IT

in Construction

Part II

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IT IN CONSTRUCTION

Part II

Учебное пособие

Пособие предназначено для студентов очной формы обучения по направлению подготовки 09.03.02 «Информационные системы и технологии». Основная цель учебного пособия – развитие навыков профессионально-ориентированного речевого общения, формирование умений и навыков перевода специализированной литературы.

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Introduction

Учебное пособие «ИТ в строительстве» предназначено для студентов технических вузов, обучающихся по направлению подготовки 09.03.02 «Информационные системы и технологии» по профилю «Информационные системы и технологии в строительстве». Основной целью является развитие навыков профессионально-ориентированного речевого общения, формирование умений и навыков перевода специализированной литературы. Учебное пособие посвящено, изучению языку вычислительной техники и Интернета и рассчитано для студентов бакалавриата среднего и продвинутого уровней, владеющих морфологическими и синтаксическими структурами английского языка. Языком компьютеров и Интернета, является английский язык и многим профессионалам, например, инженерам приходиться сталкиваться с технической документацией на английском языке.

Пособие также нацелено на обогащение и расширение активного и пассивного лексического словаря студентов за счет новой терминологии. Содержит своеобразный словарный запас, синтаксис и дискурс функции, которые могут быть полезны для развития лингвистической компетенции обучающихся. Мы надеемся, что это пособие будет способствовать взаимодействию обучающихся с компьютерами и помочь общаться более эффективно в этом цифровом мире.

Предлагаемое пособие состоит из трёх разделов, и одиннадцати подразделов. В каждом из которых дается аутентичный адаптированный текст для ознакомительного, изучающего чтения с грамматическими пояснениями и рядом упражнений, направленных на закрепление новых терминов и выражений. Тексты сопровождаются подробным словарем, а также большим количеством иллюстраций, что привлекает внимание студентов и облегчает понимание представленного материала. Задания предусмотрены для индивидуальных, парных и групповых работ, в которых студенты создают и участвуют в коммуникативных ситуациях профессиональной направленности, что способствует преодолению языкового барьера при реальном общении с носителями языка. В каждом подразделе также содержится материал на аудирование и письмо.

Работа с этим пособием позволит студентам тренировать устно и письменно современные английские клише и выражения, наиболее употребляемые в современном коммуникативном пространстве в сфере ИТ.

Part I Creative software

Unit 1 Graphics and design

Vocabulary

raster graphics – растровая графика

jagged edge – зазубренный, неровный край

a polygon – многоугольник, многогранник

to manipulate image – обрабатывать изображение

a wireframe – каркас

solid modelling **–** твердотельное моделирование

a shadow – тень

graphic applets – графические апплеты, приложение

fractal **-** фрактальный, рекурсивный, фрактал

a colour palette – цветовая палитра

1 Computer graphics

Exercise 1.1. In pairs, look at the computer graphics (a-d) and discuss these questions

1. Which of these computer graphics are three-dimensional (3-D)?

2. What are the advantages of creating 3-D images?

3. Which types of professional might use the computer graphics (a-d)?

4. Who else uses computer graphics in their job? How do they use them?
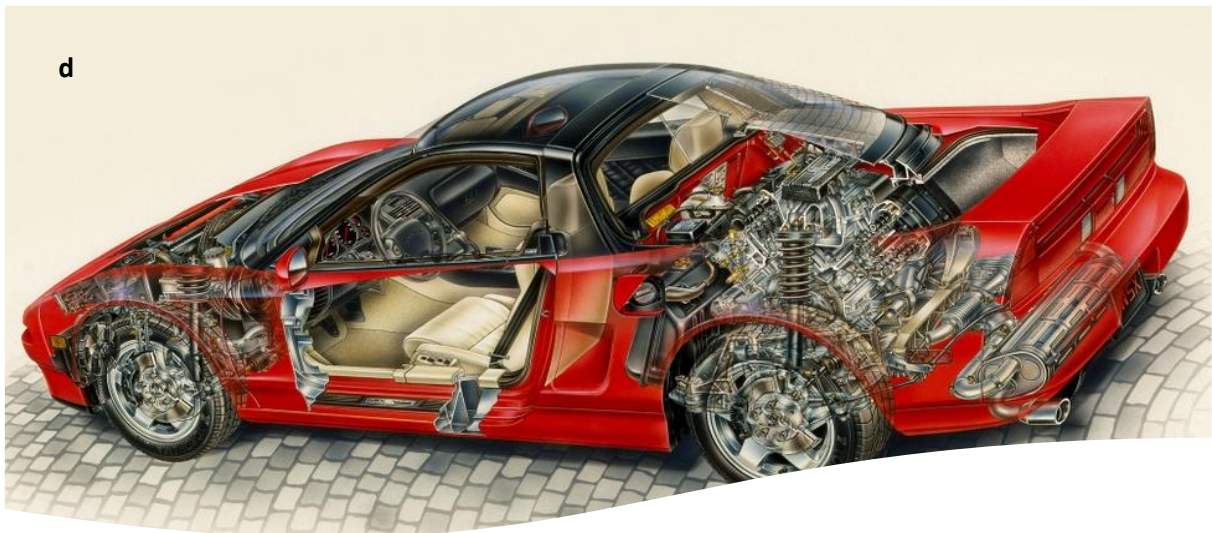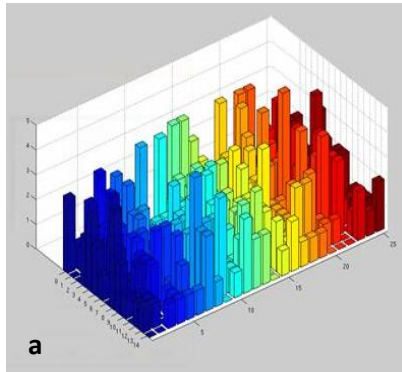
Exercise 1.2. Read the text on page 7 and check your answers to 3 and 4 in Exercise 1.1.

Exercise 1.3. Read the text again and answer these questions.

1. What are the differences between *raster* graphics and *vector* graphics?

2. Which graphics file formats are mentioned?

3. What is *compositing*?

4. What does CAD stand for?

5. What are the benefits of using graphics in the car industry?

6. What type of graphics software is used to make maps or 3-D models of the Earth?

7. Who uses computer animation? How?

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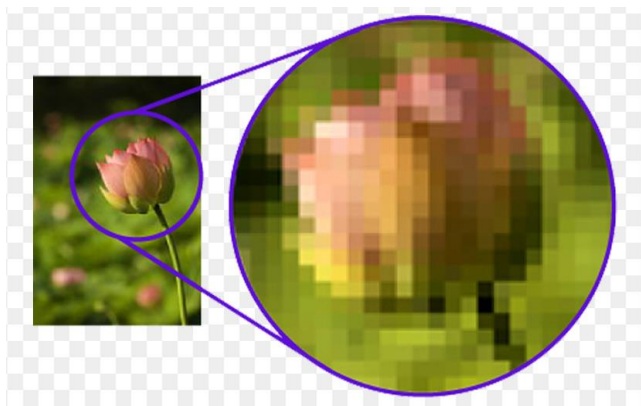
Bitmap graphics are composed of pixels, each of which contains specific colour information

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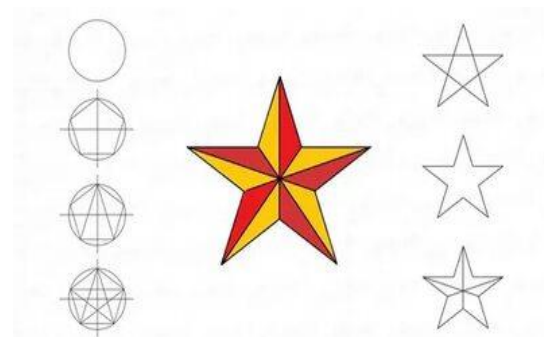
Vector graphics represent images through the use of geometric objects, such as lines, curves and polygons, based on mathematical equations. They can be changed or scaled without losing quality. Vector data can be handled by drawing programs like Adobe Illustrator, Corel Draw or Macromedia Freehand. **EPS**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

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 aero planes 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.
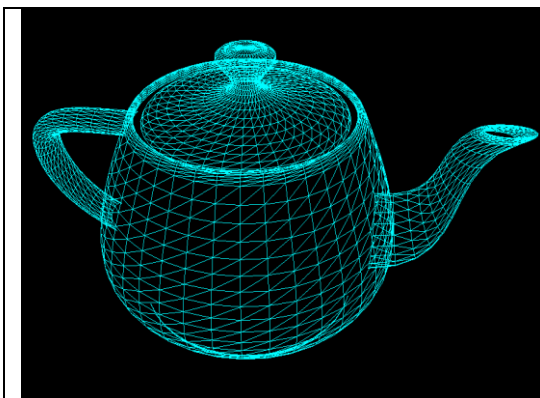
A wireframe model of a teapot

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

Exercise 1.4. 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

Exercise 1.5. 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**

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:

1. As the subject of a verb

Compositing is combining parts of different images to create a single image.

2. *As the complement of the subject.*

Compositing is combining parts of different images…

3. As the object of a verb.

I enjoy editing pictures.

4. After a preposition.

Designers start a project by making a wireframe.

5. As the complement of a verb.

*This course **involves painting** and **drawing** in various media.*

6. 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 suggest, enjoy)

Exercise 2.1. 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. _____

Exercise 2.2. 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 to make realistic images.

3 The toolbox

Exercise 3.1. (T.1.) Listen to an extract from an online tutorial about graphics programs and answer these questions.

1 What is a *toolbox* in graphics software?

2 What are graphics *primitives*?

3 What sort of *attributes,* or characteristics, can be used in graphical objects?

4 What does *translation* mean?

Exercise 3.2. Listen again and complete this extract from the web version of the tutorial.
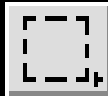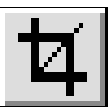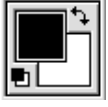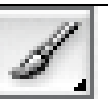
Graphics programs usually have a *toolbox* - a collection of drawing and (1) _____ tools that enable you to type, (2) _____, draw, paint, edit, move, and view images on the computer.

The basic shapes which are used to (3) _____ graphical objects are called *primitives.* These are usually geometric, such as lines between two points, arcs, circles, polygons, ellipses and even text. Furthermore, you can specify the *attributes* of each primitive, such as its colour, line type, fill area, interior style and so on.

The various tools in a toolbox usually appear together as pop-up icons in a menu or palette. To use one, you activate it by (4) _____ on it. For example, if you want to (5) _____ a rectangle, you activate the rectangle tool, and the pop-up options give you the possibility of (6) _____ rectangles with square or rounded corners.

You can transform an object by translating, (7) _____ or scaling it. *Translation* means moving an object to a different location. *Rotation* is (8) _____ the object around an axis. For example, you may need to rotate an object 90 or 180 degrees to fit the drawing. (9) _____ is making the object larger or smaller

Exercise 3.3. Match the tools from the Photoshop toolbox (1-10) with the functions (a-j).

1	Marquee select tools	a	cut down the dimensions of a picture
2	Move tool	b	select a particular part of an image (you can choose different shapes for selection)
3	Crop tool	c	fill in an area with a colour
4	Colour tools and palette	d	control the foreground and background colour
5	Paintbrush, pencil	c	select a specific colour in a photo
6	Eraser	e	magnify areas of an image when you are doing close, detailed work
7	Paint bucket	f	delete the part of the picture you drag it over
8	Type tool	g	insert text into your document
9	Colour picker (Eyedropper)	h	draw and paint in different shapes and patterns
10	Zoom	i	move a selection or entire layer by dragging it with your mouse

4   Describing graphics

Exercise 4.1. Look at the images (1-4), which show the stages involved in drawing a car using computer software. Write a short description of stages 2, 3 and 4. Look at the text on page 7 and the *Useful language* to help you.
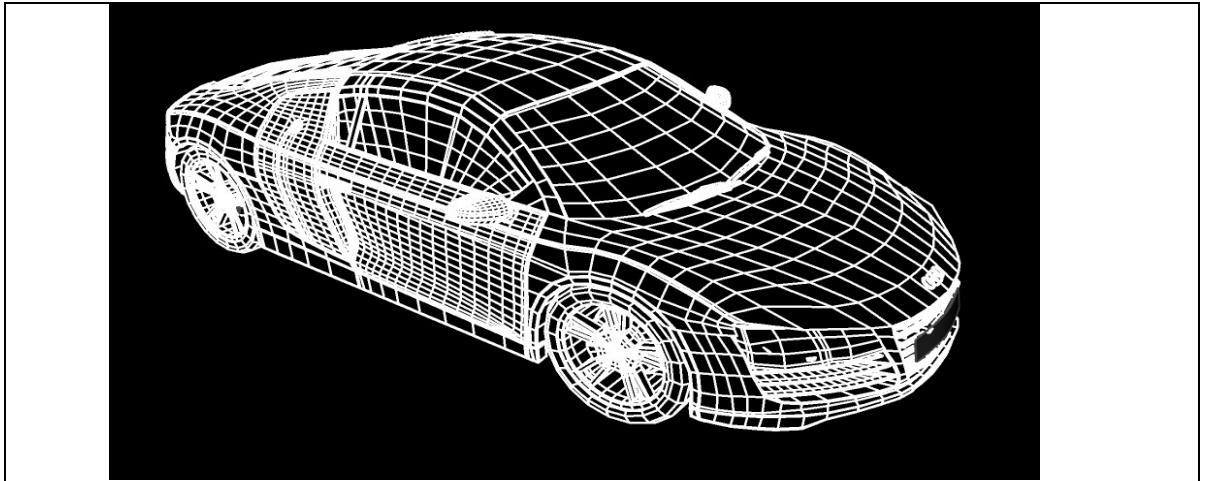
1. This first image shows a wireframe model, probably made using CAD software. A wireframe is a drawing with edges and contour lines. The parts of the car are shown in different colours (violet, green, blue, etc.)

2. Solid modelling
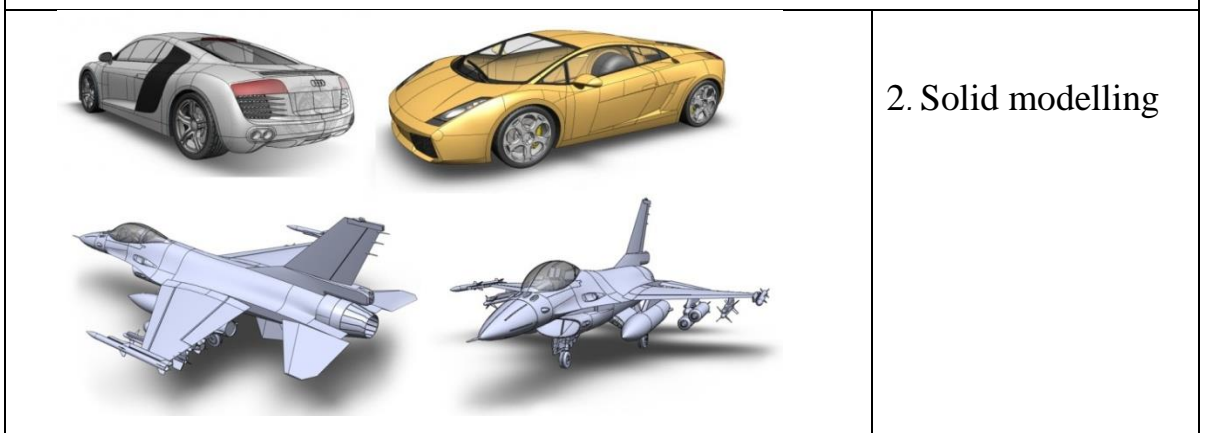
	3. Texturing the model
	4. Rendering

Useful language

This picture shows... / In this (next) stage ... / The designer has used...

This stage is called... / Rendering techniques include...

As a finishing touch, …

5 **Choosing graphics software**

Exercise 5.1. Work in pairs. Student A chooses a task from the list (1-6) and describes it. Student B chooses the most appropriate graphics software for the task (a-f) and gives reasons for his or her choice. Swap roles. Look at the text on 7and the *Useful language* to help you.

1. to edit and retouch photos
2. to create illustrations and drawings for a magazine

3. to prepare slideshows for training sessions or conferences

4. to make mechanical designs and architectural plans

5. to create dynamic simulations and special effects for films, TV, advertisements and games

6. to analyse geographic data and make maps

a. Computer animation software, for example 3-D Studio Max

b. GIS software, for example ArcView

c. Presentation software, for example PowerPoint

d. A CAD package, for example AutoCAD

e. Vector graphics software, for example Freehand

f. A paint and image-editing program, for example Photoshop

Useful language

If I need to…, what software would you recommend?

For that kind of task, the best thing would be...

It allows you to ... and...

I wouldn't recommend ... because...

A good program of this type is ...

Unit 2 Desktop publishing

Vocabulary

a page layout program – программа макетирования, верстки страниц

capability – возможность

high-quality – высококачественный

scalable – масштабируемые

kerning – кернинг. Изменение расстояния между знаками, входящими в определенные сочетания (кернинговые пары [пары знаков, требующие дополнительного кернинга])

a technology – технология

Computer-To-Plate (CTP) – полиграфическая технология передачи в дискретной форме содержания печатного листа из компьютера на печатную форму

direct to plate – печатная форма, полученная прямым копированием

platesetter – 1) оптоэлектронное устройство для изготовления печатных форм, получающее данные о записываемом изображении из компьютера; 2) устройство для копирования печатных форм

a service bureau – бюро обслуживания

a brochure – брошюра, рекламный проспект

a font – шрифт, тип шрифта

to intend – намереваться, планировать

to arrange – расставлять, расположить, организовать

1 **What is desktop publishing?**

Exercise 1.1. In pairs, discuss these questions.

1. What kind of documents can be produced with a desktop publishing system?

2. Page layout software is the key component of a desktop publishing system. Which file types can be imported into a page layout program?

Exercise 1.2. Read the text and check your answers to exercise 1.1.

What is desktop publishing?

Desktop publishing (DTP) refers to the use of computers to design and publish books, brochures, newsletters, magazines and other printed pieces. DTP is really a combination of several different processes including word processing, graphic design, information design, output and pre-press technologies, and sometimes image manipulation.

DTP centres around a **page layout program.** Typically, a layout program is used to import texts created in word processing programs; charts and graphs from spreadsheet programs; drawings and illustrations created in CAD, drawing or paint programs; and photographs.

The program is then used to combine and arrange them all on a page. It is this ability to manipulate so many different items and control how they are used that makes layout software so popular and useful. However, modern word processors also have publishing capabilities, meaning the line separating such programs from DTP software is becoming less clear. In general, though, powerful new publishing systems use high-quality scalable **fonts** and give you control over typographic features such as **kerning** (adjusting the spaces between letters to achieve even, consistent spacing). Another key feature of DTP software is **text flow** - the ability

to put text around graphic objects in a variety of ways.

Once composed, DTP documents are printed on a laser printer or on a high-resolution image setter (see Unit 8). For transfer to a commercial printer, the documents are generally saved in their native page layout format (such as Adobe InDesign or QuarkXPress) or as **PDF** files. PDF stands for Portable Document Format and allows people to view, search and print documents exactly as the publisher intended - you don't need to have the software and fonts used to create it. PDF files can be published and distributed anywhere; in print, attached to email, posted on websites, or on DVD. To open a PDF file, the Adobe Acrobat Reader (a free download), Foxit Reader is required.

In modern commercial printing, DTP files are output directly to the **printing plates** without using film as an intermediate step. This new technology is known as **Computer-To-Plate (CTP)** or **direct to plate,** and the machine that generates plates for a printing press is called a **platesetter.** CTP machines are expensive, so most people take their files to a **service bureau,** a company that specializes in printing other people's files. Service bureaux offer a full range of scanning and printing solutions.

Exercise 1.3. Read the text again and answer these questions.

1. What type of software is used for the creation of DTP documents?

2. What are three differences between DTP software and word processors?

3. What is a PDF and what can it do?

4. Which program do you need to view a PDF document?

5. Why do people send their DTP files to service bureaux?

Exercise 1.4. Find words in the text with the following meanings.

1. shape, style and size of a typeface, for example Courier at 10 pt

2. the process of adjusting the space between characters

3. feature that enables you to wrap text around images on the page

4. metal surfaces that carry the image to be printed

5. a machine that creates the printing plates

Exercise 1.5. In pairs, discuss the question *What is desktop publishing?* in as much detail as you can. Then look back at the text on page 18 to see how much you remembered.

2 Language work: **order of adjectives**

Orders of adjectives

➢ Adjectives usually come *before* the noun (also known as the headword).

They give you control over **typographic features**

For transfer to a **commercial printer,** *the document is...*

➢ However, adjectives come *after* certain verbs (e.g. **be, look, become, seem, sound),** complementing the subject of the sentence.

CTP machines are expensive.

➢ Adjectives can also complement the object of the sentence.

This makes layout software **popular** *and* **useful**

➢ This is the usual order of adjectives before a noun:

Opinion	Description	Origin/ Place	Material	Purpose	Heardword
powerful high- quality	new scalable thin	American	aluminium	Publishing printing	systems fronts plates

Adjectives are ordered from the most subjective (e.g. **nice)** to the most objective (e.g. **silicon).**

Brand names (**Microsoft, Sony,** etc.) are considered adjectives of origin/place.

If there is more than one adjective in a sentence, they are usually separated by commas, unless the adjective forms an integral part of the headword (*A fantastic, thin, Sony MP3 player.)*

Exercise 2.1. Make phrases using the words in the correct order.

Example: computer programmer / young / clever *a clever, young computer programmer*

1. software / desktop publishing / user-friendly
2. hardware company / reliable / young
3. German/industry/graphic design
4. word processing / applications / modern
5. Sony/ new/music player/portable

Exercise 2.2. Translate these sentences into your own language. How does the use of adjectives differ from English? Think about word order and whether the form of the adjective changes or not.

1. DTP refers to the use of personal computers to produce high-quality printed documents.

2. A page layout application is used to import text from word processing programs and pictures from painting and drawing programs.

3. In modern commercial printing, DTP files are output directly to the printing plates.

Exercise 2.3. In pairs, choose an object in your classroom or office and think of three words to describe it. Put the words into the correct order and make a sentence.

Example: PC: black, old, DELL *On my desk I've got an old, black, DELL PC.*

3 **Steps in a DTP publication**

Exercise 3.1. Look at this extract from an online tutorial for DTP publishing. Put the steps in the creation of a DTP document (a-f) into the correct order.

1. □   2. □   3. □   4. □   5. □   6. □

a) First, the DTP designer decides the basic form of the document (the type of document, general design, colour, fonts, images required, etc.).

d) When the text has been edited, the designer imports the pictures and uses precise tools to position, scale, crop and rotate all the items.

b) The last step is to take the files to a service bureau, which will print the publication

e) The next step is to type the text directly or to import it from a word processing program like Word or WordPerfect.

c) To create the DTP document, the designer begins by selecting a template or by specifying the settings of a new document (the page size, margins, columns, paragraph styles, master pages, etc.).

f) Once the file is composed and saved, the designer has to prepare it for printing, which involves verifying the colour specification, creating a Postscript or PDF file, exporting the file in HTML format for the Web, checking proofs, etc.

Exercise 3.2. (T.2.) Listen to the audio from the online tutorial and check your answers to Exercise 3.1.

Exercise 3.3. Label the features of this page designed with Adobe In Design (1-6) with words from the box.

toolbox	layout of master pages	dimensions
guide	horizontal ruler	scanned photo
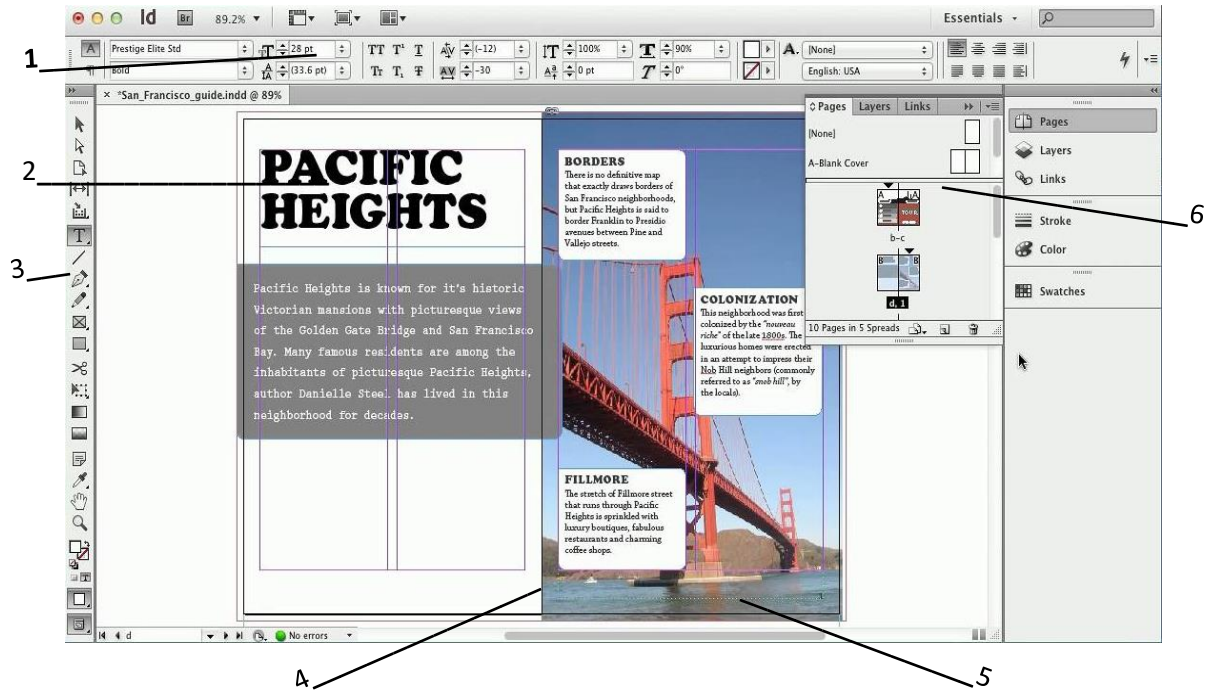
4 **Writing a letter**

Exercise 4.1. Although most written communication these days is carried out by email, letters are still appropriate for more formal correspondence. Look at this letter. What is the writer asking for?

a) Rhondda High School
Prospect Place, Cardiff, Wales
b) 28th March 2008

b) The Editor
El Independiente Moratin, 7
28006 Madrid
Spain
d) Dear Sir/Madam,

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

f) We would be very grateful if you could tell us which hardware, graphic design and page layout software you use at *El Independiente.* Could you also tell us how long your online edition has been running for? Thank you very much in advance.

g) We look forward to hearing from you.

h) Yours faithfully,

Katherine Powell

Exercise 4.2. Match the parts of the letter (a-h) with the descriptions (1 -8).

1. □ For example, *28ᵗʰ March 2008,* or *28 March 2008*, or *28/03/2008.*

2. □ This is usually in the top right corner of the letter, but can be in the centre if it's a printed letterhead.

3. □ State the reason for writing: ***I am / We are writing to .../ We are currently...***

4. □ This should be included on the left-hand side of the page, before the greeting.

5. □ Start with ***Dear Sir/Madam*** or ***Dear Mr/Mrs/Ms***... Use Ms if you are not sure if the recipient is married or not. It is often best to use ***Ms,*** as ***Mrs*** can cause offence.

6. □ Make any requests or ask any questions you need to: ***We would be grateful if you could.... Could you also ...***

7. □ *Request further contact, if necessary:* ***We/1 look forward to hearing from you. /Please contact us by...***

8. □ If you have started the letter with the person's name (for example, ***Dear Mr Robinson***), then end with ***Yours sincerely***. If you do not know the name of the recipient, end with ***Yours faithfully***.

Exercise 4.3. Write a letter to a local newspaper, asking for information about the hardware they use in their production, the page layout software they use, and the data communications systems they use. Use Exercise 4.1. and Exercise 4.2. above to help you.

5 (E-publishing versus paper publishing

Exercise 5.1. Look at this web extract about e-publishing. What examples of e-publishing can you find in the text?

> Publishing has existed in its current form for centuries. Ever since paper was first invented, human beings have found ways of using it to pass on messages to each other. Books, magazines and newspapers are now part of our everyday lives, but with the invention of the Internet and the speed of new technological advances, the world of publishing is changing. Online newspapers and magazines, blogs, and even e-book readers are changing the way we get information. But will we ever stop picking up a good old-fashioned newspaper? E-publishing versus paper publishing - who will win?

Exercise 5.2. Work in teams. Team A prepares a list of the advantages of traditional publishing over e-publishing. Team B prepares a list of the advantages of e-publishing over traditional publishing. Use your dictionary, the Internet.

Exercise 5.3. Debate your ideas. Which team has the most convincing position?

An e-book, the electronic equivalent of a printed book
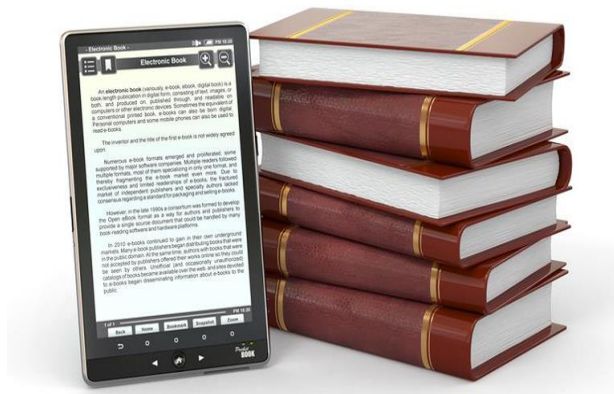
Unit 3 Multimedia

Vocabulary

hypertext – гипертекст; программная технология, позволяющая устанавливать ссылки внутри и между электронными документами

hypermedia – гипермедиа сочетание технологий гипертекста (hypertext) и мультимедиа (multimedia) для единого представления и навигации разнородной информации

emotionally – эмоционально

multiple – многократный, многочисленный, различный

an interactivity – интерактивность

a sound card – звуковая карта

a built-in stereo synthesizer – встроенный стерео синтезатор

a radio station – радиостанция

a broadcast – телепередача, радиовещание

streaming audio technology – потоковые аудио технологии

CD ripper – программа, предназначенная для извлечения цифровой звуковой информации в неструктурированном формате, записанной на Audio-CD, в файл или на стандартный вывод.

a plug-in – подключаемый модуль

a soundtrack – музыкальное сопровождение какого-либо материала

a key element – ключевой элемент

incorporate – объединять, включать в себя, вводить

1 Multiple forms of media

Exercise 1.1. 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

Exercise 2.1. (T.3.) 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.

Exercise 2.2. Listen again and complete this diagram of a multimedia system

```
                        ┌─────────────────┐
                        │   Multimedia    │
                        │     system      │
                        └────────┬────────┘
              ┌──────────────────┴──────────────────┐
      ┌───────┴───────┐                      ┌───────┴───────┐
      │   Hardware    │                      │   Software    │
      └───────┬───────┘                      └───────┬───────┘
```

Multimedia system

Hardware

1) _____ CPU and a lot of RAM

Peripherals

(2)_____ monitor

Large hard drive

DVD drive

(3) _____ card

Stereo
(4)_____ or
(5)_____
(6)_____

Software

Windows Media Player or Apple QuickTime
Adobe Flash for (7)_____ media
Audio, video and (8)_____ software
Hypermedia databases CD and DVD
(9)_____

---
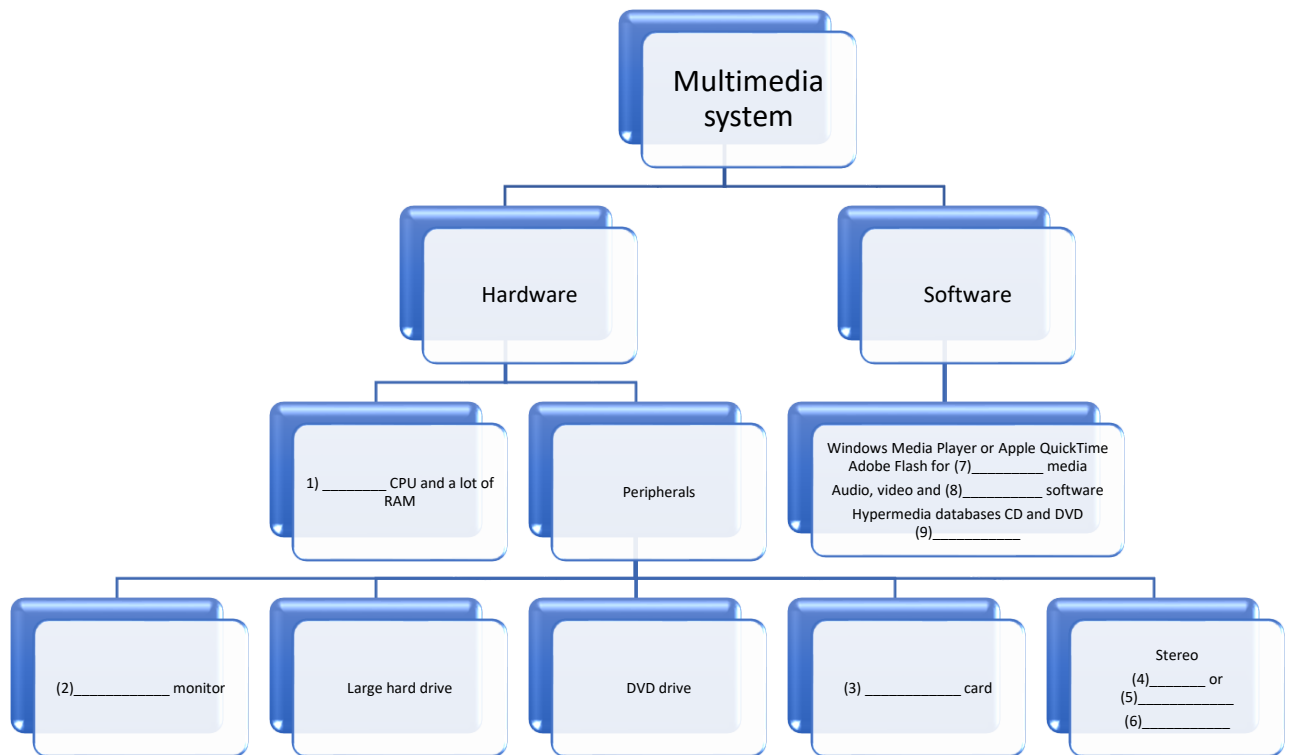
3 Multimedia magic!

Exercise 3.1. 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.

Exercise 3.2. 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.

Exercise 3.3. 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**

The 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 (present simple) B will happen **(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 (past simple) B would happen **(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.*

Exercise 4.1. 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.

Exercise 4.2. 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

Exercise 5.1. 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

*a*_____   *b*_____

c_____

d_____

*e*_____

Exercise 5.2. In pairs, discuss how multimedia is used in the situations above and then present your ideas to the rest of the class. Look at the *Useful language* to help you.

Useful language

In distance learning, multimedia is used to...

Information kiosks take advantage of multimedia in order to...

In virtual reality, the use of multimedia allows you to...

With 3G mobile phones, you can ...

Slide presentations integrate a wide range of media, such as...

Exercise 5.3. A friend who writes a blog has asked you to contribute a post about the use of multimedia now and in the future. Write a post (80-120 words) summarizing what multimedia is, what it can do, and your predictions for what it might be able to do in the future. Try to use at least two conditional sentences.

Unit 4 Web Design

Vocabulary

a tag – метка, тег

a web editor – веб-редактор

Cascading Style Sheets (CSS) – каскадные таблицы стилей

a background – фон

a template – шаблон, образец

jpg (joint photographic experts group) – растровый графический формат, применяемый для хранения фотографий и подобных им изображений

gif (graphics interchange format) – формат для обмена изображениями; растровый формат графических изображений. Способен хранить сжатые данные без потери качества в формате не более 256 цветов.

png (portable network graphics) – растровый формат хранения графической информации, использующий сжатие без потерь.

interactive – интерактивный, диалоговый

streaming – потоковый

1   **A typical home page**

Exercise 1.1. 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

Exercise 2.1. Read the text on page 37 and find the following.
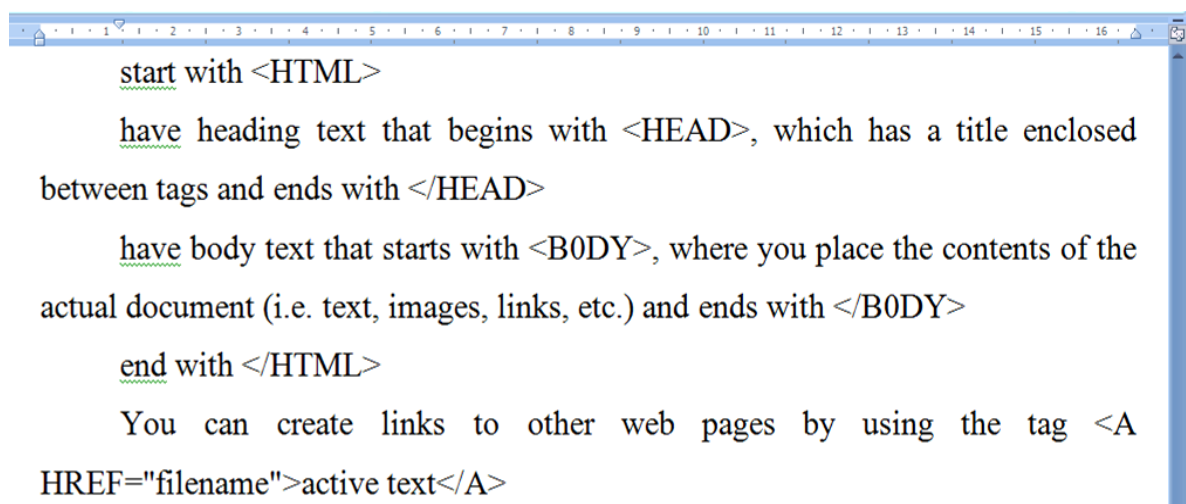
1. the language used to create web documents

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

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:

start with <HTML>

have heading text that begins with <HEAD>, which has a title enclosed between tags and ends with </HEAD>

have body text that starts with <B0DY>, where you place the contents of the actual document (i.e. text, images, links, etc.) and ends with </B0DY>

end with </HTML>

You can create links to other web pages by using the tag <A HREF="filename">active text</A>

Some basic HTML source code
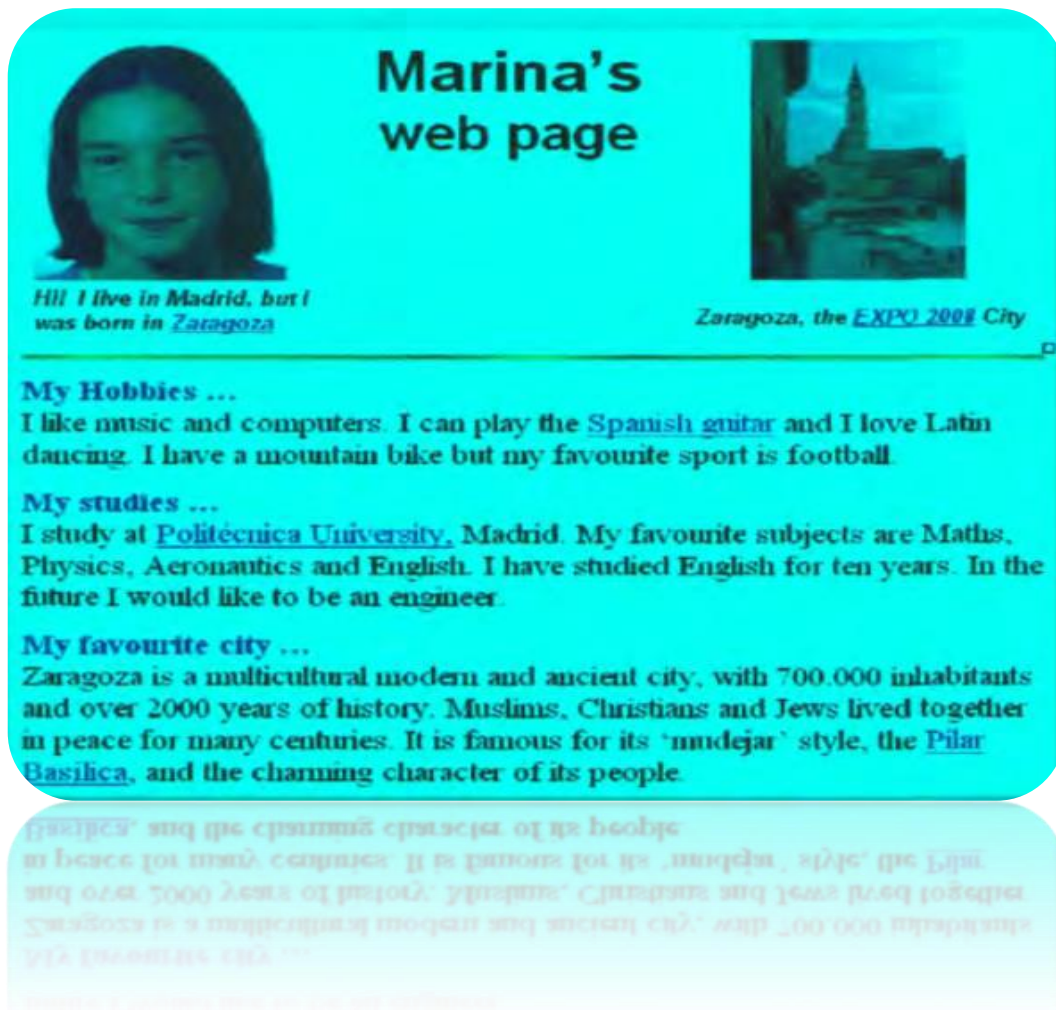
HTML file displayed as a web page

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.

Exercise 2.2. 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) interactive features to web applications.

d) to define the presentation of web pages, from fonts and colours to page layout,

e) published in the Really Simple Syndication format for download

f) are called *tags*

3 Language work: **modal verbs**

Exercise 3.1. Underline all the modal verbs in the text on page 37. Which modal verb from the 'Language work' does not appear in the text? Can you think of any other modal verbs?

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

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

Exercise 3.2. Complete these sentences with suitable modal verbs from. 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.

Exercise 3.3. 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**

Exercise 4.1. 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.

Exercise 4.2. (T.4.) Listen to an interview with a web designer describing how to design a website and put these steps into the correct order.

1. Write and format the text

2. Decide the content and structure for the website

3. Publish the website

4. Insert computer graphics and sounds

5. Keep the website updated

6. Link related pages to each other using hyperlinks

Exercise 4.3. Listen again and decide whether these design guidelines are right or wrong. Tick the correct box.

	Right	Wrong
Plan your website carefully.		
Use a web editor. It will make it easier to create your pages.		
Insert photos or animations just to make the pages look attractive		
Place a large number of graphics on your pages		
Use very bright colours		
Put a lot of links on one page		
Check that all the links on your web pages are correct		
Once they are published, update your pages regularly.		

Exercise 4.4. Design a home page for any company. Follow the instructions from the interview with the web designer.

5 Blogs

Exercise 5.1. In pairs, discuss these questions.

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

Exercise 5.2. Look at the screenshot from tpsreport.co.uk, a popular gaming blog. Can you see any design differences between blogs and normal websites?

A screenshot from www.tpsreport.co.uk

Exercise 5.3. 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?

Exercise 5.4. Write an entry for the blog you've described in Exercise 5.3. (80-100 words). Introduce the blog to the world and talk about why you've started it.

Part II
Programming / Jobs in ICT

Unit 5 Program design and computer languages

Vocabulary

a machine code – машинный код (платформенно-ориентированный код), машинный язык

assembly language – язык ассемблер (машинно-ориентированный язык программирования низкого уровня)

a compiler – компилятор, транслятор, составитель

an interpreter – переводчик, истолкователь

an object code – объектный код

a markup – пометка, разметка, верстка

a bug – ошибка

to debug – отлаживать

a voice application – голосовое приложение

an error – ошибка, сбой, неисправность

1 Programming


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

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

Exercise 1.1. In pairs, discuss what you think *programming* is.

Exercise 1.2. Look at the definition of *programming* in the Glossary. Is it similar to yours?

<div align="center">

2   **Steps in programming**

</div>

Exercise 2.1. Match the words (1-5) with the definitions (a-e).

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

Exercise 2.2. (T.5.) 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 Exercise 2.1.

Exercise 2.3. Listen again and put these steps into the correct order.

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

Exercise 2.4. Listen again and make detailed notes. In pairs, use your notes to write a short explanation of what each step in Exercise 2.3. means.

3 Computer languages

Exercise 3.1. 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** (**C**ommon **B**usiness **O**riented **L**anguage) 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 6)

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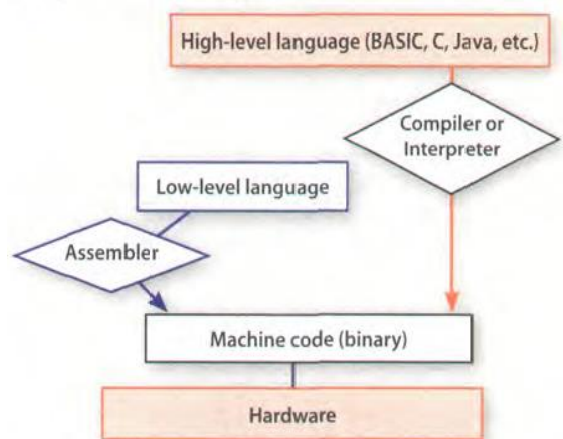
It is important not to confuse **programming languages** with **markup languages,** used to create web documents. Markup languages use instructions, known as **markup tags,** to format and link text files. Some examples include:

- **HTML,** which allows us to describe how information will be displayed on web pages.

- **XML**, which stands for **Ex**tensible **M**arkup **L**anguage. 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>

Exercise 3.2. 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?

Exercise 3.3. 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

Exercise 4.1. 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**

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.

Exercise 5.1. 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

Exercise 5.2. 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

Exercise 5.3. In pairs, discuss something

1. you can't afford to buy at the moment.

2. you've arranged to do this weekend

3. you've learnt to do in the last year.

4. you'd advise someone to do before buying a new PC.

5. you'd expect to be included with an anti-virus package.

6. you can do with Java applets.

6 **Visual BASIC and VoiceXML**

Exercise 6.1. Work in pairs. Student A reads about Visual BASIC, Student B reads about VoiceXML. Try not to look at your partner's text. Complete your part of the table.

Student A

Visual BASIC was developed by Microsoft in 1990. The name **BASIC** stands for Beginner's All-purpose Symbolic Instruction Code. The adjective **Visual** refers to the technique used to create a graphical user interface. Instead of writing a lot of

instructions to describe interface elements, you just add pre-defined objects such as buttons, icons and dialog boxes. It enables programmers to create a variety of Windows applications

Student B

VoiceXML (Extensible Markup Language) was created in 2000 to make web content accessible via the telephone. For input, it uses , voice recognition. For output, it uses prerecorded audio content and text-to-speech. Applications:

- voice portals, where you can hear information about sports, news, traffic, etc.
- voice-enabled intranets (private networks)
- voice e-commerce

home appliances controlled by voice

	Visual BASIC	VoiceXML
What does Visual BASIC / VoiceXML stand for?		
When was it developed?		
What are its main features?		
What is it used for?		

Exercise 6.2. Ask your partner about the other language and complete the table.
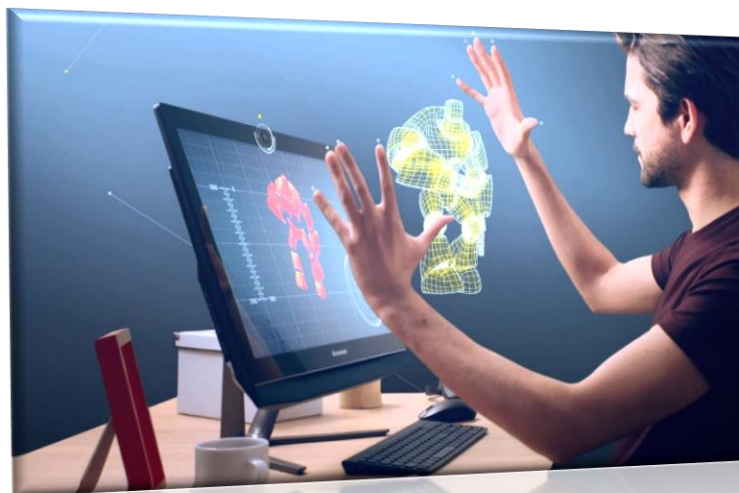
Unit 6 Java™

Vocabulary

Java – строго типизированный объектно-ориентированный язык программирования общего назначения

to permit – разрешать, позволять

a medical researcher – медицинский исследователь

sequential – последовательный, очередной

object-oriented language – объектно-ориентированный язык программирования

to eliminate – устранять, удалять

multi-threaded – многопоточный

measurement – измерение, оценка, определение

a compiler – составитель, компилятор

the proof of the theorem – доказательство теоремы

1 Java applets

Exercise 1.1. 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 (**M**agnetic **R**esonance **I**mages) 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.

The Java logo

a _____
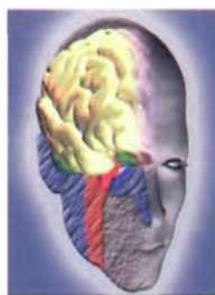
c _____

e _____

b _____

d _____

Exercise 1.2. 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

2 The Java language

Exercise 2.1. 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
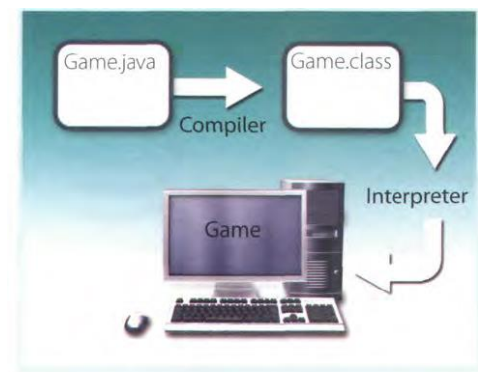
Fig. 1

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.

Exercise 2.2. Match the words (1 -6) with the words (a-f) to make technical terms from the text.

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

Exercise 2.3. 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'.

 Language work: **the** *-ed* **form**

Exercise 3.1. Put these verbs into the correct column.

stopped	asked	[t]	[d]	[ɪd]
described	decided			
produced	called			
watched	executed			
published	object-oriented			
programmed	persuaded			
configured	converted			
arranged	designed			

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/, /к/, /θ/, /s/, /f/, /ʃ/or /ʧ/. (e.g. *developed, talked, pronounced)*

➢ /**d**/ after voiced sounds: /b/, /g/, /ð/, /z/, /v/, /ʤ/**,** /l/, **/r/;** nasal consonants: **/m/, /n/, /ŋ/;** and vowels (e.g. *compiled, designed, simplified)*

➢ /**id**/ *after /t/ or /d/ (e.g.* interpreted, multi-threaded

Exercise 3.2. 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) _____ 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) _____ an object-oriented programming language that one of the engineers, James Gosling, (3) _____ *Oak,* after the tree outside his window. The device even (4) _____ 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) _____ on the Oak language. Later on, this language was adapted to the Internet and (6) _____ *Java.* The 1.0 version of Java was officially introduced by Sun in May 1995.

At that time, web pages (7) _____ only display text, pictures and hyperlinks. With the arrival of Java, web designers (8) _____ 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) _____ to attract serious attention from the internet community and was soon (10) _____ 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.

Exercise 3.3. (T.6.) Listen to an extract from the lecture and check your answers Exercise 3.2. Listen carefully to the pronunciation of the verbs that end in -ed.

4 **Your experience with computers**

Exercise 4.1. Make notes about the different stages in your computer history. Add more stages if you want to.

Example: *1990: Played my first computer game. It was...*

Possible stages:

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

Exercise 4.2. Ask a partner about their computer history. Look at the Useful language box to help you.

Useful language

When did you first...? / How long ago did you ...? / How old were you when...?

I started ... in ... / I learnt ... when I was ... / I didn't use the Internet until …

Unit 7 Jobs in ICT

Vocabulary

to apply for – подать заявку на

a contributor – сотрудник, участник

to comprise – охватывать, включать, содержать в себе

a responsibility – ответственность

a challenging work – сложная работа

a page layout – макет, расположение, компоновка страницы

a security specialist – специалист по безопасности

a webmaster – веб-мастер (лицо, ответственное за обслуживание одного или нескольких веб-сайтов)

a curriculum vitae – резюме, биографическая справка

1 IT professionals

Exercise 1.1. Complete these definitions with jobs from the box.

software engineer	computer security specialist	blog administrator
help desk technician	DTP operator	
hardware engineer	network administrator	webmaster

1. A _____ designs and develops IT devices.

2. A _____ writes computer programs.

3. A _____ edits and deletes posts made by contributors to a blog.

4. A _____ uses page layout software to prepare electronic files for publication.

5. A _____ manages the hardware and software that comprise a network.

6. A _____ designs and maintains websites.

7. A _____ works with companies to build secure computer systems.

8. A _____ helps end-users with their computer problems in person, by email or over the phone.

Exercise 1.2. (T.7.) Listen to four people on a training course introducing themselves and talking about their jobs. Which job in Exercise 1.1. does each person do?

Speaker 1 _____ Speaker 3 _____
Speaker 2 _____ Speaker 4 _____

2 **Job advertisements**

Exercise 2.1. In pairs, read the two job advertisements on page 65 and tick (✓) the most important qualities and abilities (1 -10) for each job. Add more to the list if you can.

Which three things do you think are most important for each job?

Exercise 2.2. Look at the online profile for Charles Graham. Which of the jobs above is most appropriate for him?

		Senior programmer	DTP operator
1	logical reasoning		
2	patience and tenacity		
3	being good with figures		
4	imagination		
5	self-discipline		
6	accuracy		
7	leadership skills		
8	efficiency		
9	creativity		
10	drawing skills		

Exercise 2.3. Discuss if you would like to apply for one of the jobs. Give reasons for your answer.

DIGITUM-UK

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

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

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

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

Send your CV to CHRIS SCOTT, PERSONNEL MANAGER, DIGITUM-UK, 75 PARKSHILL STREET, LONDON SW14 3DE

You can visit our website at www.digitum-uk.com

DTP operator

required for a leading financial magazine.

We are looking for a bright, competent QuarkXPress operator with at least three years' experience in design and layout. Skills in Photoshop, Freehand or Illustrator an advantage.

Ability to work in a team and to tight deadlines is vital.

Please apply in writing, with CV and samples of your work, to Tom Parker, Production Manager, Financial Monthly, Stockton Street, London EC1A 4WW Or apply online:

Apply now

Exercise 2.4. Look at the online profile for Charles Graham. Which of the jobs above is most appropriate for him?

Charles Graham 22 years old
Professional summary
I graduated in 2004 with A levels in English, Art and Maths, and went on to do a course in graphic design and page layout at Highland Art School. Since 2006 I've been a graphic designer for PromoPrint, a company specializing in publishing catalogues and promotional material, and have used Adobe InDesign and other DTP software.

3 **A letter of application**

Exercise 3.1. Read the letter of application and answer these questions.
1   Which job is Sarah Brown applying for?
2   Where did she see the advertisement?
3   How long has she been working as a software engineer?
4   What type of programs has she written?
5   When did she spend three months in Spain?

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) _____ Marc 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.

Your sincerely, Sarah Brown

Exercise 3.2. Look at the following information and then complete the letter with *for, since, ago* or *until*

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.*

4   A job interview

Exercise 4.1. (T.8.) 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**

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 Promo Print.

➢   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

Exercise 5.1. 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.

Exercise 5.2. 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?

Exercise 5.3. Make questions using these prompts. In pairs, ask and answer the questions.

1   ever / live or work in another country?

2   ever / have a bad job interview?

3   ever /do a job you hated?

4   how long / study English?

5   how long / use computers?

6   how many emails / receive today?

7   how many jobs/apply for this year?

6 | **Applying for a job**

Exercise 6.1. Look at the job advertisement for a webmaster at eJupiter.

Maria Quintana is interested in applying. Use her curriculum vitae on page 109 to write a letter of application. Follow these steps:

Paragraph one: reason for writing

I am writing to apply for the position of...

Paragraph two: education and training

I graduated in (date)...; I completed a course in...

Paragraph three: work experience

For the past X years I have been ...; Since XI have been

Paragraph four: personal skills

I spent X months in (country)..., so I have knowledge of (foreign languages). I can ...

Paragraph five: reasons why you are applying for this job

I now feel ready to... and would welcome the opportunity to...

Paragraph six: closing / availability for interview

I enclose... I look forward to... I will be available for an interview...

Vacancies at eJupiter.co.uk
Webmaster

We are seeking a Webmaster for eJupiter.co.uk, a company dedicated to e-commerce.

The successful candidate will manage our website.

You will be responsible for making sure the web server runs properly, monitoring the traffic through the site, and designing and updating our web pages.

Experience of using HTML and Java is essential. Experience of Adobe PDF and Photoshop is an advantage. The successful candidate will also have knowledge of web editors - MS Frontpage or equivalent.

Send your CV and a covering letter to James Taylor, eJupiter Computers, 37 Oak Street, London SW10 6XY

Exercise 6.2. Write your own CV in English, using Maria's CV as a guide.

Exercise 6.3. Think of your ideal job and write a letter of application for it. If you prefer, look on the Internet for real jobs and practice applying for those.

Part III Computers tomorrow

Unit 8 Communication systems

Vocabulary

telecommunications – телекоммуникации

a satellite – спутник

a transmission – коробка передач, привод

widescreen – широкоэкранный, широкоформатный

a customer – покупатель, заказчик, абонент

via – через, с помощью

a set-top box – телевизионная приставка

wireless – беспроводной

a connectivity – связь, соединенность

a wearable computer – носимый компьютер

a cybernetic organism – кибернетический организм

an assistance – помощь

a support – поддержка

1 **Information and communications technologies (ICT)**

Exercise 1.1. In pairs, discuss these questions.

1. What is an ICT system?

2. How many types of ICT system can you think of? Make a list.

3. How can a PC be connected to another computer?

Exercise 1.2. Label the pictures (1-7) with the ICT systems and services in the box.

Fax	GPS	Call centre	Digital radio
Teletext	Wearable computer		Digital TV

1 _____   2 _____   3 _____   4 _____

5 _____   6 _____   7 _____

Exercise 1.3. Complete these sentences with words and phrases from Exercise 1.2. and read text on page 74 to check your answers.

1. Digital Audio Broadcasting, or DAB, is the technology behind _____. DAB is intended to replace FM in the near future.

2. _____ are designed to be worn on the body or integrated into the user's clothing.

3. Most existing TV sets can be upgraded to _____ by connecting a digital decoder.

4. My grandfather is 75 and he still watches _____ on TV to find out

share prices, weather forecasts and sports results.

5. I work in a _____ receive incoming calls with information inquiries. I also make outgoing calls for telemarketing.

6. Please complete this form and send it by _____ or normal mail.

7. I have a _____ navigation system in my car but I don't use it very often. My town is small and I know it well.

Channels of communication

What are telecommunications?

Telecommunications refers to the transmission of signals over a distance for the purpose of communication. Information is transmitted by devices such as the telephone, radio, television, satellite, or computer networks. Examples could be two people speaking on their **mobile phone,** a sales department sending a **fax** to a client, or even someone reading the **teletext** pages on TV. But in the modern world, telecommunications mainly means transferring information across the **Internet,** via modem, phone lines or wireless networks.

Because of telecommunications, people can now work at home and communicate with their office by computer and telephone. This is called **teleworking.**

It has been predicted that about one third of all work could eventually be performed outside the workplace. In **call centres,** assistance or support is given to customers using the telephone, email or online chats. They are also used for **telemarketing,** the process of selling goods and services over the phone.

Digital TV and radio

In recent years, TV and radio broadcasting has been revolutionized by developments in satellite and digital transmission. **Digital TV** is a way of transmitting pictures by means of digital signals, in contrast to the analogue signals used by traditional TV. Digital TV offers interactive services and **pay multimedia**

- that is, it can transmit movies and shows to TV sets or PCs on a pay-per-view basis. It is also **widescreen,** meaning programmes are broadcast in a native 16:9 format instead of the old 4:3 format. Digital TV provides a better quality of picture and sound and allows broadcasters to deliver more channels.

Digital Terrestrial TV is received via a **set-top box,** a device that decodes the signal received through the aerial. New technologies are being devised to allow you to watch TV on your mobile. For example, DMB (Digital Multimedia Broadcasting) and DVB-H (Digital Video Broadcast-Handheld) can send multimedia (radio, TV and data) to mobile devices.

Audio programs (music, news, sports, etc.) are also transmitted in a digital radio format called DAB (Digital Audio Broadcasting).

Mobile communications

Thanks to wireless connectivity, mobile phones and **BlackBerrys** now let you check your email, browse the Web and connect with home or company intranets, all without wires.

The use of **GPS** in cars and PDAs is widespread, so you can easily navigate in a foreign city or find the nearest petrol station. In the next few years, GPS chips will be incorporated into most mobile phones.

Another trend is **wearable computers.** Can you imagine wearing a PC on your belt and getting email on your sunglasses? Some devices are equipped with a wireless modem, a keypad and a small screen; others are activated by voice. The users of wearable technology are sometimes even called *cyborgs'.* The term was invented by Manfred Clynes and Nathan Kline in 1960 to describe cybernetic organisms - beings that are part robot, part human.

Exercise 1.4. Read the text again and find the following

1. the device that allows PCs to communicate over telephone lines

2. the practice of working at home and communicating with the office by

phone and computer

3. the term that refers to the transmission of audio signals (radio) or audiovisual signals (television)

4. five advantages of digital TV over traditional analogue TV

5. two systems that let you receive multimedia on your mobile phone

6. the term that means *without wires*

7. devices that deliver email and phone services to users on the move

8. the meaning of the term *cyborg*

2 Language work: **the passive**

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 dynes and N Kline in i960.*

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.*

Exercise 2.1. 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.

Exercise 2.2. 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) _____.

9. How long you (have) _____ the IPad?

10. you (charge) _____ the battery?

11. they (change) _____ the Internet Service Provider?

12. you (check) _____ the remaining disk space?

3 **VoIP technology**

Exercise 3.1. (T.9.) Listen to an interview with Sue Reid, a specialist in telecommunications. What is her prediction about the future of VoIP?

Exercise 3.2. Listen again and answer these questions.

1. What exactly is VoIP?

2. Does the recipient need any special equipment?

3. What is an ATA? What is its function?

4. *What* is the advantage of Wi-Fi phones over mobile phones*?*

5. Do you need to have a VoIP service provider?

6. What is *spit*?

A wireless VoIP phone

Exercise 3.3. Using the diagram, explain VoIP technology in your own words.

Computer

Computer

Telephone

C

Telephone

ATA

Cable/DSL modem

INTERNET

Telephone

Wireless access point

Wi-Fi phone

Wi-Fi phone

4 **Mobile phones**

Exercise 4.1. Label the mobile phone with features from the box

LCD screen   Brand   Built-in camera   Changeable faceplate   SIM card (Subscriber Identity Module)   Wireless support   Keypad   Ringtone

a ....

b ....

c ....

d ....

e ....

f ....

g ....

h ....

80

Exercise 4.2. In pairs, describe your mobile phone. Use Exercise 4.1. and Useful language box to help you.

Useful language

My phone is a...

It's got a...

With the, I can...

The best feature is...

I never use the...

I mostly use it for...

An Apple iPhone combines three products - a mobile phone, an iPod, and an internet device with email, web browsing, maps and searching

Exercise 4.3. In pairs, discuss these questions

1. How much money do you spend on your mobile?

2. Can you send MMS (multimedia messages) from your mobile?

3. Do you access the Internet from your mobile? Which sites do you visit?

4. Can you listen to music and watch TV on your mobile?

5. Do you use your mobile phone for business? Do you think it is secure to carry out financial transactions via mobile phones?

6. Do you ever use your phone while driving?

7. Have you ever had to use your phone in an emergency?

8. Do you think that prolonged use of mobile phones can affect our health (for example cause fatigue and headaches, emit radiation, excite brain cells, etc.)?

Exercise 4.4. Write a summary of the discussion in C as if you were posting it on a blog. Show your summary to other members of your class so that they can add comments.

Unit 9 Networks

Vocabulary

a network – сеть

peer- to-peer – одноранговый

a router – маршрутизатор, роутер

a confidential data – секретные данные

to the other nodes – к другим узлам

peripherals – периферийные устройства, внешнее оборудование

a central hub – центральный узел

a continuous loop – непрерывный цикл

to log off – выйти из системы

to transmit – передавать, посылать

1 Small networks

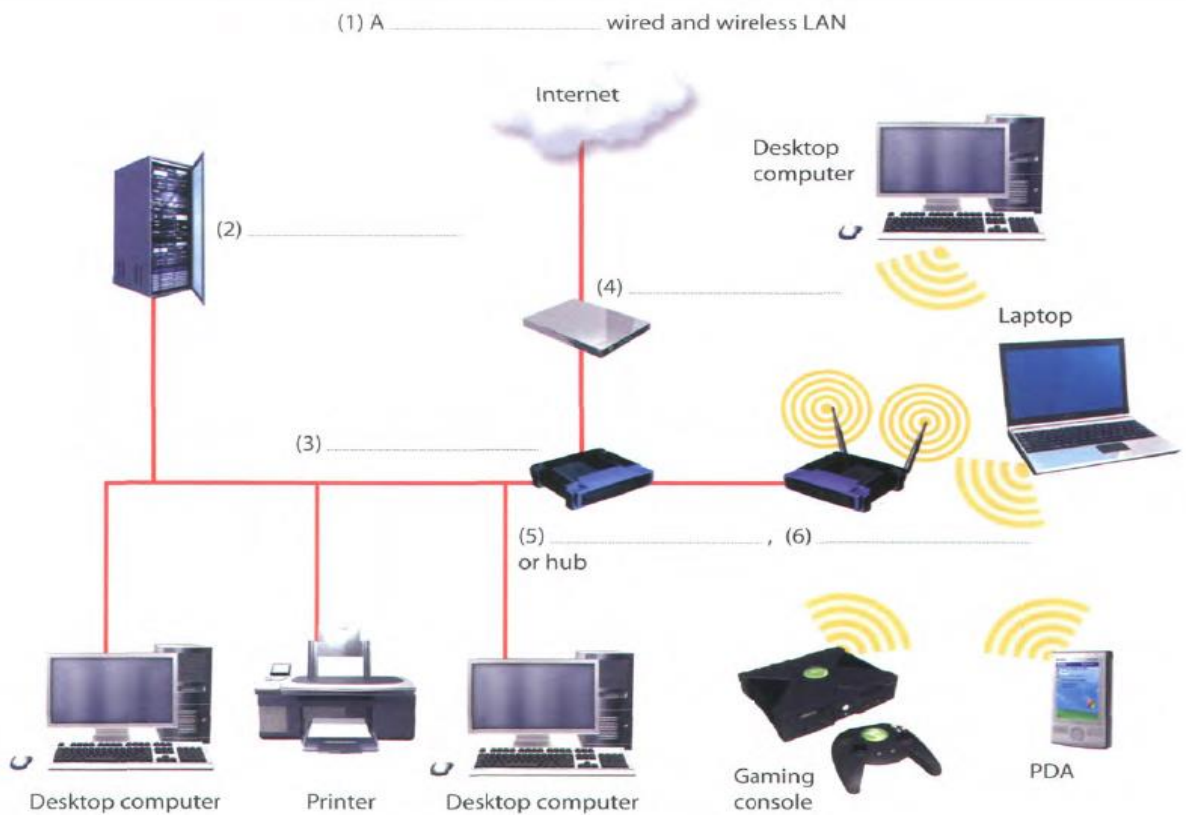**Exercise 1.1.** In pairs, discuss these questions.

1. What is a computer network?

2. What are the benefits of using networks?

Exercise 1.2. (T.10.) Listen to an extract from a lecture on networks and answer these questions.

1. What does LAN stand for?

2. Where are LANs usually located?

3. What is the difference between a *wired LAN* and a *wireless LAN*.

Exercise 1.3. Listen again and label the elements of this LAN.

(1) A _____ wired and wireless LAN

Internet

Desktop computer

(2) _____

(4) _____

Laptop

(3) _____

(5) _____ , (6) _____
or hub

Desktop computer   Printer   Desktop computer

Gaming console

PDA

2 Networking FAQs

Exercise 2.1. Look at the FAQs (i-vi) without reading the whole text. In pairs, try to answer as many of the questions as you can.

Exercise 2.2. Read the whole text and answer these questions.

1. What does PAN stand for?

2. What is a network protocol?

3. How do you log on to an Internet Service Provider?

4. WiMAX is a type of wireless network. What is it used for?

5. What equipment do you need to set up a wireless LAN?

6. What are the advantages and disadvantages of wireless networks?

Networking FAQs

i   How many types of network are there?

Networks are classified according to different criteria:

- *Geographical area:* PANs (Personal Area Networks) typically include a laptop, a mobile phone and a PDA; LANs cover a building; MANs (Metropolitan Area Networks) cover a campus or a city; WANs (Wide Area Networks) cover a country or a continent.

- *Architecture:* In a *client-server* network, a computer acts as a server and stores and distributes information to the other nodes, or *clients.* In a *peer- to-peer* network, all the computers have the same capabilities - that is, share files and peripherals without requiring a separate server computer.

- *Topology,* or layout: In a *bus* network, all the computers are connected to a main cable, or bus. In a *star* network, all data flows through a central hub, a common connection point for the devices in the network. In a *ring* network, all devices are connected to one another in a continuous loop, or ring.

- *Network protocol:* This is the language, or set of rules, that computers use to communicate with each other. Networks use different protocols. For instance, the Internet uses TCP/IP.

ii   How do I install a wired modem router?

A modem *router* is a device that connects your computer or home LAN to the Internet.

- Plug one end of the phone cord directly into a phone jack, and the other end into the ADSL port on the router.

- Plug one end of the Ethernet cable into your computer's network port and the other end into an Ethernet port on the router.

• Turn on your computer. To set up, or configure, the router, you'll need to input some parameters, for example your ISP's name and phone number.

NOTE: A router has various Ethernet ports, so you can connect various PCs to the router via Ethernet cables. If you already have a hub or switch connecting a LAN, you only need one cable to connect the hub to the router.

iii How do I log on to the Internet Service Provider?

You need to type in your username and password. Once you are online, you can get email, look for information on the Web, look up IT words in dictionaries, try out new software, and sign up for RSS feeds, newsletters, etc. It is important that you remember to log off after using the Internet. An open line increases the risk of viruses, and hackers might break into your computer to steal confidential data.

iv What is wireless networking?

Wired networks are linked by Ethernet cables, phone lines and high-speed fibre optic cables. Wireless networks, however, use electromagnetic waves, such as radio waves, to transmit data. These are the main types of wireless networks:

- *Satellites* - for long distances
- *WiMAX* - for connecting Wi-Fi hotspots
- *Wi-Fi* - for medium-range distances
- *Bluetooth* - for short distances
- *GSM* - for mobile phones

v What do I need to set up a home wireless LAN?

You'll need computers equipped with a wireless adapter or wireless card, a wireless access point (a wireless router) and a broadband internet connection.

vi Which is better, a wired or wireless LAN?

Wired LANs are more difficult to install, but they are cheaper, faster and more reliable. Wireless networks let you move, or roam, from one access point to another, but they are less secure and subject to interference.
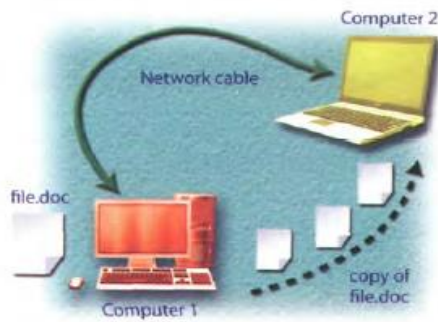
In a **basic network**, two computers are connected by cable to allow **file sharing**.
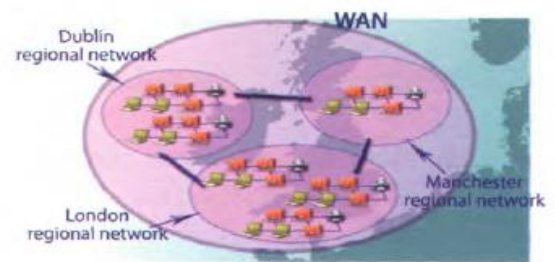
WANs cover a large geographic area, like a country or even multiple countries. They are built by large telecommunication companies. The largest WAN in existence is the Internet.
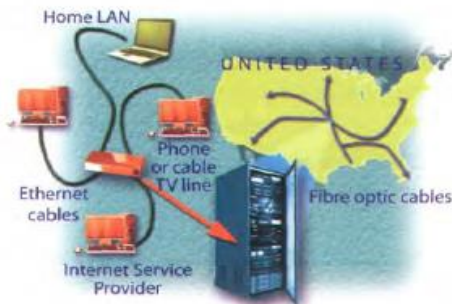
In many homes, **Ethernet cables** are used to connect computers. **Phone** or **cable TV lines** then connect the home LAN to the ISP. Much of the Internet uses high-speed **fibre optic cable** to send data over long distances.

Wi-Fi is the standard technology for building wireless LANS and public **hotspots**. **Bluetooth networks** allow handhelds, mobile phones and other devices to communicate over short distances. **Cellular networks** are used in mobile phone communications.

Exercise 2.3. In pairs, do this network quiz. See which pair can finish first.

1. This network typically consists of two or more local area networks, covering a large geographical area.

a) LAN   **b)** WAN   **c)** Intranet

2. This type of network does not have a dedicated server; all the computers are independent.

a) peer-to-peer   **b)** client-server   **c)** Metropolitan Area Network

3. On this topology, all devices are connected to the same circuit, forming a continuous loop.

a) star   **b)** ring   **c)** bus

4. The language used by computers to communicate with each other on the Internet is called.

a) Ethernet   **b)** ADSL   **c)** TCP/IP.

5. Which cables are used to transfer information for the Internet over long distances at high speeds?

a) telephone lines   **b)** Ethernet cables   **c)** fibre optic cables

6. Which device allows several computers on a local network to share an internet connection?

a) an ADSL port   **b)** a router   **c)** an Ethernet port

7. Which device serves as a common connection point for devices in a wireless network?

a) wireless access point   **b)** wired router   **c)** wireless adapter

8. Bluetooth is a wireless technology that uses radio waves to transmit data over

a) long distances. **b)** medium-range distances. **c)** short distances (ten metres or less).

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3 Language work: **phrasal verbs**

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, enroll 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)**

Exercise 3.1. Do you have the equivalent of phrasal verbs in your language? How do you say the phrasal verbs above?

Exercise 3.2. Complete these sentences with the correct form of a phrasal verb.

1. To join the club, _____ this form and send it to our office.

2. The CPU _____ all the basic operations on the data.

3. Digital music _____ a lot of space - about 10 MB for every minute of stereo sound.

4. Thousands of networks _____ the Internet.

5. You can use newsgroups to _____ about the latest trends, customer needs, etc.

Exercise 3.3. 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 cybercafe?

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

Exercise 4.1. Prepare a description of the network below to present to the rest of the class. Use PowerPoint if possible. Use the *Useful language*, the information on page 86 and the text on pages 83 to help you
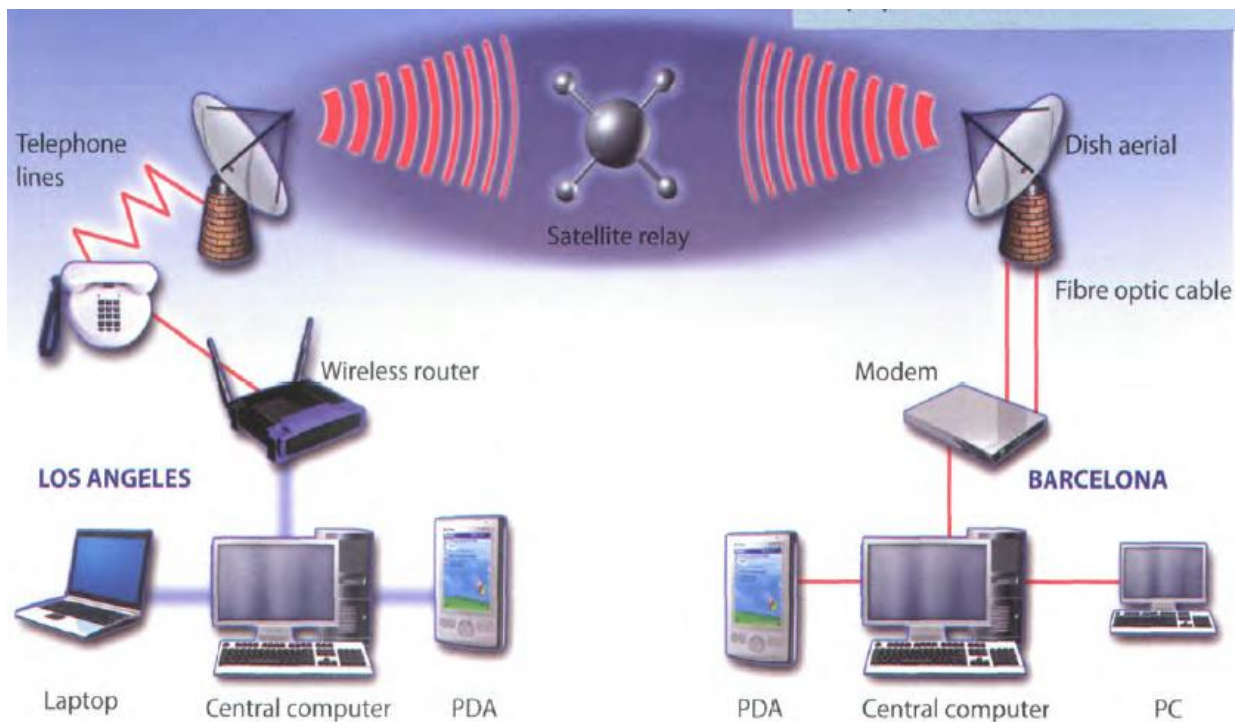
Useful language

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 onto...*;* The purpose of... is to

Exercise 4.2. Present your description to the rest of the class.

Unit 10 Video games

Vocabulary

a genres – жанр, стиль

a first-person shooter – шутер от первого лица (жанр компьютерных игр)

a role-playing game – ролевая игра

a console – пульт управления, приставка

a broadband access – широкополосный, высокоскоростной доступ

adventure games – приключенческие игры

puzzle games – логические игры

in multiplayer mode – в многопользовательском режиме

massively – массово, в широком масштабе

1 Game platforms

Exercise 1.1. In pairs, discuss these questions.

1. Do you play video games?

2. What are your favourite games? Make a list.

Exercise 1.2. Label the pictures (a-f) with the types of game in the box

PC games   Console games   Arcade games   Handheld games
Mobile phone games   Massively multiplayer online games

a _____

b _____

c _____

d _____

e _____

f _____

Exercise 1.3. Video games are played on a variety of electronic devices, or platforms. Complete these sentences with game platforms from the box and types of game from Exercise 1.2.

Personal computer	Video game consoles
Portable gaming devices	3G mobile phones

1. _____ are played on _____ such as the Sony PS3 or Microsoft Xbox 360. In the past, these electronic devices were just connected to a standard TV or video monitor; now they can also be connected to the Net, via cables or wirelessly.

2. _____ are played on _____ , such as the Sony PSP and the Nintendo DS. You can also play games on some graphing calculators and watches.

3. Don't worry if you don't have a game console. You can still play _____ on a _____ . The graphics are even more impressive if you have a high-resolution monitor. You can buy games on CDs and DVDs, or download them from the Internet.

4. _____ allow you to play against other users in other parts of the world using the Internet - something unique to electronic gaming. Players connect to a game server hosted by an ISP, a game company, or an individual enthusiast.

5. Some _____ are programmed to run natively on the chip of _____ . For instance, *Snake* is installed on many Nokia phones. Many Java-based games are also available via download.

6. _____ are played on coin-operated machines, typically installed in restaurants, bars and amusement arcades. For example, you can fly an aircraft or a spaceship using a joystick.

Exercise 1.4. 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**

Exercise 2.1. 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.

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.

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 15 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.

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

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 *Wario-Ware* are familiar names.

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.

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.

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.*

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.

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.

Exercise 2.2. 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.

Exercise 2.3. Find words or phrases in the text with the following meanings.

1) now; at this time or period _____

2) existing or happening in many places and/or among many people _____

3) in spite of; notwithstanding _____

4) more and more _____

5) a smaller category within a particular genre _____

6) big successes _____

7) sold in very large numbers _____

8) modernized _____

Exercise 2.4. 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**

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)

Exercise 3.1. 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.

Exercise 3.2. 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. _____

4 **Present and future trends in gaming**

Exercise 4.1. (T.11.) Listen to an interview with Matt Robinson, the administrator of the TPS Report gaming blog. How many game platforms does he mention?

Exercise 4.2. 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.

Exercise 4.3. Listen again and complete these extracts from the interview with adverbs.

1. With a game you are _____ in control of the action.

2. Games are now even more life-like and _____ attractive.

3. A lot of modern games _____ draw inspiration from films and even TV.

4. Their _____released Wii console has an inexpensive, simplistic, *pick up 'n'play* feel to it.

5. Wii is _____ the most popular of the three machines.

6. Logging onto an _____ separate universe to meet and play alongside your friends has enormous attraction.

7. Mobile gaming has _____ been about easy, simplistic 2-D games

Exercise 4.4. In pairs, discuss if you agree with everything that Matt says in his interview about the future of gaming. What are your own predictions?

5 **The pros and cons of gaming**

Exercise 5.1. In pairs, look at the statements about gaming (1-4) and say if you agree or disagree with them. Give reasons for your answers.

1. TV and video games are amusing and can be educational. But too much of this kind of entertainment can be addictive and make children become accustomed to violence.

2. Massively multiplayer online games are interactive and fun.

3. Video games have negative effects on children and distract them from school and homework.

4. Modern games and simulations offer a great deal of adventure and challenge. In addition, they can teach skills such as strategic thinking, interpretative analysis and problem solving.

Exercise 5.2. Write an essay called '***The*** pros ***and*** cons of ***gaming'*** *(80-120* words).

Use these steps and the Useful language to help you.

- The **opening** (paragraph one):

Present the topic in one or two sentences.

- The **body** (paragraphs two and three):

Give pros (arguments in favour) with facts and examples. Give cons (arguments against) with facts and examples.

- The **closing** (paragraph four):

Summarize your main ideas and give your opinion.

Useful language

To add arguments:

In addition,...   Furthermore,...

To introduce opposing ideas:

On the one hand,... On the other hand,...

Some people say..., Others say..., However,...

To express opinions:

In my opinion,... I believe that...

It seems to me that... It's clear that...

To conclude:

In conclusion,... To sum up,... ; In short,...

Unit 11 New Technologies

Vocabulary

nanometre (one billionth of a metre) – нанометр (одна миллиардная часть метра)

nanotechnology – нанотехнология

carbon atoms – атомы углерода

Artificial Intelligence – искусственный интеллект

intelligent – программируемый, умный

a humanoid robot – человекоподобный робот

an iris – зрачок

Biometrics – биометрический

Ubiquitous, pervasive computing – повсеместные вычисления (понятие, обозначающее модель взаимодействия человека с вычислительной системой)

to send images – отправлять изображения
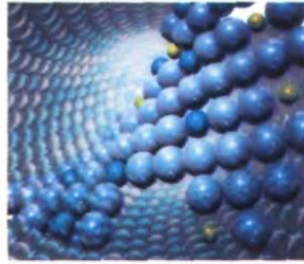
1 **Future trends**

Exercise 1.1. In pairs, discuss these questions

1. What do you think a **trend** is?

2. What trends in ICT do you think will affect our lives in the future? Make a list.

Exercise 1.2. Match the texts (1-5) with the pictures (a-e). Which trends from your list in Exercise 1.1. are mentioned?

a _____   b _____

c _____   d _____   e _____

1 By all accounts, ***nanotechnology*** - the science of making devices from single atoms and molecules - is going to have a huge impact on both business and our daily lives. Nano devices are measured in ***nanometres*** (one billionth of a metre) and are expected to be used in the following areas

Nanocomputers: Chip makers will make tiny microprocessors with **nanotransistors**, ranging from 60 to 5 nanometres in size.

Nanomedicine: By 2020, scientists believe that nano-sized robots, or ***nanobots,*** will be injected into the body's bloodstream to treat diseases at the cellular level.

Nanomaterials: New materials will be made from carbon atoms in the form of ***nanotubes,*** which are more flexible, resistant and durable than steel or aluminium. They will be incorporated into all kinds of products, for example stain-resistant coatings for clothes and scratch-resistant points for cars.

*2 **Artificial Intelligence** (Al)* is the science of making intelligent machines and programs. The term originated in the 1940s, when Alan Turing said: 'A machine has artificial intelligence when there is no discernible difference between the

conversation generated by the machine and that of an intelligent person.' A typical Al application is robotics. One example is ASIMO, Honda's intelligent humanoid robot. Soon, engineers will have built different types of *android,* with the form and capabilities of humans. Another Al application is ***expert systems*** - programs containing everything that an 'expert' knows about a subject. In a few years, doctors will be using expert systems to diagnose illnesses.

3 Imagine you are about to take a holiday in Europe. You walk out to the garage and talk to your car. Recognizing your voice, the car's doors unlock. On the way to the airport, you stop at an ATM. A camera mounted on the bank machine looks you in the eye, recognizes pattern of your iris and allows you to withdraw cash from your account.

When you enter the airport, a hidden camera compares the digitized image of your face to that of suspected criminals. At the immigration checkpoint, you swipe a card and place your hand on a small metal surface. The geometry of your hand matches the code on the card, and the gate opens. You're on your way.

Does it sound futuristic? Well, the future is here. **Biometrics** uses computer technology to identify people based on physical characteristics such as fingerprints, facial features, voice, iris and retina patterns (Adapted from the Richmond Times-Dispatch).

4 **Ubiquitous computing,** also known as **pervasive computing,** is a new approach in which computer functions are integrated into everyday life, often in an invisible way. **Ubiquitous devices** can be anything from smartphones to tiny sensors in homes, offices and cars, connected to networks, which allow information to be accessed anytime and anywhere - in other words, ubiquitously. In the future people will interact naturally with hundreds of these **smart devices** (objects containing a microchip and memory) every day, each invisibly **embedded** in our environment and communicating with each other without cables.

5 In the ideal **smart home, appliances** and electronic devices work in sync to keep the house secure. For example, when a regular alarm system senses that someone is breaking into the house, it usually alerts the alarm company and then the police. A smart home system would go further, turning on the lights in the home and then sending a text message to the owner's phone. Motorola *Homesight* even sends images captured by wireless cameras to phones and PCs

Smart homes can remember your living patterns, so if you like to listen to some classical music when you come home from work, your house can do that for you automatically. They will also know when the house is empty and make sure all appliances are turned off. All home devices will be interconnected over a home area network where phones, cable services, home cinemas, touch screens, smart mirrors and even the refrigerator will cooperate to make our lives more comfortable. (Adapted from www.businessweek.com)

Exercise 1.3. Read the texts again and answer these questions.

1. Which unit of measurement is used in nanotechnology?

2. What are the advantages of nanotubes over regular materials?

3. What will doctors use *expert systems* for?

4. What features are analysed by biometrics?

5. Which trend refers to computers embedded in everyday devices, communicating with each other over wireless networks?

6. What will the alarm system do if someone breaks into a smart home?

7. How will devices be interconnected inside the smart home?

Exercise 1.4. Find words in the texts with the following meanings.

1. a microscopic robot, built with nanotechnology (text 1) _____

2. a robot that resembles a human (text 2) _____

3. biological identification of a person (text 3) _____

4. integrated; inserted into (text 4) _____

5. electrical devices, or machines, used in the home (text 5) _____

**Exercise 1.5.** Write a suitable caption for each picture on page 101.

2 RFID tags

Exercise 2.1. (T.12.) Listen to Sarah Wood, an ICT teacher, giving a class about RFID tags. Which definition (a-c) best describes RFID?

a) a smart technology worn on the user's body so that they can email and access the Web

b) a technology that uses radio waves and chip-equipped tags to automatically identify people or things

c) a technology that uses microchips and bar codes to track people or things at a distance

Exercise 2.2. Listen again and decide which answers (a or b) are correct.

1. RFID stands for

    a Radio **F**requency **I**dentification.

    b Radio **F**requency **I**dentification **D**ownload.

2. Radio tags

    a can only be attached to or embedded into products.

    b can be attached to or embedded into products, animals and humans.

3. Active RFID tags

    a have a communication range of several hundred metres
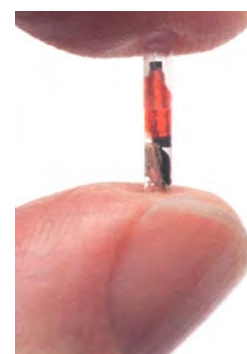
An RFID micro chip

b have a communication range of five metres.

4. RFID chips

    a will help us track ordinary objects like car keys or books.

    b won't be able to locate objects when they are lost or stolen.

5. Radio tags may be implanted under the skin

    a to confirm a patient's identity and cure illnesses.

    b to give doctors instant access to a patient's medical history.

6. According to consumer organizations, RFID tags

    a could be used to track consumers or to steal a person's identity.

    b are secure and private; there is no need for concern.

Exercise 2.3. In pairs, discuss how secure you think RFID is. Do you agree with the consumer organizations or the manufacturers? Give reasons for your answers.

3 Language work: **future forms**

Future forms

We use the future simple (**will/won't** + verb) in the following ways:

• To make predictions when you don't have present evidence that something will happen

*Nanobots **will be injected** into the body's bloodstream to treat diseases.*

• To talk about hopes and promises, especially with the words **expect, think, hope** and **probably**

*They hope that people **will interact** naturally with hundreds of smart devices at a time.*

• To describe an instant decision, often when we make an offer

*Sure, **I'll help** you with your homework.*

• To talk about facts that will inevitably happen

She'll be 21 in May.

We use **be going to** + verb in the following ways:

• To describe future intentions

*She's **going to write** a book about ubiquitous computing.*

• To make predictions when you have present evidence that something is going to happen

*By all accounts, nanotechnology **is going to have** a huge impact on business and our daily lives.*

We use the future continuous **(will be + -ing** form of the verb) to talk about actions in progress at a specific time in the future.

*In a few years, doctors **will be using** expert systems to diagnose illnesses.*

We use the future perfect **(will have** + past participle) to talk about actions finished at a specific time in the future.

*Soon, engineers **will have built** different types of android.*

Exercise 3.1. Choose the correct words in brackets to complete these sentences.

1. In the future, I hope we ('ll have /'re going to have) robots in the home to help us with the housework.

2. Hey, Nick, be careful, you ('re going to spill /'ll spill) that coffee on the computer!

3. It's John's birthday next week. We ('ll give / 're going to give) him a mobile phone.

4. - My laptop has crashed! - Don't worry. I ('ll lend / 'm going to lend) you mine.

5. The Internet (will probably change / is probably going to change) the

publishing industry in the way that TV changed the movie industry.

6. Futurists predict that smart technology (will be / is going to be) incorporated into fabrics, so you'll be able to email from your coat!

Exercise 3.2. Complete these sentences with the correct future form of the verb in brackets. Use the future continuous or future perfect.

1. Thanks to ICT, by the year 2030 we (find) _____ cures for the major diseases of our time.

2. In twenty years' time, some people (live) _____ in space, perhaps inside a computerized colony.

3. By this time next week, I (work) _____ for IBM.

4. By this time next month, I (buy) _____ that BlackBerry that I've been wanting to buy for months.

5. Scientists predict that in twenty years' time nearly everyone (live) _____ in smart houses.

Exercise 3.3. In pairs, discuss these predictions. Do you agree or disagree? Give reasons for your answers. Use*: I think that...*; *What do you think about number... ?; I'm not sure that... will...;I completely agree/disagree with…*

1. Someday, we'll be talking to computers naturally, like friends.

2. Microchips implanted in our arms will serve as ID cards and contain our medical records.

3. Robots will learn to build themselves, without human help.

4. Smart homes will be voice-activated.

5. Computers will be ubiquitous and almost invisible, embedded into our homes and integrated into our lives.

Exercise 4.1. Write your own predictions about these topics.

• **Work/Jobs**

Example: *By the year 2030, human labour in industry will have been replaced by robots.* Your prediction: _____

•   **Money**

Example: *Cash will be replaced by electronic money.* Your prediction: _____

•   **Education**

Example: *By the end of this century, every student in every school will have a PC.* Your prediction: _____

• **The Internet**

Example: *People in every country will have high-speed access to the Internet within five years.* Your prediction: _____

Exercise 4.2. In pairs, compare your predictions. Find out more about your partner's predictions.

Appendix: **a model CV**

1 **Curriculum vitae**

Personal information

Name: Maria Quintana

Address: Avda Seneca, 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 - Part-time Webmaster at www.keo.es; responsible for updating the site and present   using Adobe Flash to create animations

May 2005 - IT consultant at Media Market, specializing in e-commerce and IT strategies December 2006

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

Computing and communication technology, also commonly known as Information Technology (IT) have been radically transforming the way we live, learn, work and play. Today, a large number of software packages are available to all the disciplines of the construction team at every stage of the construction process. They provide support for a broad range of activities such as computer aided design and drafting, building visualization, design appraisal, project management, information storage and retrieval, cost estimation, structural analysis, on-site management, facilities management, etc.

The use of Information and Communication Technologies (ICTs) in the construction industry is generating new opportunities for collaboration, coordination and information exchange among organizations that work on a construction project. Information technologies or Software applications are available to support most aspects of a construction project.

1. Computer Aided Design and Visualization

The basic function of CAD [kæd] tools is allowing the user to build up drawings by manipulating lines, circles, rectangles and texts interactively on the screen. The clear advantage of CAD software is the ability to allow 'editing', which means delete, move, copy, rotate, scale mirror, etc.

Furthermore, since the drawing can be saved at any stage, the designers are able to keep various versions of the building layout for later study. Once the geometrical information of the building design is stored in a CAD package, different views of the building can easily be produced.

Visualization and animation systems, Ike 3D studio, can produce photo-realistic, static, and moving images, so that the clients can view the final appearance of the building at the design stage. The emerging Virtual Reality technology even allows the user to interact with the design model and experience the building in

simulated reality settings.

2. Building Engineering Applications

The benefit of these applications is that they allow designers to evaluate alternative design solutions in order to reach optimum design.

3. Computer Aided Cost Estimation

Controlling costs is one of the most important requirements during a construction project. To achieve this, contractors and subcontractors must first make accurate cost estimation. Rigorous project accounting must then be used to control the spending.

4. Planning, Scheduling, Site Management

5. Computer Aided Facilities Management

6. Integration

7. Business and Information Management.

The following five effective and accessible digital technology innovations for the construction industry are the next level in 2022, that can benefit every construction.

1. Cloud-based communication and collaboration solutions

Cloud-based solutions ensuring a seamless connection between back offices and workers in the field and real-time inputs of critical project data are particularly appropriate for managing geographically dispersed equipment and personnel. Users can access construction software at any time and location as long as there is an Internet connection

2. Mobile Apps and 5G

Mobile phones and tablets are already used on job sites worldwide, most of them leveraging cloud technology. The essence of this innovation in the construction industry is that the 5G wireless technology will become more accessible and widespread in 2022. Together with Wi-Fi 6, it will enable users

to communicate even more effectively, share large-scale drawings, and run resource-heavy apps without compromising speed and performance.

3. Building Information Modeling (BIM) Technology & Digital Twins

BIM is the creation of three-dimensional digital representations of the physical and functional aspects of buildings and their infrastructure early in the project. Creators can add additional layers of data to the interactive 3D models, e.g., construction specifications, pricing, lifecycle predictions, and performance scoring. BIM tools enable engineering, architecture, and construction professionals, even those on site, to work on a shared model. All changes and updates are immediately visible to all stakeholders. This facilitates collaboration and problem-solving and increases accuracy during the design and construction processes, as well as prefabrication, takeoff and estimating, planning, scheduling, and resource management.

Some of the BIM solutions on the market include BIMx, Tekla BIMsight, and Autodesk's BIM 360 Design, Navisworks, and Revit. BIM moves towards 4D, 5D, and even 6D, adding construction schedule, cost and materials, and more details to the software. The geometrics, thermal and acoustic properties, and aesthetics will become available long before construction begins.

BIM helps architects and contractors identify clashes between several models during the design stage, reducing the risks of budget overruns and delays in project completion time. The visualization of the construction process facilitates planning out each construction phase. It becomes easier for estimators to calculate the exact quantities of building materials and components a project requires.

The modeling tool also facilitates document management, coordination, and simulation during the entire building lifecycle: plan, design, build, operation, and maintenance BIM promotes a better project scope understanding, shorter project cycles, and increased productivity. It also supports other latest

construction industry technology trends, such as digital twins, artificial intelligence (AI), VR, and scheduling software.

Digital twin technology uses sensors, drones, and IoT applications to gather data on an existing building or one under construction. AI software, advanced analytics, and machine learning process that data to create and update a dynamic digital replica of the building in real time. Digital twins can be used to create data-rich as-built drawings, improve project scheduling, monitor a project's status throughout all phases, and simulate, predict, and guide decisions.

4. Augmented Reality (AR) and Virtual Reality (VR)

An example of construction technology of such technology is as follows, the image of a completed project can be overlaid on an empty site view or a blueprint so that the client can visualize it during discussions.

Workers will be able to check project documents, guides, and checklists, access critical information about equipment, see hidden structures or 3D models, and identify hazards and ways to avoid them while keeping their hands free to perform tasks. AR applications use markers, such as QR codes, architectural drawings, or geolocation to overlay BIM models, installation and safety instructions, and more.

5. Big Data and Artificial Intelligence

Big data, which basically describes using vast volumes of data to uncover hidden trends, correlations, or patterns in behavior, is not a new building technology trend itself. However, it provides the basis for data-driven decision-making, AI, and automation systems, whose role in the architecture, engineering, and construction industries is growing.

The application of new technologies in construction changes the way companies design and plan their projects, run daily operations, control and integrate value and supply chains, supervise work on the ground, and connect with the consumers.

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