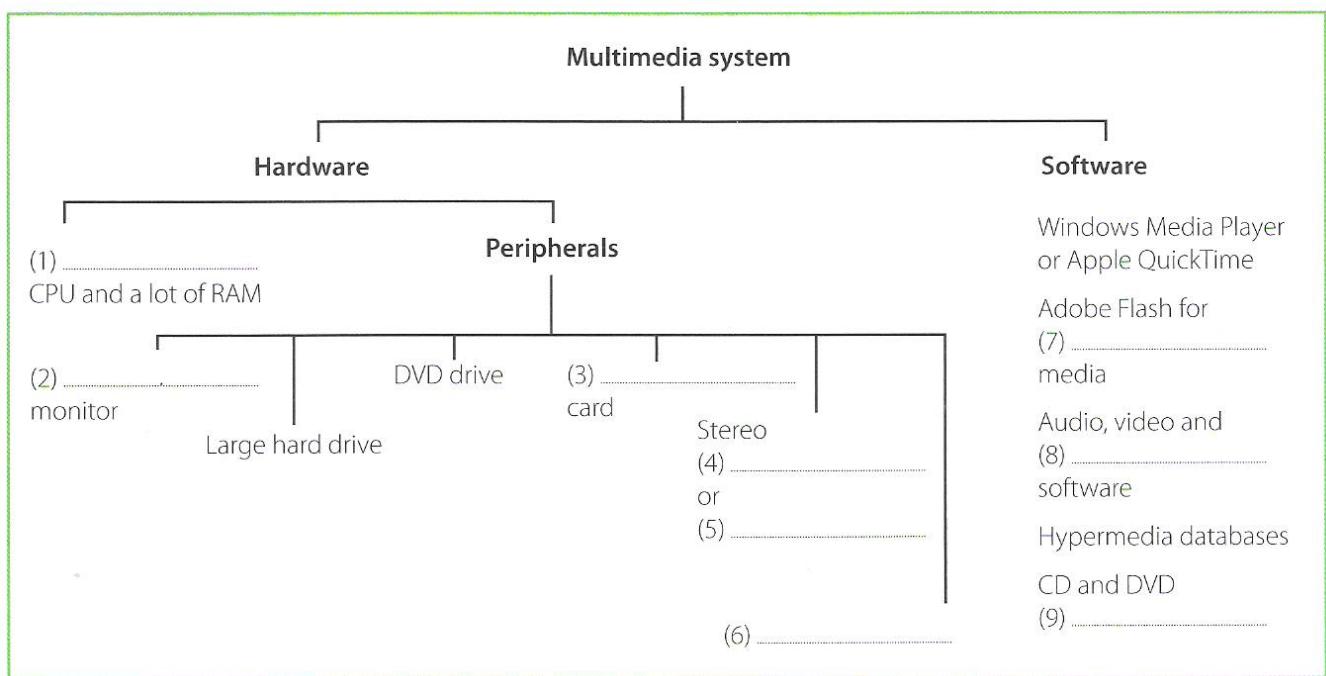


**A** Listen to a sales assistant in a computer shop explaining to a customer the system requirements needed to run multimedia software. Which answers (a or b) best describe what she says?

- 1 Multimedia is defined as
  - a the integration of video and telecommunications with traditional computing.
  - b the integration of text, graphics, audio, video and animation in a single application.
- 2 With multimedia encyclopedias,
  - a you have more fun but you learn more slowly.
  - b you get much more involved than with print encyclopedias.
- 3 Interactive games
  - a use multimedia and virtual reality features.
  - b do not require much RAM memory.



**B** Listen again and complete this diagram of a multimedia system.



### 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.



**B** In pairs, discuss these questions. Use the second conditional.

What would you do if ...

- 1 you had a digital video camera?  
*If I had a digital video camera, I'd ...*
- 2 you had a home recording studio?
- 3 you couldn't afford an iPod but you wanted an MP3 player?
- 4 you won the lottery?
- 5 someone stole your laptop?

## 5 Applications of multimedia

**A** Match the descriptions (1–5) with the pictures (a–e).

- 1 Virtual reality
- 2 Distance learning
- 3 A business presentation
- 4 A touch screen information kiosk
- 5 An MMS mobile phone



c .....



a .....



d .....



b .....



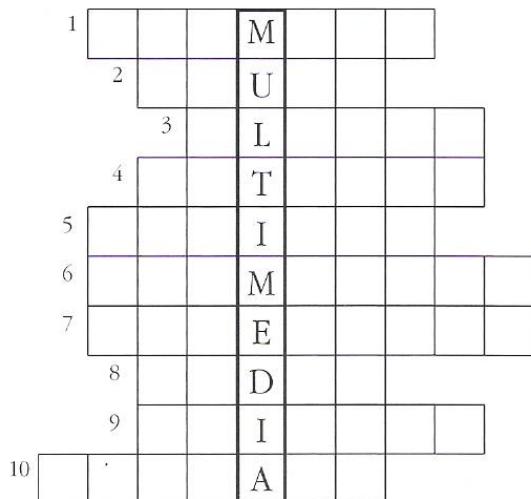
e .....

## UNIT 6: EXERCISES

### Vocabulary review: Multimedia systems

#### 1 Solve the clues and complete the puzzle.

- 1 The most common graphics ..... on the Web are .gif and .jpg.
- 2 To capture sounds in a digital format and play them back, modern PCs contain a ..... card.
- 3 Compressed music files can be played with an MP3 .....
- 4 Most multimedia software is distributed on ..... disks (e.g. CD-ROM, DVD).
- 5 MIDI stands for ..... Instrument Digital Interface.
- 6 The term 'computer .....' refers to drawings that have moving images.
- 7 Text with links which take you to other Web pages.
- 8 DVDs will eventually replace ..... tapes.
- 9 To make a movie on your PC you need a special video ..... program.
- 10 Concerts and other events are broadcast over the Web in a process called '.....'.



### Reading: MP3 music

#### 2 Read the text and find answers to these questions.

- 1 What is MP3?
- 2 Why is MP3 technology so popular?
- 3 What software do you need to expand and play MP3 music files?
- 4 What is streaming audio?
- 5 How can you make your own MP3s?
- 6 Why are music companies so angry about the MP3 format?

#### *Music for an electronic generation*

MP3 technology has revolutionized the music industry. It's a standard format that compresses audio files enabling them to be transmitted over the Net much more easily. This also makes them easier to download, attach to an e-mail or store on disk. It means you can listen to music at high-quality sound for little or no cost.

You can use MP3 music in two main ways:

- You can expand and play MP3 files by using an MP3 player, which you can download from the Internet. Two popular choices are *Winamp* (from Nullsoft) and *RealJukebox* (from RealNetworks). They support streaming MP3 music, which lets you play a file while it's downloading.
- You can also create your own MP3 files from your CDs. You can do this using a CD ripper, a program that extracts music tracks and saves them on disk. Then using an encoder they're converted into the MP3 format. A program like *MusicMatch* has all that you need to turn CD tracks straight into MP3 song files.

To find MP3 music titles on the Web you need an MP3 search engine, or you can visit music portal sites like MP3.com and Emusic.com.

You can play MP3 music on your PC, or you can use a portable MP3 player. This looks like a personal stereo, but instead of CDs it uses a memory card.

A problem with MP3 music is that a lot of files are pirated and offered free on illegal websites.

Big record companies are angry about this because they may lose a lot of money. For this reason, they are taking initiatives to protect digital music from piracy.

**3 Match each word 1–8 with its partner a–h to make a common technical term.**

- |               |              |
|---------------|--------------|
| 1 compression | a speaker    |
| 2 sound       | b company    |
| 3 web         | c engine     |
| 4 record      | d attachment |
| 5 search      | e site       |
| 6 stereo      | f protection |
| 7 e-mail      | g format     |
| 8 copyright   | h card       |

**4 Which verbs on the left are frequently found with nouns on the right?**

- |               |            |
|---------------|------------|
| 1 to download | a the Web  |
| 2 to install  | b files    |
| 3 to compose  | c software |
| 4 to browse   | d data     |
| 5 to process  | e music    |

## Language work: Adverbial clauses

**5 Look at the box. Underline the subordinate clauses below and decide what type of meaning they convey.**

- e.g. Send me an SMS as soon as you arrive at the airport. = Time
- 1 It was so cold that the water froze. = ....
- 2 Teachers use multimedia software to teach subjects like music and languages. = ....
- 3 Put the CDs wherever you like. = ....
- 4 If you bring your digital video camera, we can make a movie on my PC. = ....
- 5 Even though she has lived in Boston for three years, she can't speak English. = ....
- 6 As it was late, we decided to leave. = ....

**6 Rewrite these sentences. Keep the same meaning.**

- 1 Paul Scott is very famous but he is unhappy.  
Although .....
- 2 Her computer doesn't work properly, so she has decided to format the hard disk.  
As .....
- 3 He can't buy a multimedia PC because he has no money.  
Since .....
- 4 She'll buy a new PC when she gets paid.  
As soon as .....
- 5 He'll go to a computer shop, but he'll look at a brochure first.  
Before .....
- 6 The Internet won't expand if there isn't a good telephone system.  
Unless .....

### Adverbial clauses

They express circumstances (time, reason, etc.).

#### Time

Introduced by *when*, *as soon as*, *until*, *before*, *since*, *while*, *after*.

*I'll phone when he arrives home.*

#### Place

Introduced by *where* and *wherever*.

*The reporter walked where the bomb had exploded.*

#### Concession

Introduced by *although*, *even though*, *whereas*.

*Some kids like classical music whereas others hate it.*

#### Reason/Cause

Introduced by *because*, *since*, *as*.

*Since it was raining, we stayed at home.*

#### Result

Introduced by *so ... that*, *such ... that*, *so*.

*He was such a good teacher that everyone liked him.*

#### Purpose

Introduced by *to*, *in order to*, *so as to* + infinitive.

*Turn the radio down so as not to wake the baby.*

#### Condition

Introduced by *if*, *unless*, *as long as*, *provided that*.

*I'll type the report if you lend me your laptop.*

- **Remember!** *Unless* means *if not*.

*You can't use this PC if you don't know the entry password. (= ... unless you know ...)*

## UNIT 7

### Web design

#### **1 A typical home page**



**In pairs, discuss these questions.**

- 1 Why do companies have websites?
- 2 What is the difference between a *website* and a *web page*?
- 3 What is a home page?
- 4 Do you have a blog or personal website? Describe the home page to your partner.

The Yahoo! home page

#### **2 Web page design**

**A Read the text on page 115 and find the following.**

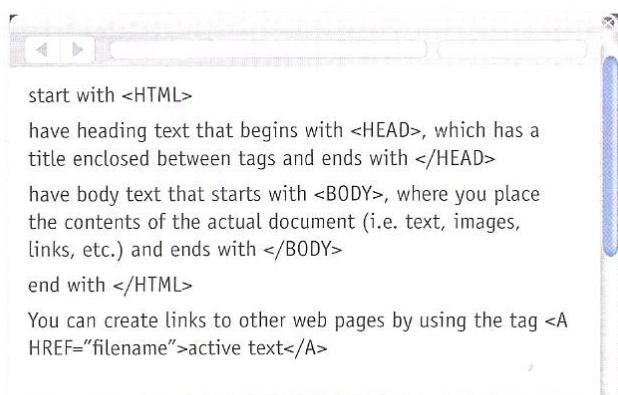
- 1 the language used to create web documents
- 2 the type of software that lets you design web pages without writing HTML codes
- 3 the format invented by Adobe to distribute text files over the Internet
- 4 a method of displaying multiple HTML documents in the same browser window
- 5 three common graphics formats used on websites
- 6 three popular formats used to store and play back video

## Web page design

### HTML and web editors

The code behind most web pages is **HTML** (**hypertext markup language**), which consists of commands called **tags**. Tags are placed around pieces of text to tell the web browser how to display text or pictures. You can view the source HTML code of a web page by choosing the *Page Source* option in your web browser. But you needn't learn HTML in order to build your own website. Instead, you can use a word processor with web design capabilities or a dedicated **web editor** like Macromedia Dreamweaver or Microsoft FrontPage. Web editors are user-friendly and **WYSIWYG** (*What You See Is What You Get*). Different buttons and menu items let you design a page without writing HTML.

HTML files have this basic structure:



Some basic HTML source code



### Web page elements

There are a number of different elements that you can use on a web page:

- **Text** – displayed in a variety of fonts and sizes. Most text files are available in two formats: **HTML** or **PDF** (the portable document format that can be viewed with Acrobat Reader).

- **Background** – the underlying colours and patterns of a web page

- **Tables** – with columns and rows, used to position images and text on a page

- **Frames** – rectangular areas that allow the display of different pages in the same browser window

- **Cascading Style Sheets (CSS)** – a mechanism for adding styles to web documents. You could use HTML code to specify the font, text styles and background colour. Nowadays, however, it is more common to use CSS. This makes it easy to apply presentation changes across a website.

- **Graphics, clip art, icons, background templates, wallpaper, and transparent images** – common formats are **.jpg** (joint photographic experts group), ideal for pictures with many colours, **.gif** (graphics interchange format), ideal for pictures with fewer colours, and **.png** (portable network graphics), which supports 16 million colours.

- **Hyperlinks** – highlighted text or pictures (buttons, image maps, etc.) that act as links to other pages. If you want to share information with people, you can use **RSS feeds** and provide readers with a link to the feed. RSS allows subscribers to receive updates of blogs, news, podcasts, etc. Before **going live**, you should check that all the links work.

### Audio, video and animation

Many websites now incorporate audio files, and if you're designing a site, you may like to insert songs, podcasts, etc. The most common audio formats are: **.wav** (Windows wave audio format), **.ra** (RealAudio file) and **.mp3** (MPEG-1 Audio Layer-3).

**Full-motion video** is stored in these formats: **.avi** (audio video interleave), **.mov** (QuickTime movie) and **.mpg** (moving picture experts group).

If you want to inject something special into your web pages, you can use Adobe Flash to include **interactive animations** and **streaming audio**. Additionally, you can insert Java applets – small programs that enable the creation of interactive files. Animations are made up of a series of independent pictures put together in sequence to look like moving pictures. To see or hear all these files, you must have the right **plug-in**, an auxiliary program that expands the capabilities of your web browser.

**B** Read the text again and then match the sentence beginnings (1–6) with the correct endings (a–f).

- 1 Instructions in HTML
  - 2 Cascading Style Sheets are the way
  - 3 A hyperlink is any clickable text,
  - 4 A plug-in is a small program
  - 5 Java applets are used to provide
  - 6 RSS feeds are summaries of web content
- 
- a image or button that takes you to another place on the Web.
  - b used for handling audio, video and animation files.
  - c are called *tags*.
  - d interactive features to web applications.
  - e to define the presentation of web pages, from fonts and colours to page layout.
  - f published in the Really Simple Syndication format for download.

### 3 Language work: modal verbs

**A** Underline all the modal verbs in the text on page 115 and then look at the HELP box. Which modal verb from the HELP box does not appear in the text? Can you think of any other modal verbs?

#### HELP box

##### Modal verbs

We use modal verbs to add extra meaning to the main verb. They are followed by infinitive without *to*. Modal verbs are used in the following ways:

- To express a possibility

You **can/could** use Adobe Flash to include interactive animations.

You **may** like to insert songs, podcasts, etc.

The price of Dreamweaver **might** go down next month.

**Can** and **could** are often interchangeable when talking about possibility. **May** and **might** are used to express weaker possibilities and often come before the verb **like** to mean *It is possible you will like*.

- To ask for permission

**Can/Could/May** I use your mobile phone?

**May** is more formal than **can** or **could**.

- To talk about ability

*They are looking for artists who **can** draw and design web pages.*

**Could** is the past tense of **can** and is used to talk about ability in the past.

- To talk about obligation or necessity

*To see or hear all these files, you **must** have the right plug-in.*

*... you **needn't** learn HTML in order to build your own website.*

**Needn't** means *don't need to* or *don't have to* and is used to express a lack of obligation.

- To give advice (see Unit 7)

*Before going live, you **should** check that all the links work.*

**B Complete these sentences with suitable modal verbs from the HELP box. There may be more than one possible answer.**

- 1 With Java, I ..... include some attractive banners on my website.
- 2 With a web editor, you ..... create a web document easily.
- 3 These days, you ..... learn how to use complicated HTML codes. Modern web design software is user-friendly and converts a visual layout into HTML code.
- 4 Once live, you ..... update your website regularly.
- 5 To view a PDF file, you ..... have Adobe Acrobat Reader.
- 6 Websites with graphics are more inviting than those written in plain text, so you ..... like to insert some graphics into your documents.
- 7 ..... I use your laptop? I need to print out this report.

**C  In pairs, discuss at least two things**

- 1 you can now do more easily because of the Internet.
- 2 you could do better if you had a faster internet connection.
- 3 that may/might happen to the Internet in the next ten years.
- 4 you must consider when designing a website.
- 5 you should take into account when choosing which PC to buy.

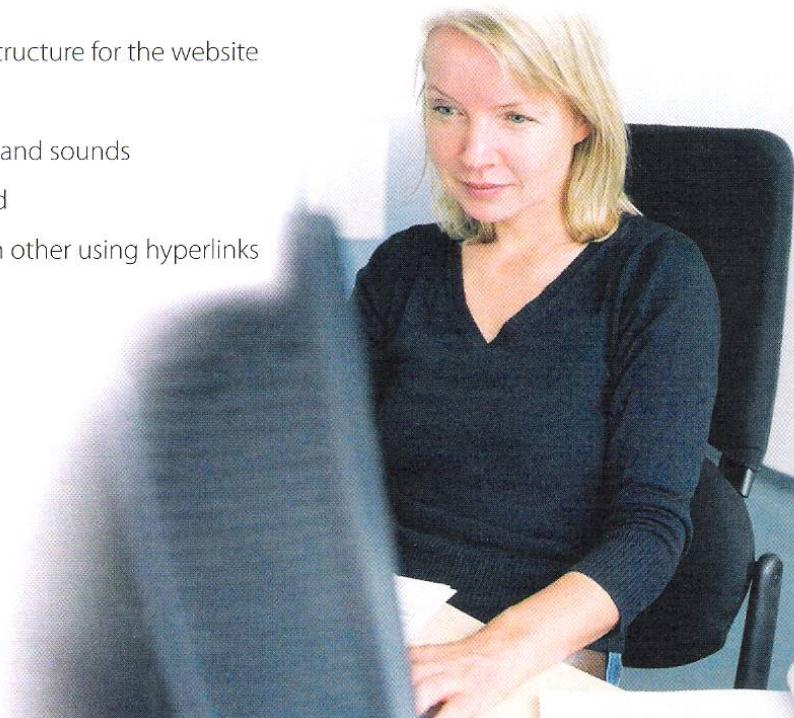
## 4 Designing a website

**A  In pairs, think about your favourite websites and discuss these questions.**

- 1 Do you like the way they are designed? Give reasons for your answer.
- 2 What elements do you think a good website should have? Make a list.

**B  Listen to an interview with a web designer describing how to design a website and put these steps into the correct order.**

- Write and format the text
- Decide the content and structure for the website
- Publish the website
- Insert computer graphics and sounds
- Keep the website updated
- Link related pages to each other using hyperlinks



*A web designer at work*

**C** Listen again and decide whether these design guidelines are right or wrong. Tick the correct box.

- |   | Right                    | Wrong                    |
|---|--------------------------|--------------------------|
| 1 Plan your website carefully.  | <input type="checkbox"/> | <input type="checkbox"/> |
| 2 Use a web editor. It will make it easier to create your pages.      | <input type="checkbox"/> | <input type="checkbox"/> |
| 3 Insert photos or animations just to make the pages look attractive. | <input type="checkbox"/> | <input type="checkbox"/> |
| 4 Place a large number of graphics on your pages.                     | <input type="checkbox"/> | <input type="checkbox"/> |
| 5 Use very bright colours.  | <input type="checkbox"/> | <input type="checkbox"/> |
| 6 Put a lot of links on one page.                                     | <input type="checkbox"/> | <input type="checkbox"/> |
| 7 Check that all the links on your web pages are correct.             | <input type="checkbox"/> | <input type="checkbox"/> |
| 8 Once they are published, update your pages regularly.               | <input type="checkbox"/> | <input type="checkbox"/> |

**D** In small groups, collect information about your college or company and design a home page for it. Follow the instructions from the interview with the web designer.

## 5 Blogs

**A** In pairs, discuss these questions.

- 1 What is a blog?
- 2 Which blogs do you read regularly?

**B** Look at the screenshot from [tpsreport.co.uk](http://www.tpsreport.co.uk), a popular gaming blog. Can you see any design differences between blogs and normal websites?

**C** Imagine you wanted to start your own blog. In pairs, discuss these questions.

- 1 Why would you start your own blog – to write a diary of your thoughts or to share your expertise on a particular topic?
- 2 What types of media would you include – text, photos, video, audio (including podcasts)?
- 3 Would you insert links to other blogs? Which ones?
- 4 Would you focus on a particular subject or have a mix of several topics?
- 5 Which site would you use to host your blog?



A screenshot from [www.tpsreport.co.uk](http://www.tpsreport.co.uk)

## UNIT 7: EXERCISES

### Language work: Modal verbs 2

**1 Look at the box. Ask for permission to do these things. Use *can*, *may* or *could*.**

- 1 use the phone at a friend's house
- 2 read someone's newspaper; you are on a train
- 3 park your car in someone else's garage
- 4 send a fax from someone's house
- 5 ask a question at a business meeting

**2 Can you lend me £5? Imagine you are in class. Use *can* or *will* to make requests. If you want to be more polite or formal (e.g. because the request is unusual) use *could*, *would you (mind)* ...**

*Requests*

- 1 open the window
- 2 switch on the heater
- 3 put a music CD on
- 4 pass a dictionary to you
- 5 speak louder

**3 Change these orders into requests.**

- 1 Stop smoking – it's not allowed here.  
.....
- 2 Send me a catalogue of your products.  
.....
- 3 Translate this web page for me.  
.....
- 4 Lend me some money.  
.....
- 5 Give me the password.  
.....

**4 Read this text and then match the modal verbs (1–5) with the correct meaning (a–c).**

We are sending two students to a course on web design next week, so they won't come into college.

The course could be beneficial for all of us. They may well learn HTML and Java. From what I've heard, it should be interesting. One thing is sure: it will be expensive.

- 1 They won't come
  - 2 The course could be beneficial
  - 3 They may learn
  - 4 It should be interesting
  - 5 It will be expensive
- a It is possible that ...
  - b It's certain that ...
  - c It's probable (likely) to happen

**5 Complete these sentences with *can*, *could*, *was able to*, *must* or *can't*.**

- 1 Sue ..... draw and paint very well.
- 2 In spite of the difficulties, he ..... to repair the hard disk.
- 3 I ..... play the guitar when I was 7.
- 4 That news report ..... be true.  
It's impossible.
- 5 She can speak seven foreign languages. She ..... be very clever.

### Modal Verbs 2

#### Permission

- In informal situations (speaking to friends or people we know well), we use **can**.  
*Can I use your computer?*
- In formal situations, we use **may**.  
*May I use your computer?*
- We use **could** if we want to be polite.  
**Could** is less formal than **may**.  
*Could I use your computer?*

#### Requests

Informal: *Can you turn up the radio, please?*

Neutral: *Will you turn up the radio, please?*

More formal and polite:

*Could you turn up the radio, please?*

*Would you turn up the radio, please?*

*Would you mind turning up the radio, please?*

#### Ability

- We use **can** in the present and **could** in the past.  
*She can type very fast.*  
*She could swim when she was 5.*
- **Can** borrows the rest of its tenses from **be able to**.  
*Jess hasn't been able to get a job yet.*  
*He won't be able to attend the meeting next week.*

- We use **was able to** or **could** to express ability for repeated actions in the past.  
*He **could/was able to** surf the web when he was 8.*
- For a single particular achievement in the past we use **was able to**.  
*His English wasn't very good, but he **was able to** understand most of the film. (= managed to ...)*

### Deduction

- We use **must** when we are sure about something or we think it's logically probable. We use **can't** when it's logically improbable.  
*Someone is knocking at the door.*  
A: *It **must** be Alex. He said he might come.*  
B: *It **can't** be Alex. It's too early.*

## Writing: A web page

### 6 Design and create a web page about your city, town or village.

You can use the document below as a model.

The screenshot shows a web browser window with a menu bar and toolbar. The main content area displays a web page with the following structure:

- Header:** WELCOME TO MY CITY
- Section:** Zaragoza
- Text:** Zaragoza lies on the banks of the Ebro river, in the north east of Spain. Its current population is 650,000 inhabitants.
- Section:** There is something for everyone
- Text:** There are sports centres, swimming pools, discos, cinemas, and theatres. In the Casco Viejo (old part of the city) the narrow streets are full of cafés and bars where you can go for 'tapas' (typical delicacies served with drinks). The nightlife is really pleasant. Around the city centre you can enjoy the friendly atmosphere of old cafés, pubs and dance halls.
- Section:** A city of history and culture
- Text:** Zaragoza was founded by the Roman legions of Caesar Augustus over 2,000 years ago. The Romans called it Caesaraugusta. Part of the Roman wall is still preserved today. The Moors called it Sarakusta. The loveliest monument from the Muslim era is the palace of La Aljafería. There are also Gothic-Mudejar buildings (e.g. La Seo cathedral). The most important temple is the Pilar Basilica (connected with the tradition that the Virgin appeared to James the Apostle on a column or pillar). Zaragoza also has several museums with archeological collections and works by famous painters, including Goya.
- Section:** A modern city
- Text:** Zaragoza has a lot of modern buildings, shopping centres, hospitals, schools, wide avenues and parks. Today it's an important communication link between the centre of Spain, the north-east and the French border. It's the capital of the autonomy of Aragón and has a large university.
- Text:** And more ...

Here are some popular web page editors:

- Dreamweaver (Macromedia)  
<http://www.macromedia.com>
- FrontPage (Microsoft)  
<http://www.microsoft.com/frontpage>
- HotDog (Sausage software)  
<http://www.sausage.com/>
- Netscape Composer (part of Communicator)  
<http://www.netscape.com/>

# MODULE 4

## PROGRAMMING

***UNIT 8: Program design and computer languages***  
***UNIT 9: Java***

## UNIT 8

### Program design and computer languages

#### **1 Programming**

**A**  In pairs, discuss what you think **programming** is.

**B** Look at the definition of **programming** in the Glossary. Is it similar to yours?

```
#include <stdio.h>
main( )
{
    printf("good morning\n");
}
```

#### **2 Steps in programming**

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

- 1 flowchart
- 2 source code
- 3 compiler
- 4 machine code
- 5 debugging

- a Program instructions written in a particular computer language
- b The techniques of detecting and correcting errors (or bugs) which may occur in programs
- c A diagram representing the successive logical steps of the program
- d A special program which converts the source program into machine code – the only language understood by the processor
- e The basic instructions understood by computers; it consists of 1s and 0s (binary code)

*This C program tells the computer to print the message 'good morning'*

**B**  Listen to Andrea Finch, a software developer, talking to a group of students on a training course about how a program is written and check your answers to A.

**C**  Listen again and put these steps into the correct order.

- Write instructions in a programming language
- Prepare documentation
- Understand the problem and plan a solution
- Make a flowchart of the program
- Compile the program (to turn it into machine code)
- Test and debug the program

**D**  Listen again and make detailed notes. In pairs, use your notes to write a short explanation of what each step in C means.

### 3 Computer languages

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

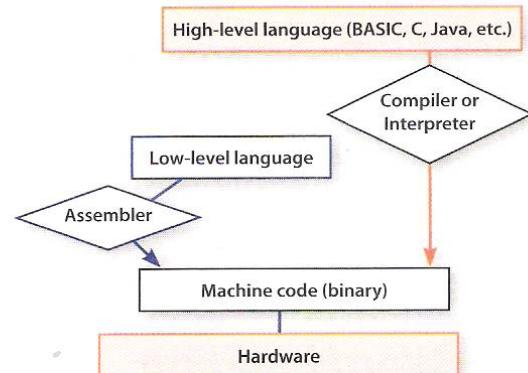
#### Computer languages

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).

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>

**B Read the text again and answer these questions.**

- 1 Do computers understand human languages? Why? / Why not?
- 2 What is the function of an *assembler*?
- 3 Why did software developers design high-level languages?
- 4 Which language is used to teach programming techniques?
- 5 What is the difference between a *compiler* and an *interpreter*?
- 6 Why are HTML and VoiceXML called *markup* languages?

**C Complete these sentences with a computer language from the text.**

- 1 \_\_\_\_\_ allows us to create our own *tags* to describe our data better. We aren't constrained by a pre-defined set of tags the way we are with HTML.
- 2 IBM developed \_\_\_\_\_ in the 1950s. It was the first high-level language in data processing.
- 3 \_\_\_\_\_ applets are small programs that run automatically on web pages and let you watch animated characters, play games, etc.
- 4 \_\_\_\_\_ is the HTML of the voice web. Instead of using a web browser and a keyboard, you interact with a voice browser by listening to pre-recorded audio output and sending audio input through a telephone.
- 5 This language is widely used in the business community. For example, the statement ADD VAT to NET-PRICE could be used in a \_\_\_\_\_ program.

## 4 Word building

**Look at the words in the boxes. Are they nouns, verbs or adjectives? Write *n*, *v* or *adj* next to each word. There may be more than one possible answer. Complete the sentences with words from the boxes.**

program	programmers	programming	programmable
---------	-------------	-------------	--------------

- 1 \_\_\_\_\_ is the process of writing a program using a computer language.
- 2 A computer \_\_\_\_\_ is a set of instructions that tells the computer how to do a specific task.
- 3 Most computer \_\_\_\_\_ make a plan of the program before they write it.
- 4 A \_\_\_\_\_ keyboard allows the user to configure the layout and meaning of the keys.

compile	compiler	compilation
---------	----------	-------------

- 5 Programs written in a high-level language require \_\_\_\_\_ – that is, translation into machine code, the language understood by the processor.
- 6 A source program is converted into machine code by software called a \_\_\_\_\_.
- 7 Programmers usually \_\_\_\_\_ their programs to generate an object program and diagnose possible errors.

bug	debug	debugger	debugging
-----	-------	----------	-----------

- 8 Any error or malfunction of a computer program is known as a \_\_\_\_\_.
- 9 A \_\_\_\_\_ is a program used to test and \_\_\_\_\_ other programs.
- 10 The process of going through the code to identify the cause of errors and fixing them is called \_\_\_\_\_.

## 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.*

## UNIT 8: EXERCISES

### **Word search: Programming**

- 1 Find 10 words about ‘programming’.**

F	H	C	G	Y	B	U	G	S	F	R
L	S	O	I	R	A	H	M	E	A	E
O	R	M	G	R	S	M	C	Z	D	P
W	L	P	X	Y	I	O	M	O	C	A
C	P	I	G	R	C	M	C	F	A	S
H	R	L	S	S	A	O	M	E	L	C
A	C	E	G	P	A	M	B	L	Z	A
R	D	R	G	R	A	Q	M	O	R	L
T	C	O	I	E	A	M	C	U	L	G
O	R	T	D	E	B	U	G	G	E	R
P	R	O	G	R	A	M	M	E	R	O

### **Reading: Programming steps**

- 2 These words are missing from the text. Decide where they fit.**

errors program compiled debugging  
flowchart documentation language

#### **Programming steps**

To write a (1) ..... software engineers usually follow these steps:

First they try to understand the problem and define the purpose of the program.

Next they design a step-by-step plan of instructions. This usually takes the form of a (2) ...., a diagram that uses standardized symbols showing the logical relationship between the various parts of the program.

These logical steps are then translated into instructions written in a high-level computer (3) ..... (PASCAL, COBOL, C++, etc.). These computer instructions are called the ‘source code’. The program is then (4) ....., a process that converts the source code into machine code (binary code), the language that computers understand.

Testing programs are then run to detect (5) ..... in the program. Errors are known as ‘bugs’, and the process of correcting these errors is called (6) ‘.....’. Engineers must find the origin of each error, then write the correct instruction, compile the program again, and conduct another series of tests. Debugging continues until the program runs smoothly.

Finally, software developers write detailed (7) ..... for the users. Manuals tell us how to use programs like word processors, databases or Web browsers.

- 3 Refer to the text again and answer these questions.**

- 1 What is a flowchart?
- 2 What type of language is used by software developers when they write source code?
- 3 What is ‘debugging’ a program?

### **Language work: The infinitive**

- 4 What follows? Infinitive (with or without *to*) or the -ing form?**

Look at the box opposite and complete these sentences using the correct form of these verbs.

spend	do	meet	understand
live	buy	remove	

- 1 We had arranged ..... in my office to discuss the problem.
- 2 I don’t really fancy ..... my holidays with my parents.
- 3 He refuses ..... the project with me.
- 4 The only language computers can ..... directly is called ‘machine code’.
- 5 A debugger is a tool which helps programmers ..... errors or ‘bugs’ from a program.
- 6 Can you imagine ..... without robots and computers?
- 7 I simply can’t afford ..... a new car.

- 5 Choose the correct answer.**

- 1 I’m not interested in ..... that computer language.  
a learn    b learning    c to learn
- 2 You promised not ..... anybody my secret.  
a tell    b telling    c to tell
- 3 I can’t get used ..... a voice recognition system.  
a use    b to using    c to use
- 4 I would prefer ..... by train.  
a travel    b travelling    c to travel

- 5 I would rather ..... the small one than the large one.  
a have    b having    c to have
- 6 Would you mind ..... the window?  
a open    b opening    c to open
- 7 They may not ..... to the conference.  
a come    b coming    c to come
- 8 Can you make this old PC .....?  
a start    b starting    c to start

**6 Complete the sentences describing each picture. Use infinitives.**



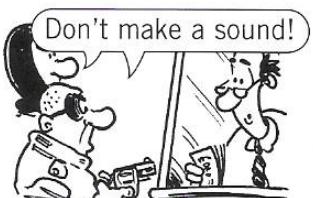
1 e.g. Franz helped his mother carry the books.



3 Ludwig invited Pedro



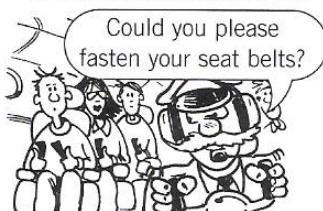
5 The teacher ordered



7 The bank robbers told



2 The manager reminded Freya .....



4 The pilot asked the passengers .....



6 Eva advised Marta .....



8 The engineer warned the employees ..... because .....

### The use of the infinitive

The **to-infinitive** is used:

a to express purpose:

*In a flowchart, special symbols are used to indicate different functions.*

*I went to England to learn English. (not ... for to learn)*

b as the complement of adjectives and nouns:

*I'm pleased to meet you.*

*The HTML language is easy to use.*

c after adjectives or adverbs accompanied by **too** or **enough**:

*This program runs too slowly to do the simulation. (too + adj. or adverb)*

*She is not old enough to do this. (adj. + enough)*

d as the complement of certain verbs:

- Verb + infinitive. Here are the most common verbs:

afford	decide	manage
agree	demand	offer
appear	expect	plan
arrange	fail	promise
ask	hope	refuse
attempt	learn	try

*I can't afford to buy a laser printer.*

*Experts are trying to develop better programs.*

- Verb + object + infinitive. Here are the most common verbs:

advise	expect	recommend
allow	force	remind
ask	help	teach
beg	invite	tell
enable	order	want
encourage	persuade	warn

*The program documentation enables the user to operate the program correctly.*

*A lightpen allows the user to draw on the screen.*

The **bare infinitive** (without **to**) is used:

a after modal auxiliary verbs: *can, could, may, might, will, would, shall, should, would rather*  
*Unfortunately, computers can't understand English.*

*I'd rather buy a game than a spreadsheet program.*

b after the verbs **make** and **let**

*Instructions make a PC perform a specified task.*  
*Let me show you how this program works.*

### NOTE

In the passive form we use the **to-infinitive**:

*She was made to apologize.*

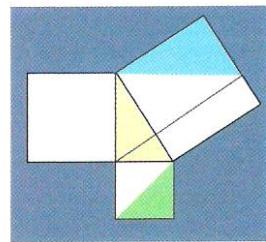
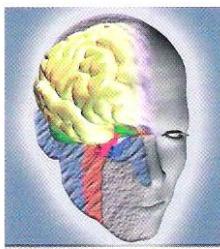
# UNIT 9

## 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.



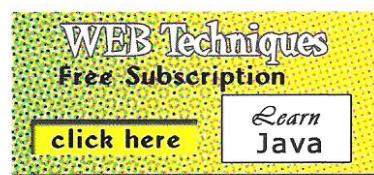
a .....

c .....

e .....



b .....



d .....

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

- 1 Java      c
- 2 applet    e
- 3 plug-in   a
- 4 platform-independent b
- 5 object-oriented programming d

- 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. **sun microsystem**
- 2 With the interpreter, a program is first converted into Java bytecodes. **with the combiner**
- 3 Java is not compatible with most computing platforms. **is comptatible**
- 4 The Java language is single-threaded, one part executing at a time. **multi threaded**
- 5 Java has no competitors. **c# and adobe flash**
- 6 Flash files are called *animations*. **flash movies**

### 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.

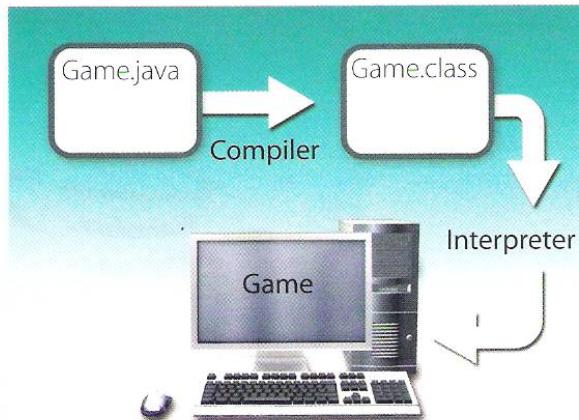


Fig. 1

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

- |                        |                      |          |            |
|------------------------|----------------------|----------|------------|
| 1 Java <b>a</b>        | 4 web <b>b</b>       | a applet | d system   |
| 2 operating <b>d</b>   | 5 source <b>c</b>    | b page   | e object   |
| 3 programming <b>f</b> | 6 graphical <b>e</b> | 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 **animated** characters on web pages.
- 2 Java is an **object oriented** 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/	/ɪd/

### 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/, /V/, /r/; nasal consonants: /m/, /n/, /ŋ/; and vowels (e.g. *compiled, designed, simplified*)
- /ɪd/ after /t/ or /d/ (e.g. *interpreted, multi-threaded*)

**B** Complete this extract from a lecture handout about Java with the correct form of the verbs in the box.

call be begin can decide rename have support develop base

The idea for Java started in 1990, when a team of software engineers at Sun Microsystems (1) decided to create a language for a handheld device that could control and interact with various kinds of electronic appliances, ranging from Nintendo Game Boys to VCRs and TV set-top boxes. They (2) developed an object-oriented programming language that one of the engineers, James Gosling, (3) called Oak, after the tree outside his window. The device even (4) had an animated character named Duke, who would go on to become Java's mascot.

With the advent of the Web in 1993, the company made a web browser (5) based on the Oak language. Later on, this language was adapted to the Internet and (6) renamed Java. The 1.0 version of Java was officially introduced by Sun in May 1995.

At that time, web pages (7) could only display text, pictures and hyperlinks. With the arrival of Java, web designers (8) were able to include animation and interactive programs on web pages. The first major application created with Java was the HotJava browser. The Java language (9) began to attract serious attention from the internet community and was soon (10) supported by Netscape Navigator and MS Internet Explorer. Today, Java is a hot technology that runs on multiple platforms, including smart cards, embedded devices, mobile phones and computers.

## UNIT 9: EXERCISES

### Vocabulary review: Java

**1 Match these words with the correct explanation below.**

- |   |                        |
|---|------------------------|
| 1 applet  | 4 object-oriented      |
| 2 plug-in   | 5 Java virtual machine |
| 3 file transfer   | 6 computer bug         |
| <b>3a</b> to copy a file from the Net to your PC  |                        |
| <b>6b</b> an error in a program   |                        |
| <b>5c</b> a programming environment that interprets Java for operating systems like Mac OS, UNIX or Windows |                        |
| <b>4d</b> a technique that allows the creation of 'objects' to represent processes in programming           |                        |
| <b>1e</b> a small program produced with Java  |                        |
| <b>2f</b> a program that adds capabilities to your browser (e.g. to play sound or video clips)              |                        |

### Reading: Landmarks in computer history

**2 Read the text and find:**

- 1 the device used in China 4,000 years ago
- 2 the first woman computer programmer
- 3 the distinction between first and second generation computers
- 4 the company that designed the first microprocessor
- 5 the OS designed for IBM PCs and compatibles
- 6 the first computer which used a graphical interface
- 7 the year when the Web was created
- 8 the company that invented Java

**3 Translate these words into your language.**

- |                |                           |
|----------------|---------------------------|
| 1 abacus       | 6 compiler                |
| 2 punched card | 7 cyberspace              |
| 3 vacuum tube  | 8 optics                  |
| 4 transistor   | 9 artificial intelligence |
| 5 silicon chip | 10 molecular computer     |

#### *Landmarks in computer history*

- 2000 The abacus emerged in Asia. It allowed people to make calculations using moving beads arranged on a rack.
- 1642 Blaise Pascal invented the first mechanical adding machine, a numerical wheel called Pascaline.
- 1833 Charles Babbage started to build his Analytical Engine, the forerunner of the modern computer. He was helped by Augusta Ada, who is considered the first female computer programmer.
- 1890 Herman Hollerith used punched cards in a device which automatically read the US census.
- 1941 Konrad Zuse built the first programmable computer, called Z3, working on the binary system.

**First generation computers** (1945–1954)

1945 The University of Pennsylvania designed ENIAC, an electronic computer which used vacuum tubes and was able to calculate at electronic speeds.

**Second generation computers** (1955–1964)

Computers used transistors instead of vacuum tubes. Memories were made of magnetizable cores (e.g. the IBM 1401).

**Third generation computers** (1965–1973)

1965 The first computers built using silicon chips went on sale (e.g. the IBM 360 and CDC 6400).  
1971 Intel released the first microprocessor.

**Fourth generation computers** (1974–Present)

Computers became smaller as more components were squeezed onto microchips.

1975 MITS sold the first minicomputer, the Altair 8800. Bill Gates and Paul Allen founded Microsoft and wrote a BASIC compiler for the Altair.

1976 Steve Jobs and Steve Wozniak founded Apple Computer, Inc.

1981 IBM sold the IBM PC, a model that became the standard in personal computers. MS-DOS was the operating system for IBM PCs and compatibles.

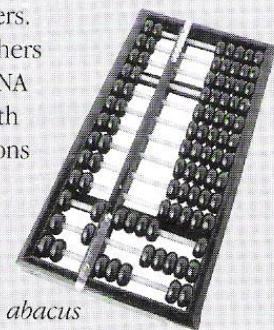
1984 Apple produced the Macintosh, the first computer with a mouse and a graphical user interface (GUI).

- 1986 William Gibson invented the term 'cyberspace' in his novel *Neuromancer*.
- 1991 CERN (Conseil Européen pour la Recherche Nucléaire) created the World Wide Web.
- 1995 Microsoft launched Windows 95 and Sun Microsystems created the Java language.
- 2001 Intel launched the Pentium 4 running at 2 GHz.

#### Fifth generation computers (Present and beyond)

- Fibre optics and optical disks revolutionize the world of computers.
- Artificial Intelligence and voice recognition are incorporated into computer applications.
- Experts start making tiny, superfast computers known as nanocomputers.

Some are electronic, others are biochemical (e.g. DNA computers) working with bio-chips made of millions of molecules.



An abacus

- 4 Look at the text again and put the verbs into the correct column.

Regular past tenses in -ed	Irregular past tenses
.....	.....
.....	.....

### Language work: Past tenses

- 5 Look at the list and write sentences describing what Kelly did or didn't do last week.

- e.g. *Last Monday she began a course on Java.*
- |           |                                     |
|-----------|-------------------------------------|
| Monday    | begin a course on Java (✓)          |
|           | phone parents (✗)                   |
| Tuesday   | write an e-mail to a webpal (✓)     |
|           | watch TV (✗)                        |
| Wednesday | repair the optical drive (✗)        |
|           | visit her friend in hospital (✓)    |
| Thursday  | read the <i>Financial Times</i> (✗) |
|           | send a postcard to a friend (✓)     |
| Friday    | have lunch with her boss (✓)        |
|           | go to her German class (✗)          |
| Saturday  | buy a DVD-R drive for brother (✓)   |
| Sunday    | download music from the Net (✓)     |

- 6 Look at the sentences below. What is the verb tense called in each one?

*When the manager left the office ...*

- 1 Yoshiko was using a mobile phone.
- 2 Tina was writing letters.
- 3 Hamid and Beata were talking about a project.
- 4 Franco and Anna were exploring the Web.

### Writing: What were you doing?

- 7 a Study this dialogue. Identify the use of the past simple and past progressive.

- A: I broke my sister's pocket PC yesterday.  
B: Really? What were you doing?  
A: I was sitting on it.  
B: And what did you do about it?  
A: I told her. She was furious with me.

- b Write similar dialogues for these situations.

- 1 I realized I had a computer virus on my PC.
- 2 Someone stole my wallet.
- 3 My grandfather saw a UFO.

#### Past simple

I/you/he/she/we/they worked.

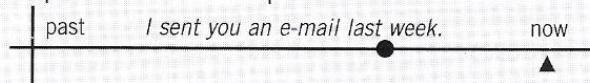
I/you/he/she/we/they didn't work.

**Did** I/you/he/she/we/they **work**?

Irregular verbs: see list on page 78.

We use the past simple to talk about:

- a complete action or event which happened at a specific time in the past.

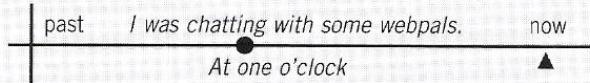


#### Past progressive

**was/were + -ing** form

We use the past progressive to talk about:

- an action which was in progress at a definite time.



- two or more actions happening at the same time.

*We were talking while she was reading the paper.*

- We sometimes use the past **progressive** to describe the situation or 'background' action, and the past **simple** to describe the main action.

*I was playing football when I broke my leg.*