UNIVERSIDAD CATÓLICA DE TEMUCO

DEPARTAMENTO DE LENGUAS
FACULTAD DE CIENCIAS SOCIALES Y HUMANIDADES

LEN 1183

Ingeniería Civil en Informática

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Talking about the past

Reading **1** How much do you know about the history of networking? Can you match these events 1–4 to the dates a–d?

1 The creation of the World Wide Web
2 The start of Facebook
3 The launch of Twitter
4 The beginning of MySpace

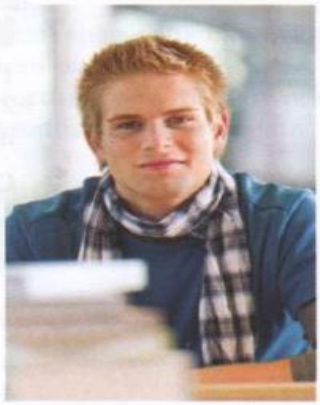
a) 2006
b) 1990
c) 2003
d) 2004

Speaking **2** What social networks do you use? How much time do you spend on them?
Example: I use … . I spend about … .

Reading **3** Read this text about Karl's IT career up until now and answer these questions.

'I left school in Cambridge in the UK at the age of 18 and went straight to the University of Bristol to study computing in 2000. I graduated in 2004 and decided to travel around the world for a year.

In 2006 I got a job back in Cambridge with the software company Arm. I stayed with Arm for two years and then went to work for Microsoft in Seattle in the USA. This is where I am now and I love it!'



1 When did Karl go to university?
2 When did he leave university?
3 What did he do after university?
4 Where did Karl go in 2006?
5 When did he go to Seattle?

Language

Past simple (1)

We use the **past simple** tense to talk about finished actions in the past.	*When did I/she/he/we/they create the network?* *She **created** the network in December 2008.* *I **started** the network last year.*
Time expressions	*I looked at that **yesterday**.* *I had broadband connected **three days/a month/two years ago**.* *I used that system **last week/year/month**.* *I started that user group **on Monday/in June/in 2001**.*

Listening **4** 38 Listen and repeat these sentences.

1 When did they start work?
2 They installed the computers yesterday.
3 We didn't work last week.
4 She went to the office on Sunday.
5 Did you finish the report?

Speaking **5** Practise asking and answering questions about what you did yesterday or last week in your work or studies.

Example:
A: What did you do last week?
B: I worked on the new network.

6 Talk about what you did on your last day off.

Example:
A: What did you do on your day off?
B: I went to the gym.

Language

Past simple (2)

Regular past tense endings	*look*	***looked***
	use	***used***
	install	***installed***
	connect	***connected***
	work	***worked***
Irregular past tense endings	*set up*	***set up***
	go	***went***
	see	***saw***
	do	***did***
	buy	***bought***
	be	***was***

Writing **7** Write three or four sentences about your own computing education and/or work up until now. Use the text in 3 to help you.

Speaking **8** Work in pairs. Ask and answer questions about your education and/or work.

Network range and speed

Listening

1 39 Listen and complete this dialogue between Karoline and Sam.

Karoline: How do you describe network speed?
Sam: In bits, kilobits, megabits and gigabits. They describe network speed. For example, dial-up connections allow (1) _____ kilobits per second and DSL from (2) _____ kilobits per second to (3) _____ megabits per second.
Karoline: OK. I've got that. What about the range?
Sam: Range is the distance of network coverage, so distance units represent network range. Most countries use metric but some use feet as units of measurement. Metres or feet usually describe the range of a network. Home networking routers support a range up to (4) _____ feet or (5) _____ metres indoors and (6) _____ feet or (7) _____ metres outdoors.
Karoline: Thanks.

2 40 Listen and repeat these speeds and ranges.

1 77 kilobits per second
2 5 megabits a second
3 2 gigabits per minute
4 250 metres
5 40 feet

Speaking

3 Say these speeds and ranges.

1 156 feet
2 12 kbit/s
3 4 Gbit/m
4 7,000 metres
5 95 Mbit/s
6 65 Mbit/s

4 Write down four speeds and ranges and dictate them to your partner.

Reading

5 Read these texts and answer these questions.

Range

Wireless networks have limited range. Network range depends on the type of 802.11 protocol, strength of the device transmitter and the architecture of the surrounding area. Some structures, such as walls and metal frames, reduce the range of a WLAN by 25%. However, users can extend the range of a WLAN. Repeaters forward the wireless signal to access points or routers and increase the range of a network.

Speed

Bandwidth and latency are the measures of computer network speed, or data transfer rate. Bandwidth is the maximum throughput of data in bits per second.

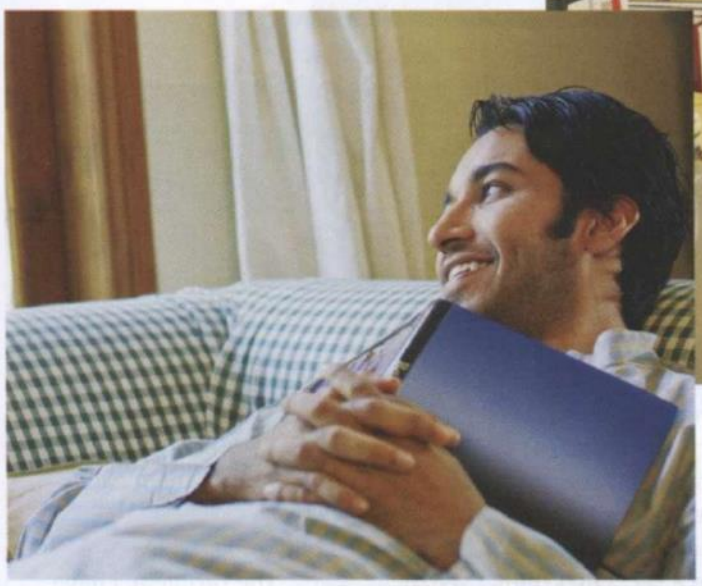
Some modems support 100 Gbit/s but speed depends on the hardware and software used. Latency is the delay that network creates during the transfer data. Users have no, or very little, control over bandwidth and latency.

1 How many things does network range depend on?
2 What can reduce network range?
3 What can improve network range?
4 What two things affect speed?

Business matters

Reading **1** Karam and Natasha work for the ComHelp company. The company provides IT services to customers. Karam and Natasha work in different areas of the city. Every week they write a report for their boss. Read their notes.

	Monday	Tuesday	Wednesday	Thursday	Friday
Natasha	called CISCO about a training do paperwork	went to British Council to install new software	attended the training on network cabling	day off	had a meeting with the team
Karam	went to TESCO to fix Cat6 cables	set up LAN in a paper factory	day off	installed an audio/ video server in Welcare hospital	
You	writted code for a company	studied for an exam	changed operating system of a PC	started a personal project	learned a new programming language



Writing **2** Complete the table in 1 with notes about what you did last week at work or college.

3 Write a report about what you did last week.

Example: Last week I … . On Monday I … and … .

Your experience with computers

A 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 online

B 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 …

Your questions

UNIT II History of Computers (Part 1)

Definition of Computer

•Computer is a programmable machine.

•Computer is a machine that manipulates data according to a list of instructions.

•Computer is any device which aids humans in performing various kinds of computations or calculations.

Abacus

•An abacus is a mechanical device used to aid an individual in performing mathematical calculations.

•The abacus was invented in Babylonia in 2400 B.C.

•The abacus in the form we are most familiar with was first used in China in around 500 B.C.

•It used to perform basic arithmetic operations.

Napier's Bones

•Invented by John Napier in 1614.

•Allowed the operator to multiply, divide and calculate square and cube roots by moving the rods around and placing them in specially constructed boards.

Slide Rule

•Invented by William Oughtred in1622.

•Is based on Napier's ideas about logarithms.

•Used primarily for –multiplication–division–roots–logarithms–Trigonometry

•Not normally used for addition or subtraction.

Pascaline

•Invented by Blaise Pascal in 1642.

•It was its limitation to addition and subtraction.

•It is too expensive.

Stepped Reckoner

•Invented by Gottfried Wilhelm Leibniz in 1672.

•The machine can add, subtract, multiply and divide automatically.

Jacquard Loom

•The Jacquard loom is a mechanical loom, invented by Joseph-Marie Jacquard in 1881.

•It an automatic loom controlled by punched cards.

Arithmometer

•A mechanical calculator invented by Thomas de Colmar in 1820,

•The first reliable, useful and commercially successful calculating machine.

•The machine could perform the four basic mathematic functions.

•The first mass-produced calculating machine.

Difference Engine and Analytical Engine

•It an automatic, mechanical calculator designed to tabulate polynomial functions.

•Invented by Charles Babbage in1822 and 1834

•It is the first mechanical computer.

First Computer Programmer

•In 1840, Augusta Ada Byron suggests to Babbage that he use the binary system.

•She writes programs for the Analytical Engine.

Scheutzian Calculation Engine

•Invented by Per Georg Scheutz in 1843.

•Based on Charles Babbage's difference engine.

•The first printing calculator.

Tabulating Machine

•Invented by Herman Hollerithin 1890.

•To assist in summarizing information and accounting.

Havard Mark 1

•Also known as IBM Automatic Sequence Controlled Calculator (ASCC).

•Invented by Howard H. Aiken in 1943

•The first electro-mechanical computer.

Z1

•The first programmable computer.

•Created by Konrad Zuse in Germany from 1936 to 1938.

•To program the Z1 required that the user insert punch tape into a punch tape reader and all output was also generated through punch tape.

Atanasoff-Berry Computer (ABC)

•It was the first electronic digital computing device.

•Invented by Professor John Atanasoff and graduate student Clifford Berry at Iowa State University between 1939 and 1942.

ENIAC

•ENIAC stands for Electronic Numerical Integrator and Computer.

•It was the first electronic general-purpose computer.

•Completed in 1946.

•Developed by John Presper Eckert and John W. Mauchl.

UNIVAC 1

•The UNIVAC I (UNIVersal Automatic Computer 1) was the first commercial computer.

•Designed by J. Presper Eckert and John Mauchly.

EDVAC

•EDVAC stands for Electronic Discrete Variable Automatic Computer

•The First Stored Program Computer

•Designed by Von Neumann in 1952.

•It has a memory to hold both a stored program as well as data.

The First Portable Computer

•Osborne 1–the first portable computer.

•Released in 1981 by the Osborne Computer Corporation.

The First Computer Company

•The first computer company was the Electronic Controls Company.

•Founded in 1949 by J. Presper Eckert and John Mauchly.

Computer Generations (Part 2)

There are five generations of computer:

First generation–1946 -1958

The first computers used vacuum tubes for circuitry and magnetic drums for memory, and were often enormous, taking up entire rooms.
They were very expensive to operate and in addition to using a great deal of electricity, generated a lot of heat, which was often the cause of malfunctions.
First generation computers relied on machine language, the lowest-level programming language understood by computers, to perform operations, and they could only solve one problem at a time.
Input was based on punched cards and paper tape, and output was displayed on printouts.

Second generation–1959 -1964

Transistors replaced vacuum tubes and ushered in the second generation of computers.
One transistor replaced the equivalent of 40 vacuum tubes, allowing computers to become smaller, faster, cheaper, more energy-efficient and more reliable. Although it still generated a great deal of heat that can damage the computer.
Second-generation computers moved from cryptic binary machine language to symbolic, or assembly, languages, which allowed programmers to specify instructions in words.
Second-generation computers still relied on punched cards for input and printouts for output.
These were also the first computers that stored their instructions in their memory, which moved from a magnetic drum to magnetic core technology.

Third generation–1965 -1970

The development of the integrated circuit was the hallmark of the third generation of computers.
Transistors were miniaturized and placed on silicon chips, called semiconductors, which drastically increased the speed and efficiency of computers.
Much smaller and cheaper compare to the second generation computers, it could carry out instructions in billionths of a second.
Users interacted with third generation computers through keyboards and monitors and interfaced with an operating system, which allowed the device to run many different applications at one time with a central program that monitored the memory.

Computers for the first time became accessible to a mass audience because they were smaller and cheaper than their predecessors.

•Fourth generation–1971 –today

The microprocessor brought the fourth generation of computers, as thousands of integrated circuits were built onto a single silicon chip. As these small computers became more powerful, they could be linked together to form networks, which eventually led to the development of the Internet. Fourth generation computers also saw the development of GUIs, the mouse and handheld devices.

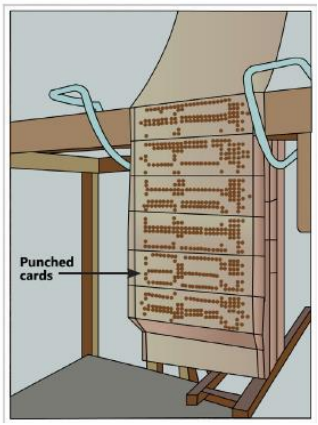
•Fifth generation–Today to future

It is based on Artificial Intelligence (AI) and still in development.
The use of parallel processing and superconductors is helping to make artificial intelligence a reality. The goal is to develop devices that respond to natural language input and are capable of learning and self-organization. There are some applications, such as voice recognition, that are being used today.

Reading comprehension exercises

1. **Find the names of these devices.**
2. **Circle the one that was used for landing man on the moon.**

1



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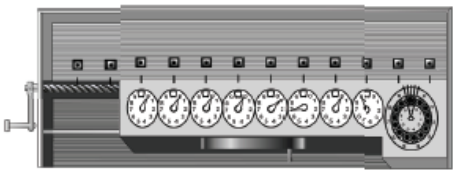

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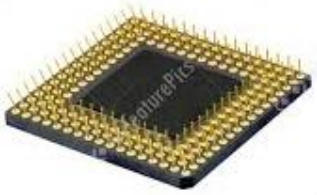

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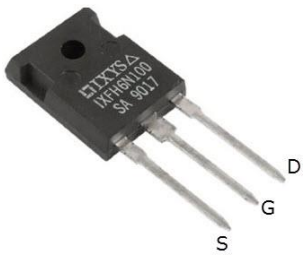

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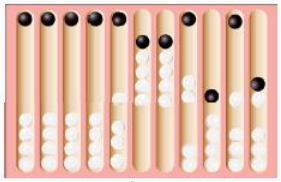

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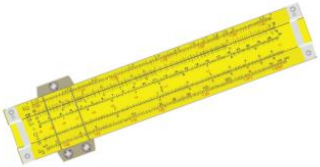

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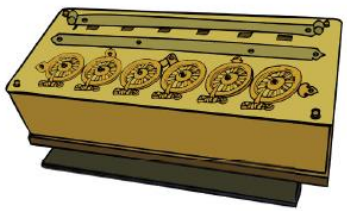

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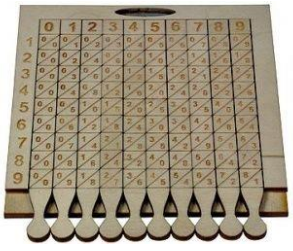

2. Can you arrange these devices in sequence of which appeared first?

Abacus / Eniac / Punched card reader / Napier bones / Desktop Laptop / Z1

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3. Which one is not true about the fifth generation computers?

a. These are cheaper. b. They are compact.

c. They are reliable. d. They use transistors.

4. Which are the features of embedded devices?

i. They are used in phones and washing machines.

ii. They can control multiple devices.

iii. They are small.

iv. User can do programming with them.

a. Both i & ii **b. Both i & iii** **c. Both ii & iv** **d. Both iii & iv**

5. List some advantages of fifth generation computers compared to the other generation computers.

_____
_____
_____
_____

6. Select one of the following or any other device and write a short note on the history of its development.

• Cell phone

• Television

• Internet

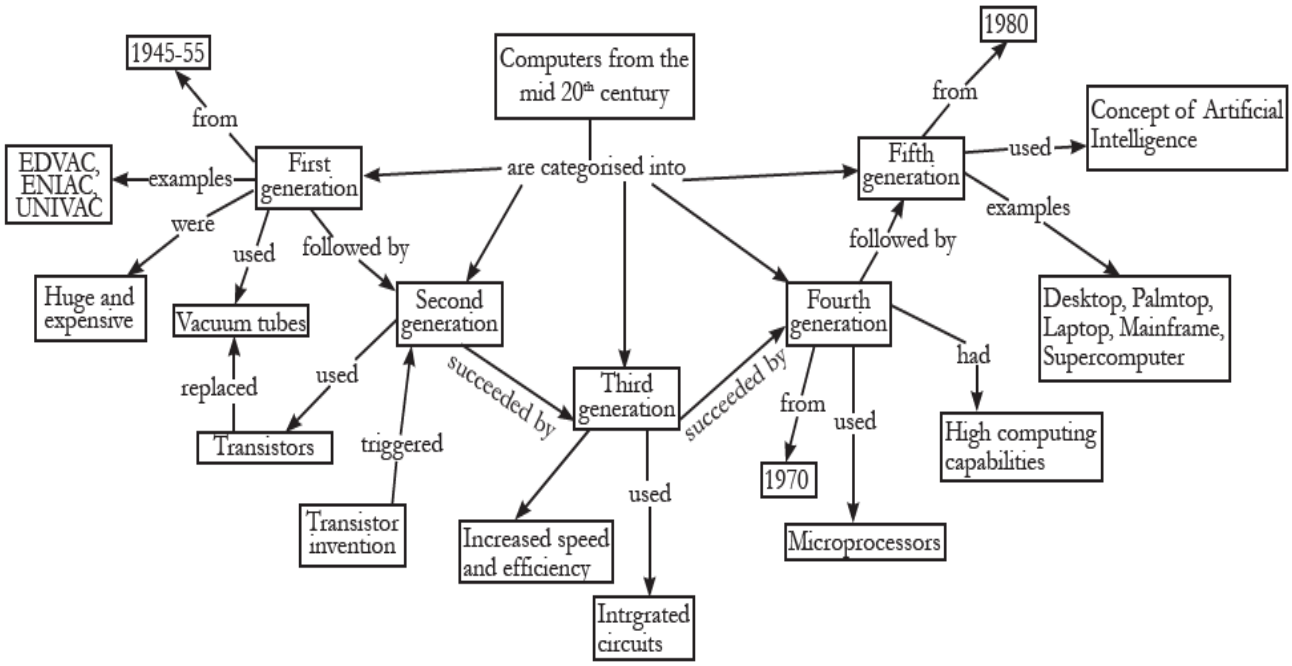
• Email

• Social networking

The following questions would help you:

When was it invented and by whom? For what purpose was it invented? Is the purpose for which it is used today different from what it was initially designed for? Can you include pictures that depict the different stages of its developments?

7. Here is a picture, which tells about the history of computers from mid twentieth century. Study the picture and answer the following questions.



a. From the figure can you tell which was the technology used in the first, second, third, fourth and fifth generation computers?

_____

_____

_____

b. Name two first generation computers.

_____

_____

c. Which invention resulted in the evolution of Second generation computer?

_____

d. Give some examples of fifth generation computers.

_____

_____

History of Computers

Computers are devices that are used to carry out tasks that people want done in a more efficient and usually faster way than can be done by the human brain. There are two types of computers, analog and digital. Analog are devices that require human operation like the tide predicting machine made by Sir William Thomson, and digital is like a personal computer, which uses a series of codes and programs to calculate data.

Computing devices have existed for thousands of years, such as a form of tally stick, which was a piece of wood used to keep track of numbers. The first 'analog computer' is known as the Antikythera mechanism, a complex device that used gears from 100 BC that could do many functions like track the planets and stars, as well as plot courses for sea travel. In 1770, a Swiss watchmaker named Pierre Jaquet-Droz would build a mechanical doll that could be 'programmed' by switching a series of digits, and doing so would cause it to write out different letters to make any word.

The first programmable computer was designed by Charles Babbage, who was an English mechanical engineer. He created the design for it in the early 19th century, and would develop the difference engine, which was an automated mechanical calculator. This device would primarily be used for navigational calculations, but he would realize he could use it more generally, and in 1833, designed the first Analytical Engine, which was a device that had all the components of a modern computer. He was far too ahead of his time, and he would never complete one, but his son would complete one in 1888 as well as demonstrate how it used computing tables in 1906.

As the sciences grew in the first half of the 20th century, so too did the need for more sophisticated analog computers. These computers used manual or electric models for computations, but they still could not program nor had the accuracy that modern computers have. The first modern analog computer was a tide predicting machine made by Sir William Thomson in 1872. In 1927, the analog computer would peak with a differential analyzer, solving complex equations with balls and discs.

By 1938 the analog computer would already start to be on its way out. The United States Navy developed the first electromechanical (electric switch that triggered relays to prefer calculation) analog computer small enough to be put on a submarine, known as the Torpedo Data Computer, a computer that helped with the problem of hitting moving targets with torpedoes. All electric computers that used vacuum tubes, which are electric currents between electrodes in a vacuum controlled by a device, would take over quickly. The Z2 was one example of this, made by German engineer Konrad Zuse in 1939.

In 1941, Zuse made the first programmable and fully automatic computers, named the Z3. It used punched film, similar to a CD but you had to manually punch the program into a slip then insert it in a slot in order to program, and could store 64 words in its memory. The Z3 was considered Turing complete, meaning a program can be written and will find an answer to what it was programmed to do.

Throughout World War II, computers were used in mass amounts. Two of the greatest examples of this are Enigma, a German computer that coded all messages for the Nazis, and Colossus, which was developed by Tommy Flowers. Colossus was the first electronic digital programmable computer. These would lead to modern computers, described in Alan Turing's 1936 paper On Computable Numbers.

Alan Turing would describe a device known as a 'Universal Computing Machine'. This machine would be able to execute instructions (programs) from tape, which would program the machine. This led to the invention of transistors, which replaced vacuum tools, in 1947. This led to integrated circuits; invented by Jack Kilby and were 'a body of semiconductor material'. The next step was the microprocessor, created by Ted Hoff Federico Faggin and Stanley Mazor at Intel. This led to the shrinking of computers, eventually the personal computer. Now, computers are everywhere, and almost everyone is always carrying a small computer in their pockets, commonly known as a cell phone.

1) Which of the following is the first known analog computer?

A: Personal computer B: Difference Engine

C: Personal Computer D: Antikythera mechanism

2) Who invented the first programmable computer?

A: Sir William Thomson B: Charles Babbage

C: Konrad Zuse D: Tommy Flowers

3) Which of the following was the first electromechanical analog computer?

A: Torpedo Data Computer B: Differential Analyzer

C: Analytical Engine D: Difference engine

4) Which of the following is an example of an early all electric computer that used a series of vacuum tubes?

A: Torpedo Data Computer B: Enigma

C: Colossus D: Z2

5) Who first described the modern computer?

A: Charles Babbage B: Sir William Thomson

C: Alan Turing D: Tommy Flowers

6) Which of the following years were transistors made?

A: 1939 B: 1947

C: 1888 D: 1906

UNIT III

IT SUPPORT

- **Talk about results of an action**
- **Write service reports**
- **Explaining the use of things**

Fault diagnosis

Speaking 1 Work in pairs. Make a list of computer hardware problems. Compare your list with another pair.

2 Read this dialogue and complete it with the words in the box.

Checked	disconnected	found	go	switched
Type	tight	unplugged	worked	working

Haider: Hello, IT Help Desk.
Maryam: Hi, this is Maryam from Human Resources.
Haider: Hi, this is Haider. How can I help you, Maryam?
Maryam: I (1) _____ my computer off yesterday and today I can't turn it on.
Haider: What (2) _____ of computer do you have?
Maryam: I'm not sure. It's a desktop computer. It (3) _____ fine yesterday.
Haider: Don't worry. Have you (4) _____ the cable connections?
Maryam: No, I haven't. I can see some cables but I don't know which cable goes where.
Haider: Make sure all cables are (5) _____ and fully plugged in.
Maryam: Ok, give me a sec. Oh, I think I've (6) _____ the problem. I have one cable that is (7) _____ . It's the power cable. Where does it go?
Haider: The power cable should (8) _____ in the three-pronged port on the computer.
Maryam: OK, done. Let me try now. It's (9) _____ fine. Sorry about that. Stupid of me.
Haider: Maybe the cleaners (10) _____ your PC by mistake last night.
Maryam: Maybe. Good, we've solved the problem. Thank you, Haider.
Haider: You're welcome. Have a good day.
Maryam: You too.

Listening 3 41 Listen and check your answers.

4 42 Listen and repeat these words.

1 checked
2 switched
3 unplugged
4 worked
5 disconnected

Language

Present perfect

We use the **present perfect** tense to talk about recent actions (an action that has happened in the past and has a result in the present).	*I've **unplugged** the computer.*	
	*She **hasn't finished** the report.*	
	***Has** she **switched off** the computer? Yes, she **has**./No, she **hasn't**.*	
	***Have** you **checked** the cable connections? Yes, I **have**. /No, I **haven't**.*	
We use ***have/has*** + the past participle of the verb. (To form the past participle of **regular** verbs, we add *-ed*.)	*clean*	***cleaned***
	work	***worked***
Irregular past participles	*do*	***done***
	be	***been***
	run	***run***
	see	***seen***
	have	***had***
	make	***made***

5 Complete these questions with *have* or *has* and the correct form of the verb in brackets.

1 _____ you _____ (run) the computer in the battery mode?
2 How long _____ you _____ (have) the iPad?
3 _____ you _____ (charge) the battery?
4 _____ he _____ (open) the file?
5 _____ she _____ (enter) her username and password?
6 _____ they _____ (change) the Internet Service Provider?
7 _____ you _____ (check) the remaining disk space?
8 _____ you _____ (install) or _____ (uninstall) software recently?
9 _____ Dillip _____ (update) the drivers recently?

6 Use the present perfect to make positive or negative sentences.

Example: the screen/go/blank
The screen's gone blank.

1 the charger/stop/working
2 I/not/upgrade/the operating system
3 She/not/install/the updates
4 They/reinstall/the application
5 She/not/be able to fix the problem
6 I/defragment/your drive

Listening **7** 43 Listen and repeat the questions in 5.

Simple Past – Present Perfect Simple

Certain time in the past or *just / already / yet*?

Do you want to express that an action happened at a certain time in the past (even if it was just a few seconds ago) or that an action has *just / already / not yet* happened?

Simple Past	Present Perfect Simple
certain time in the past *Example:* I phoned Mary 2 minutes ago.	***just / already / not yet*** *Example:* I have just phoned Mary.

Do you want to express when a certain action took place or whether / how often an action has happened till now?

Simple Past	Present Perfect Simple
certain event in the past *Example:* He went to Canada last summer.	**whether / how often till now** *Example:* Have you ever been to Canada? / I have been to Canada twice.

Do you just want to **express what happened** in the past? Or do you want to **emphasize the result** (a past action's consequence in the present)?

Simple Past	Present Perfect Simple
Emphasis on action *Example:* I bought a new bike. *(just telling what I did in the past.)*	**Emphasis on result** *Example:* I have bought a new bike. *(With this sentence I actually want to express that I have a new bike now.)*

Signal Words

Simple Past	Present Perfect Simple
yesterday ... ago in 1990 the other day last ...	just already up to now until now / till now ever (not) yet so far lately / recently

A. 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 las Monday. Have you received it yet?

B. 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 a computer? _____

6. how much emails / receive today? _____

7. how many jobs / apply for this year? _____

C. A letter for application

A. Read the letter for application in the next page and answer these questions.

1. Which job is Sara Brown applying for? _____

2. Where did she see the advertisement? _____

3. How has she been working as a software engineer? _____

4. What type of program has she written? _____

5. When did she spend three months in Spain? _____

B. Read the letter again and complete it with *for – since – ago – until.*

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 the job _____ March 2004.

_____ 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 _____ 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 _____ 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 I would welcome the opportunity to learn about a new industry.

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

I look forward to hearing from you

Yours sincerely

Sara Brown

- 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 of 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.*

Reading activities

Warm up

1 What do these abbreviations stand for? Scan the text and find out if you are correct.

1 CAD _____

2 CAM _____

3 CAE _____

4 CIM _____

5 RFID _____

6 QR _____

Information Technology

Information technology plays a primary role in industry and business today. The incredible changes and developments in the management and processing of information have brought about advances in all areas, from design and production to distribution and sales. IT has allowed companies to build up a competitive advantage, increase their efficiency and speed, cut costs and develop strategic planning.

COMPUTER- AIDED TECHNOLOGIES

Computer-aided technologies is a term used to indicate the use of computer technology to assist with the ideation, design, analysis and manufacturing of products. Two of the most well-known applications are **CAD** and **CAM**, although there are many others including **CAE** (computer-aided engineering) and **CIM** (computer-integrated manufacturing).

CAD, short for computer-aided design, creates 2D drawings and 3D models and is used, for example, by designers, architects and engineers. The software allows the user to rotate the model in any direction and to edit and instantly make changes to the design. It is widely employed in the automotive and aerospace industries, as well as architectural design.

CAM stands for computer-aided manufacturing and refers to computer applications, which control the machine tools used to produce high-quality parts. Its benefits include precise control, a more efficient and faster production process and less waste of raw materials.

RFID TECHNOLOGY

RFID stands for Radio Frequency Identification and it is a versatile technology for identifying, tracking and auditing items.

The two components of a RFID system are tags and readers. Tags are the very tiny, data carrying transponders, which are attached to an item. These tags can be self-adhesive, heat and water resistant, embedded on credit cards, wrist bands or key rings. Readers are the devices used for the collection of the data and can be connected to a computer or POS terminal, for example. These readers collect the data without direct contact with the tag: it is sufficient for it to be within a certain distance. In addition, multiple tags can be read at the same time, unlike barcodes, which have to be read one at a time. This fast, contact-less reading of data increases speed and efficiency, keeping costs lower and providing accurate, real time information. The applications for this technology are multiple and include ticket systems for public transport, motorway toll

payment systems, manufacturing process checks, distribution chain, stock and inventory control and security and safety inspections.

QR CODES

The Quick Response code, usually shortened to **QR code**, is a two-dimensional barcode which can be read faster than a traditional barcode and also has a much greater storage capacity. It was originally invented for use in the automobile industry to keep track of vehicles during production. Its uses in business and industry include traceability, picking, inventory management, document management and admission control and it can be found in all areas from a manufacturing plant, to a retail outlet, warehouse or pharmacy. Recently, its use has become extremely common in consumer advertising and marketing. These black and white squares of code are placed everywhere: on adverts and bus shelters, in magazines and stores. A potential customer can use his or her smartphone, with a QR scanner app, to scan the code and will be taken directly to a company website, for example, with more product information, discounts or special offers.

Read the texts and answer these questions.

A. Write down the main characteristics of RFID TECHNOLOGY and QR CODES.

_____
_____
_____

B. How do they work?

_____
_____
_____

1 What benefits has IT brought to businesses and industry?

2 How does CAD software help a designer?

3 In what ways does CAM assist the manufacturing process?

4 What are the two essential elements for a RFID system?

5 What advantages does RFID technology have over traditional barcodes?

6 In what areas is the use of QR codes common today? Why?

The Internet of Things

Should you worry if your jeans go smart?

What if those new jeans you've just bought start tweeting about your location,as you cross London Bridge? It sounds bizarre, but it is possible – if they are equipped with a tiny RFID device, your location could be revealed without you knowing about it. This technology is just one of the current ways of allowing physical objects to go online – the so-called **Internet of Things** .

Those in favour of the IoT claim that interconnectivity would allow us to locate and monitor everything, everywhere and at any time. Imagine a smart building where you know how many people are inside just by detecting movement with motion-sensitive lights. This could help save lives in an emergency.

But as more objects become part of the digital world, there is growing debate over the benefits of smart technology versus the lack of privacy. To what extent can surveillance of people be accepted? Which principles should govern the use of the IoT? The European Commission, for example, has established a framework to safeguard consumer privacy as industries develop this technology further.

Within the retail industry, a number of stores have started using RFID tags to check and track stock more easily. However, some people are worried that the RFID reader being used by a shop employee to check the number of pairs of jeans could also read the data on a customer's driving licence, for example, if it contained a RFID chip. This could then lead to identity theft. If the tag is not removed at the checkout, the item could be tracked on the street. Once the tag is thrown away, it can still be scanned, allowing someone to get an idea of your shopping habits.

Supporters of the IoT point out that in our already digital and high-tech society your mobile phone operator and bank know much more about your life than your partner does and it is certainly more critical information than the type of jeans you wear.

Source – BBC News –

The **Internet of Things**, shortened to IoT, is the integration of the physical world with the virtual world of Internet. Objects such as your car, house, clothes, fridge or family pet are electronically tagged with important information and then can be connected to the Internet through remote, contact-less technology.

Reading comprehension

Read the text and decide if these sentences are true (T) or false (F). If there is not enough information, choose 'doesn't say' (DS).

1 You are always aware that RFID tags are communicating your location.

2 The Internet of Things means everyday objects and items can be connected to the Internet.

3 There are more people in favour of the IoT than against it.

4 The European Commission is against the development of RFID technology.

5 If someone has a document with an RFID chip, they could be at risk of identity theft.

6 Because of digital technology, many companies already hold a lot of private, important information about us.

Speaking

Discuss these questions in small groups.

1 Is the Internet of Things a positive or negative technological development? Why?

2 Can you think of examples (e.g. a situation or a specific object) where it could cause problems/be useful?

3 Do you think the issue of privacy is important?

4 Some schools in Texas, USA, introduced RFID chips in student badges. What is your opinion on this?

5 How do you see the future of the Internet of Things?

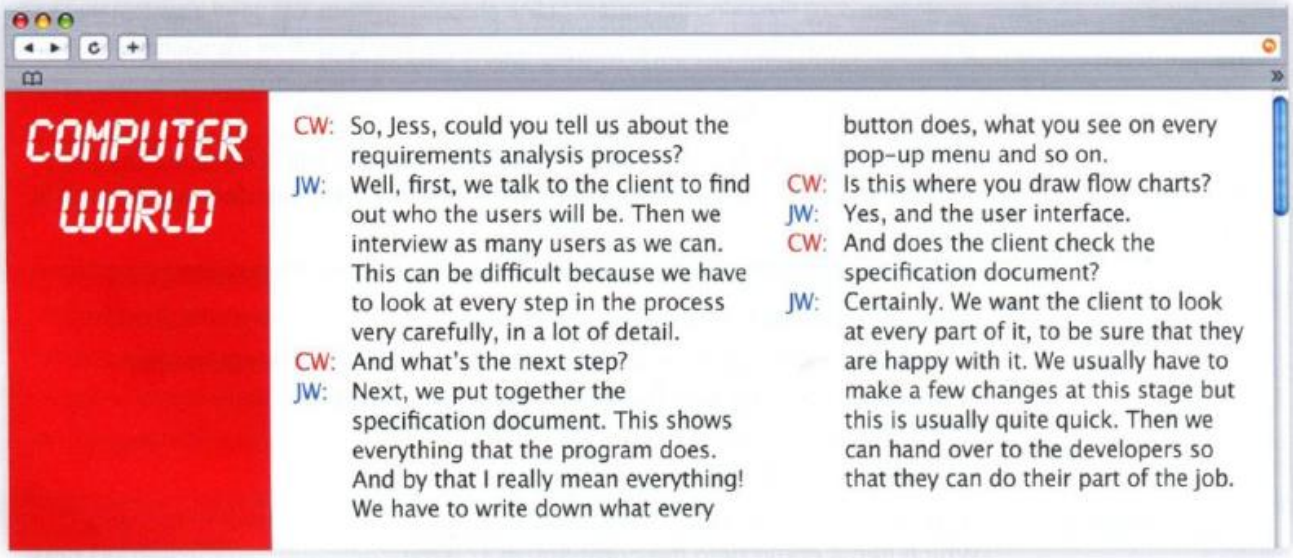
UNIT IV DEVELOPMENT

Requirements analysis

1 Work in pairs. Put these stages of the software development process in the best order.

- ☐ The customer checks and approves the final version.
- ☐ Speak with the people who will use the new software and analyse how they will use it.
- ☐ Plan the project, write the specifications and prepare instructions for the programmers.
- ☐ Test and debug the code.
- ☐ Write the code.

Reading **2** Read this interview from *Computer World*, an online magazine, in which Jess Wong, a systems analyst, talks about her job. Which of the stages in 1 does she mention?



COMPUTER WORLD

CW: So, Jess, could you tell us about the requirements analysis process?

JW: Well, first, we talk to the client to find out who the users will be. Then we interview as many users as we can. This can be difficult because we have to look at every step in the process very carefully, in a lot of detail.

CW: And what's the next step?

JW: Next, we put together the specification document. This shows everything that the program does. And by that I really mean everything! We have to write down what every button does, what you see on every pop-up menu and so on.

CW: Is this where you draw flow charts?

JW: Yes, and the user interface.

CW: And does the client check the specification document?

JW: Certainly. We want the client to look at every part of it, to be sure that they are happy with it. We usually have to make a few changes at this stage but this is usually quite quick. Then we can hand over to the developers so that they can do their part of the job.

3 Read the interview in 2 again and answer these questions.

1 Why does Jess talk to the client at the beginning of the process?
2 Why are the interviews sometimes difficult?
3 What does the specification document contain, besides writing?
4 Why does the analyst want the client to check the specification document?

Vocabulary **4** Complete these definitions with the words in the box. Use the stages in 1 and the interview in 2 to help you.

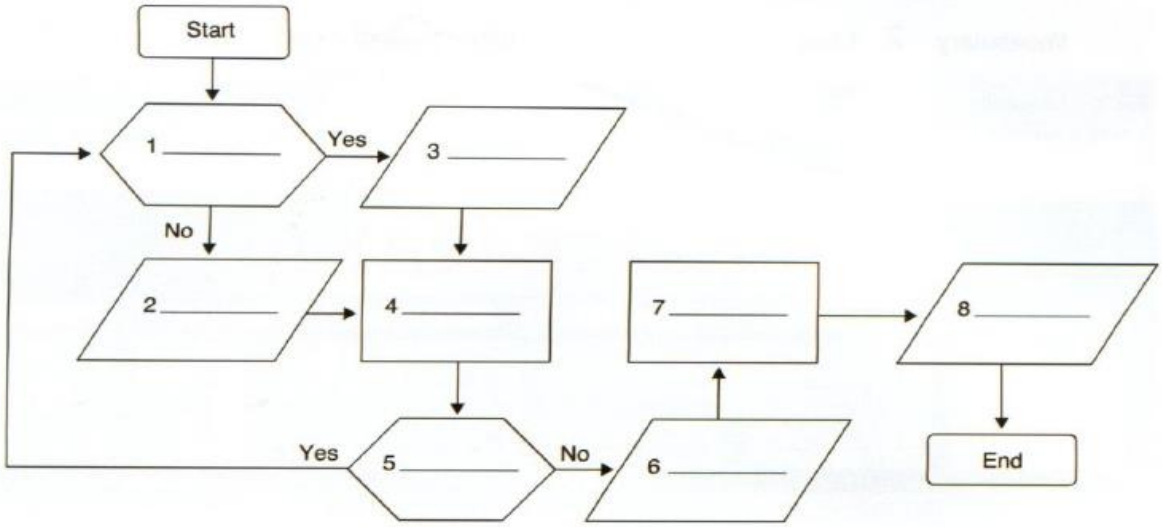
approve	analyse	debug	detail	interview

1 all the separate features and pieces of information about something _____
2 think about something very carefully, step-by-step _____
3 officially say that you are happy with something _____
4 ask someone questions formally in order to find out information _____
5 find problems in a computer program and correct them _____

Listening **5** 36 Listen to a systems analyst talking to a worker. He is preparing specifications for a pizza shop website to take orders online. Which stage from 1 is he at?

6 Complete 1–4 in this flow chart with the steps in the box. Then listen again and check your answers.

Ask which type of standard pizza.	Ask which toppings.
Customer wants standard pizza?	Write order on order sheet.



7 37 Now complete 5–8 in the flow chart in 6 with the steps in the box. Then listen to the second part of the conversation between the systems analyst and the worker and check your answers.

Ask for delivery address.	Calculate delivery time.
Customer wants another pizza?	Tell customer delivery time.

Language

Expressing user requirements

We use *should*, *have to* and *need to* to express **requirements**.	*The program **should be** easy to use.* *It **needs to be** fast but it **doesn't have to look** good.*
We can also use *want* + object + infinitive.	*The client **wants the program to run** on old versions of Windows.*

Speaking **8** Work in pairs. Use the flow chart in 6 to say what the program should do.

First, the program should find out what kind of pizza the customer wants: standard or choice of toppings.

9 Work in small groups. A shop selling fashionable clothing for young people wants an online order system. Think about the software and make a list of requirements.

The website should look interesting for young people. It should show ...

10 Compare your list from 9 with another group's list.

Website design and architecture

Speaking **1** Work in pairs. Think of a typical website and discuss these questions.

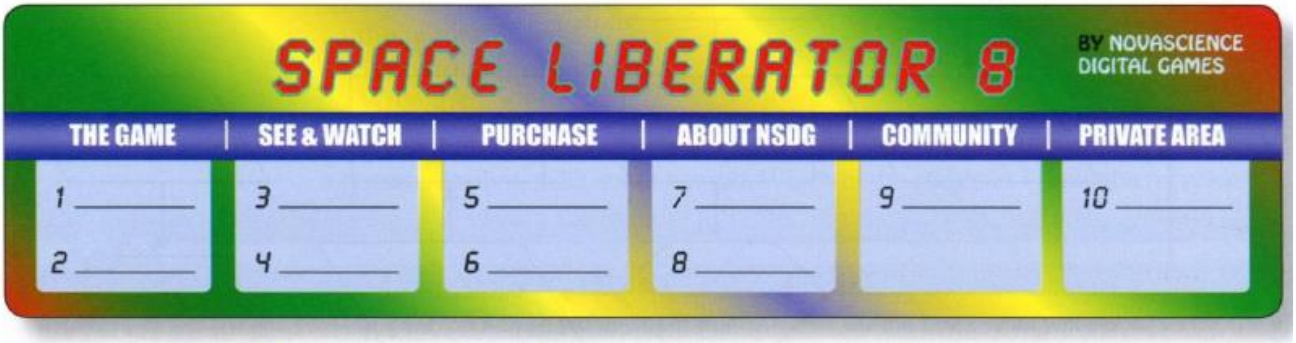
1 Which pages do most websites have (e.g. contact details)?
2 Which of these items, or other items, is often at the top of each page? Which is below that? What else might you find at the top of a web page?
- contact details
- menus
- search
- title

3 What makes a website easy or difficult to use? What makes it interesting? Think about how easy it is to find things, what the website looks like and what is on it (e.g. photos).

Vocabulary **2** Complete the menus on this home page of a computer game website.

FAQs = frequently asked questions

Company blog Contact us FAQs How to pay How to play
Images Login Players' forum Prices Videos



Reading **3** Read this case study about a website development project. What do you think a fan site is? Was the project successful? How do you know?

SEO = search engine optimisation

A web developer's work

Andrea Pinheiro da Silva is a web developer who is well known for the websites she has developed. Her websites have won several awards. Here, she describes a recent project.

'Recently, I worked on a project for SLFan, a fan club for the *Space Liberator* game. There were a few other sites for fans of the same game, so it was important that it looked exciting and dynamic, to get more site visits. The customer also wanted their new site to have two different areas: a public one for general content and a private one with premium content for paying fans.

We decided to use a combination of PHP, HTML5 and MySQL. PHP was chosen to keep costs down (it's open source) and for its flexibility. It's also very versatile: it integrates easily with many other website tools. We mainly used HTML5 for multimedia content but also used other systems so that the site can be viewed on many types of devices, including mobile devices. And MySQL was just right for the private area: forum posts and other private data can be stored in the MySQL database.

Speaking of mobile devices, one of the challenges was to make the site viewable on mobile phones and smaller tablets. We had to make sure that every page can be seen in mobile format. We also had to work on SEO because high search rankings were required. That involved working closely with SLFan.

The end result was a website that the customers were very pleased with. They were great people and real fun to work with!'

Vocabulary **4** Find words in the case study in 3 that match these definitions.

1 accessible by anyone (paragraph 2) _____
2 information, images, video, etc. on a website or in an application (paragraph 2) _____
3 better or more expensive than others (paragraph 2) _____
4 two or more things that are used together (paragraph 3) _____
5 that can be used in many different ways (paragraph 3) _____
6 things that are difficult to do (paragraph 4) _____
7 possible to see (paragraph 4) _____
8 position on a page of search results (paragraph 4) _____

Language

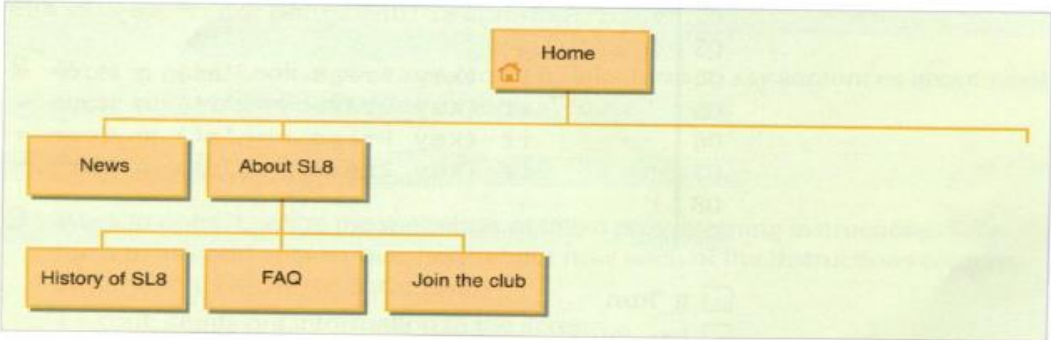
The passive

We use **the passive** when the action is more important than the agent (the person or thing doing the action), or when it isn't necessary to mention the agent at all.	*His website **is linked** to my website.* *The new website **was viewed** many times.* *Videos **can be viewed** on this site.*

5 Rewrite these sentences in the passive.

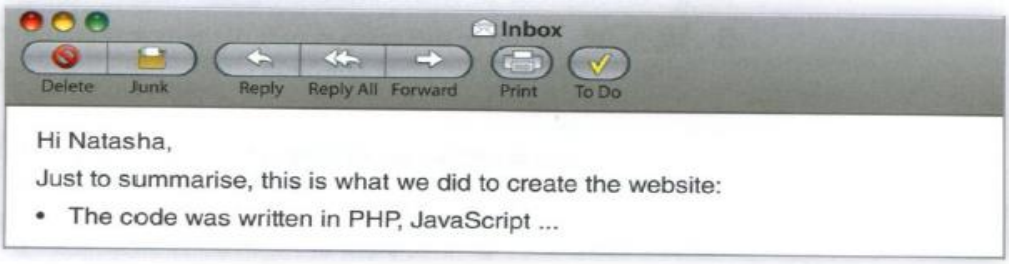
1 They found a problem.
2 The customer requires a dynamic, exciting website.
3 We used PHP for this website.
4 People can watch videos on this website.
5 People can download useful PDFs from this website.

Speaking **6** Look at this website navigation chart. Which pages are linked to the home page? Which page is the parent node? Which pages are the child nodes? Which are the grandchild nodes?



7 Work in pairs. Student A, look at the information on page 68. Student B, look at the information on page 71. Follow the instructions.

Writing **8** Read the text in 3 again. What was done to create the website? Complete this email to your manager. Use the passive.



Practice

1 Describe the operation of the new speed trap by converting each of these statements to the Present passive. Add information on the agent where you think it is necessary.

1 The first unit records the time each vehicle passes.
2 It identifies each vehicle by its number plates using OCR software.
3 It relays the information to the second unit.
4 The second unit also records the time each vehicle passes.
5 The microprocessor calculates the time taken to travel between the units.
6 It relays the registration numbers of speeding vehicles to police headquarters.
7 A computer matches each vehicle with the DVLC database.
8 It prints off a letter to the vehicle owners using mailmerge.

Part 2

Some drivers have now got used to these traps. They slow down when they approach one to ensure that the camera is not triggered. They speed up again as soon as they have passed. This is known as 'surfing'. One way of outwitting such motorists is a new computerised system. This consists of two units equipped with digital cameras positioned at a measured distance apart. The first unit records the time each vehicle passes it and identifies each vehicle by its number plates using optical character recognition software. This information is relayed to the second unit which repeats the exercise. The microprocessor within the second unit then calculates the time taken by each vehicle to travel between the units. The registration numbers of those vehicles exceeding the speed limit are relayed to police headquarters where a computer matches each vehicle with the DVLC database. Using mailmerge a standard letter is then printed off addressed to the vehicle owner.

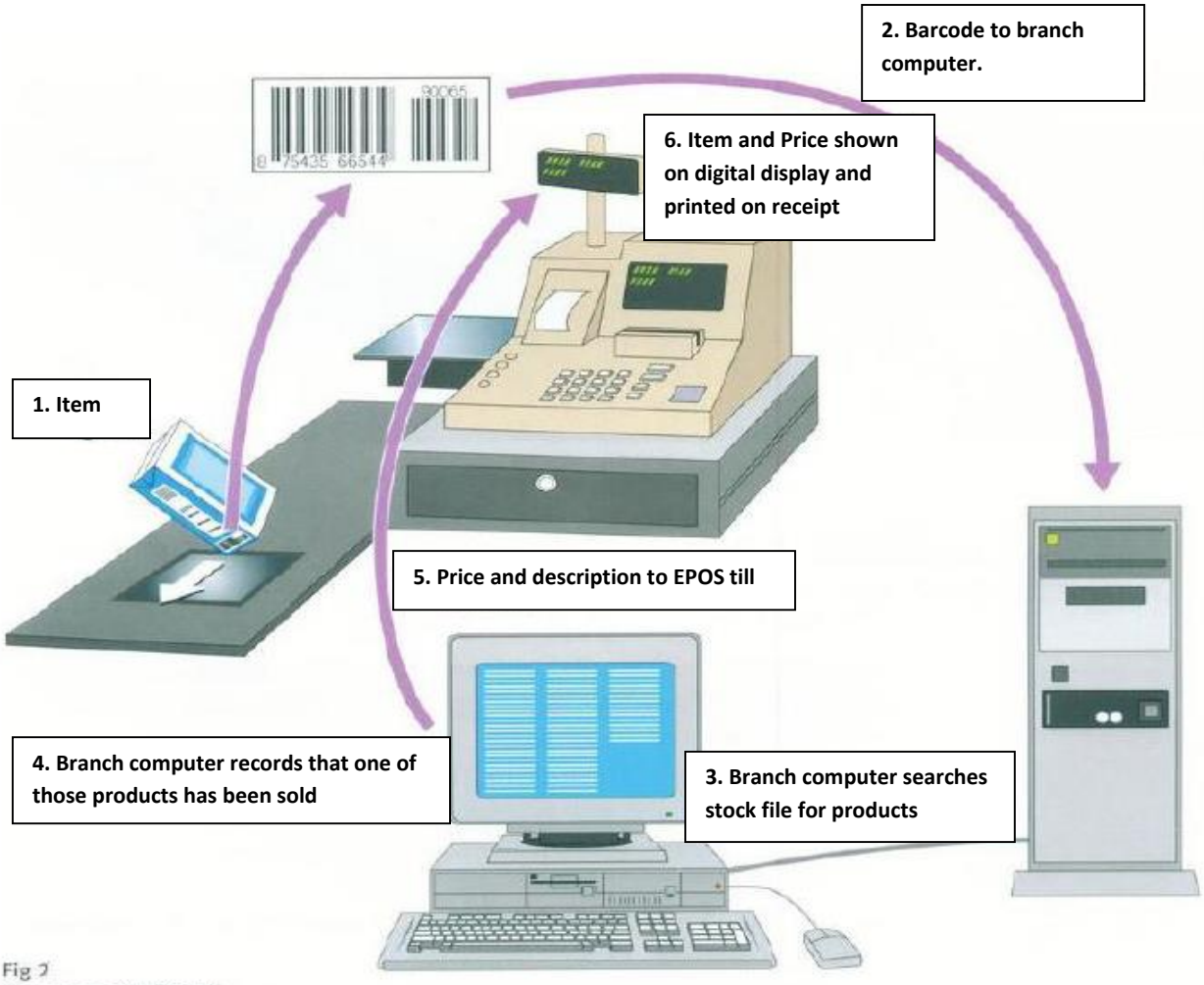


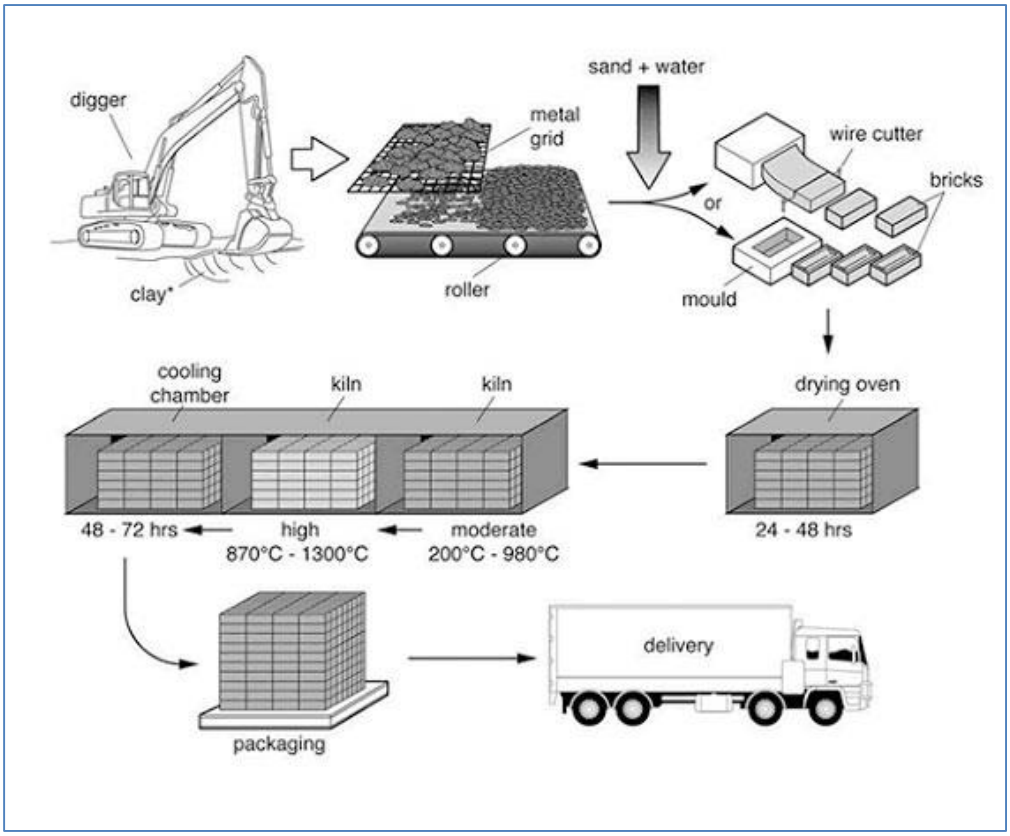
Fig 7
Operation of EPOS till

2 With the help of this diagram, sequence these steps in the operation of an EPOS till. Then write a description of its operation in the Present passive.

a The scanner converts the barcode into electrical pulses.
b The branch computer sends the price and description of the product to the EPOS till.
c The scanner reads the barcode.
d The branch computer records the sale of the product.
e The till shows the item and price.
f The checkout operator scans the item.
g The scanner sends the pulses to the branch computer.
h The till prints the item and price on the paper receipt.
i The branch computer searches the stock file for a product matching the barcode EAN.

How to explain a process.

Complete the paragraph using passive voice.



The Brick Manufacturing Process

The diagram explains the way in which bricks _____ (make) for the building industry. Overall, there are seven stages in the process, beginning with the digging up of clay and culminating in delivery.

To begin, the clay used to make the bricks _____ (dig) up from the ground by a large digger. This clay _____ then _____ (place) onto a metal grid, which _____ (use) to break up the clay into smaller pieces. A roller assists in this process.

Following this, sand and water _____ (add) to the clay, and this mixture _____ (turn) into bricks by either placing it into a mould or using a wire cutter. Next, these bricks _____ (place) in an oven to dry for 24 – 48 hours.

In the subsequent stage, the bricks go through a heating and cooling process. They _____ (heat) in a kiln at a moderate and then a high temperature (ranging from 200c to 1300c), followed by a cooling process in a chamber for 2 – 3 days. Finally, the bricks _____ (pack) and delivered to their destinations.

Read the passage below and answer the questions that follow.

Computers are machines that can help us in many ways. But they cannot think or do things on their own. Humans have to feed them with information and tell them what to do with it. They cannot come up with any new information. But they can save much time and work. For example, all the information and the office files can be stored in a computer's "memory". If a clerk were to trace any information from a particular file, the computer would only take seconds to find it. It would take a clerk days or even weeks to go through every file if no computers were used.

The first computers were huge and costly. They filled up almost the whole floor of large offices. Later, because of the usefulness and demand for computers in business, scientists soon found ways to produce cheaper and smaller computers. They invented chips which made it possible to store more information in less space.

Today, computers are not only cheaper, but also *more compact*. They can just be placed on top of an ordinary writing table. They can even be carried from place to place easily. Computers are not only used in offices by companies, but they are also used at home, by families who can afford them.

Robots, on the other hand, are not mechanical people. They are only moving parts controlled by a computer. A robot can do the same work for twenty four hours, and yet, it does not complain or get tired. In the United States robots are computers that tell them where to guard and what to do. These robots are programmed to listen for certain noises and signals for help in case of trouble or danger.

In Japan and in some places in America, robots are used in factories to assemble cars. As computers become more common businesses and factories, people fear tha tone day computers and computer controlled robots will put human workers out of work.

1. Why do humans have to feed the computers with information and tell them what to do?

   (A) Because computers can save time and work.
   (B) Because computers cannot think or do things on their own.
   (C) Because computers can store office information in their memory.
   (D) Because computers can help us in many ways.

2. Why did the first computers fill up almost the whole floor?

   (A) Because they were huge and costly.
   (B) because of the usefulness and demand for computers in businesses.
   (C) Because the office floor was small.
   (D) Because they were huge.

3. Find a word in the passage that has the same meaning as *more compact*.

   (A) Huge
   (B) Cheaper
   (C) Smaller
   (D) Costly

4.Which of the following statements in **NOT TRUE**?

(A)Robots are controlled by a computer.
(B)Robots are mechanical people.
(C)Robots do not get tired of working.
(D)Robots guard factories and museums in the United States.

5.Humans fear that one day computers and robots

(A)are busier than humans.
(B)are cleverer than humans.
(C)will make humans jobless.
(D)will make humans listen to certain noise.

6.The **BEST** title for this passage would be

(A)Computers and Robots
(B)Old and New Computers
(C)Robots are Security Guards
(D)The Electronic Invention