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МИНОБРНАУКИ РОССИИ

Федеральное государственное бюджетное
образовательное учреждение высшего образования
«Юго-Западный государственный университет»
(ЮЗГУ)

Кафедра иностранных языков

УТВЕРЖДАЮ
Проректор по учебной работе
_____О. Г. Локтионова
«30» 08 _____2021г.

COMPUTER AND IT TECHNOLOGIES: HISTORY AND DEVELOPMENT

(PART III)

Методические указания для практических занятий и
самостоятельной работы по дисциплине «Иностранный язык»
для студентов специальностей 02.03.03, 09.03.01, 09.03.02, 09.03.03,
09.03.04, 10.03.01, 11.03.02, 11.03.03, 12.03.04, 10.05.02, 30.05.03

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Computer and IT Technologies: History and Development (Part III): методические указания для практических занятий и самостоятельной работы по дисциплине «Иностранный язык» для студентов специальностей 02.03.03, 09.03.01, 09.03.02, 09.03.03, 09.03.04, 10.03.01, 11.03.02, 11.03.03, 12.03.04, 10.05.02, 30.05.03 / Юго-Зап. гос. ун-т; сост.: В. В. Махова. – Курск, 2021. – 53 с.: – Библиогр.: с. 53.

Цель методических указаний сформировать у студентов базовый тезаурус и начальные навыки работы с профессионально-ориентированными текстами. Методические указания основаны на оригинальных материалах, задания ориентированы на активное обучение английскому языку и формирование понятийного аппарата по специальности.

Методические указания соответствуют требованиям ФГОС ВО дисциплины «Иностранный язык» по направлениям подготовки 02.03.03, 09.03.01, 09.03.02, 09.03.03, 09.03.04, 10.03.01, 11.03.02, 11.03.03, 12.03.04, 10.05.02, 30.05.03.

Методические указания предназначены преподавателям и студентам специальностей 02.03.03, 09.03.01, 09.03.02, 09.03.03, 09.03.04, 10.03.01, 11.03.02, 11.03.03, 12.03.04, 10.05.02, 30.05.03 очной и заочной форм обучения для практических занятий и самостоятельной работы по дисциплине «Иностранный язык» (английский).

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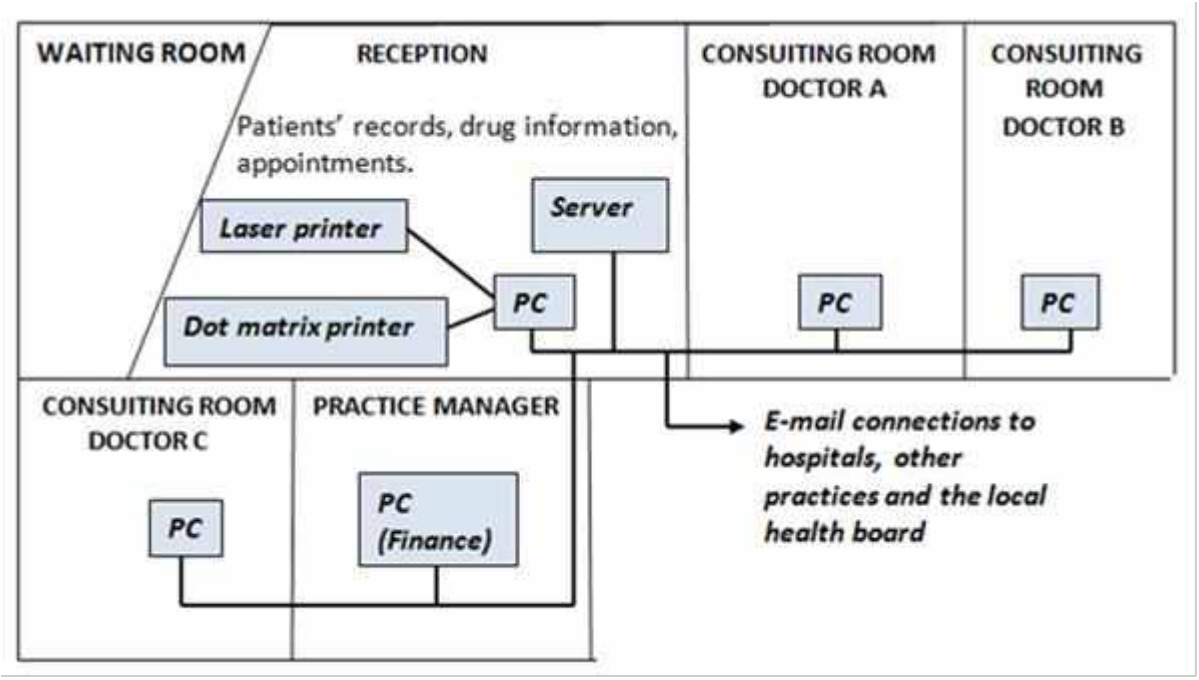
UNIT I. NETWORKS

I. Study this example of a local area network. Answer these questions.

1. Who are the users?
2. What kind of hardware is used?
3. What do the doctors use it for?
4. What do the receptionists use it for?
5. What does the practice manager use it for?



Newtown Health Centre Local Area Network

II. Study the following text.

What is a network?

A network is simply two or more computers linked together. It allows users to share not only data files and software applications, but also hardware like printers and other computer resources such as fax.

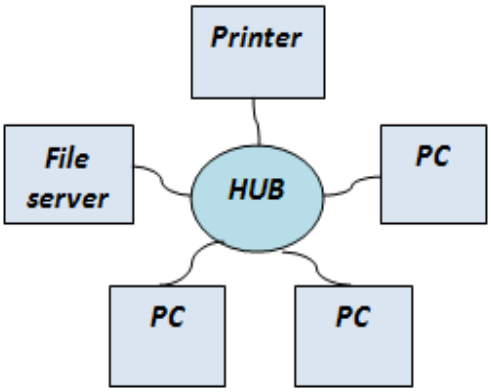
Most networks link computers within a limited area within a department, an office, or a building. These are called Local Area Networks, or LANs. But networks can link computers across the world, so you can share information with someone on the other side of the world as easily as sharing with a person at the next desk.

When networks are linked together in this way, they are called Wide Area Networks, or WANs.

Networks increase productivity by allowing workers to share information easily without printing, copying, telephoning, or posting. They also have money by sharing peripherals such as printers.

III. Using the text above and the diagram answer the questions.

1. What is a network?
2. What are its hardware components?
3. What is the difference between a *local area network* and a *wide area network*?
4. What advantages do you think networks have?



IV. With the help of the diagrams and the text above, identify these hardware components of the network.

1. _____ Most networks have at least one central computer which all the desktop computers connect to. This is the most important computer on your network. It stores the data files and application software programs that the users need to access or share with others.
2. _____ This is the desktop computer or notebook computer on your desk. It is linked to the server, and can access files and applications on it. Each computer on the network has a device called a network interface card which connects the computer to the network. Many computers come with these cards fitted as standard.
3. _____ Once you have a network you can share any number of these, including printers, scanners, CD-ROM drives, and backup devices.
4. _____ Desktops typically connect via telephone-type cabling to this intermediary device, which enables communication between servers and desktops.

HELP box
Language work: Predicting consequences

Study these examples.

The cable fails. The whole network will fail.
(action) (consequence)

***If** the cable **fails**, the whole network **will fail**.*

Note that the action is in the ***Present simple***, and the consequence in the ***will*** future.

Study the other examples.

***If** you **don't use** the right password, you **won't get** access to the network.*
*If you **don't save** your text document, you **will lose** the information.*

V. Link each action (1−10) with a suitable consequence (a j).

***Ex**. If you place a floppy disk near a magnet, you will destroy the data.*

1) ~~you place a floppy disk near a magnet~~
2) you press Print Screen
3) you input the correct password
4) you add memory to a computer
5) you move the mouse to the left
6) you store data in RAM
7) you use a faster modem
8) there is a memory fault
9) you press the arrow key
10) you move a CD-ROM drive with the disk in place

a) the cursor moves to the left
b) the computer hangs
c) it is not lost when you switch off
d) you damage the drive
e) you copy the screen
f) you have access to the network
g) ~~you destroy the data~~
h) it runs faster
i) your phone bills are lower
j) the cursor moves across the screen

VI. Problem-solving. Study these rules for passwords. Then decide if the passwords which follow are good or bad. Explain your answers.

Network passwords

Usually you need a password to use a network. It is important to keep your password secret. The following rules make a password more difficult to guess.

Passwords should:

1) be at least 6 characters long
2) have a mixture of numbers and letters
3) have a mixture of capital and small letters
4) be easy to remember.

Passwords should not:

5) be a word from a dictionary
6) be a common name
7) include spaces, hyphens, dots, or symbols with a special meaning in computing, e.g. $, *, etc.

Passwords

1. Colibarte
2. Torn3
3. 7Azah
4. 6Biscuits
5. RztvSxq
6. ZutabalS
7. 4epilon
8. ZobidonS

VII. Read the text, and then match the technical terms on the left with the explanations on the right.

Network configurations

A network is a group of devices (PCs, printers, etc.) or nodes connected by communications circuits so that users can share data, programs and hardware resources. A network has two main elements: the physical structure that links the equipment and the software that allows communication.

The physical distribution of nodes and their circuits is known as network 'topology' or 'architecture'. The software consists of the protocols, i.e. the rules which determine the formats by which information may be exchanged between different systems. We could say that cables and transceivers (the architecture) allow computers to 'hear' one another, while the software is the 'language' that they use to 'talk' to one another over the network.

As regards the cables, they consist essentially of the transceiver − the hardware that sends and receives network signals. At present the most widely used transceivers are Token Ring, Ethernet and LocalTalk. Token Ring is the most common method of connecting PCs and IBM mainframes. Most Token Ring adapters transmit data at a speed of 16

megabits per second. With Ethernet, data is transmitted at 100 Mbits/sec. Ethernet provides a very robust, trouble-free architecture with good levels of performance. In this regard, Ethernet is the best solution for first and intensive activity.

LocalTalk transceivers are the cheapest of all because they are directly included in each Macintosh. However, they're a bit slow, which is why most Macs come with built-in Ethernet.

As for protocols, these are rules which describe things like transmission speed and physical interfaces. The Token Ring protocol avoids the possibility of collisions. To transmit data, a workstation needs a token, and as there is only one token per network, holding tine guarantees sole use of the network. With Ethernet there are other options, of which TCP/IP (Transmission Control Protocol/Internet Protocol) is perhaps the most useful since it allows different operating systems to communicate with each other. With regard to LocalTalk networks, they use AppleTalk protocols. The Macintosh operating system includes the AppleTalk manager and a set of drivers that let programs on different Macs exchange information.

LANs can be interconnected by gateways. These devices help manage communications and control traffic on large networks. They change the data to make it compatible with the protocols of different networks.

1. LAN
2. network
3. architecture
4. nodes
5. protocol
6. transceiver
7. token
8. gateway

a) the hardware that emits and receives signals in a computer network
b) a network contained in a relatively small area
c) the arrangement of nodes in a communication system (i.e. the distribution of elements in a network)
d) a device that translates protocols between different types of networks (e.g. it can link networks of PCs and Macs to mainframes and minicomputers)
e) a special unit of data which acts as a key on a Token King network; only the machine in possession of this piece of software can transmit on the network
f) a set of rules that allows the exchange of information over a network
g) computer devices interconnected in a network

VIII. Try to answer these questions.

1. What is a WAN?
2. How can computers be linked up over a long distance?
3. What are the advantages of optical-fibre cables over telephone lines?
4. What is the function of communication satellites?

IX. Now read the passage and find out if your answers were correct.

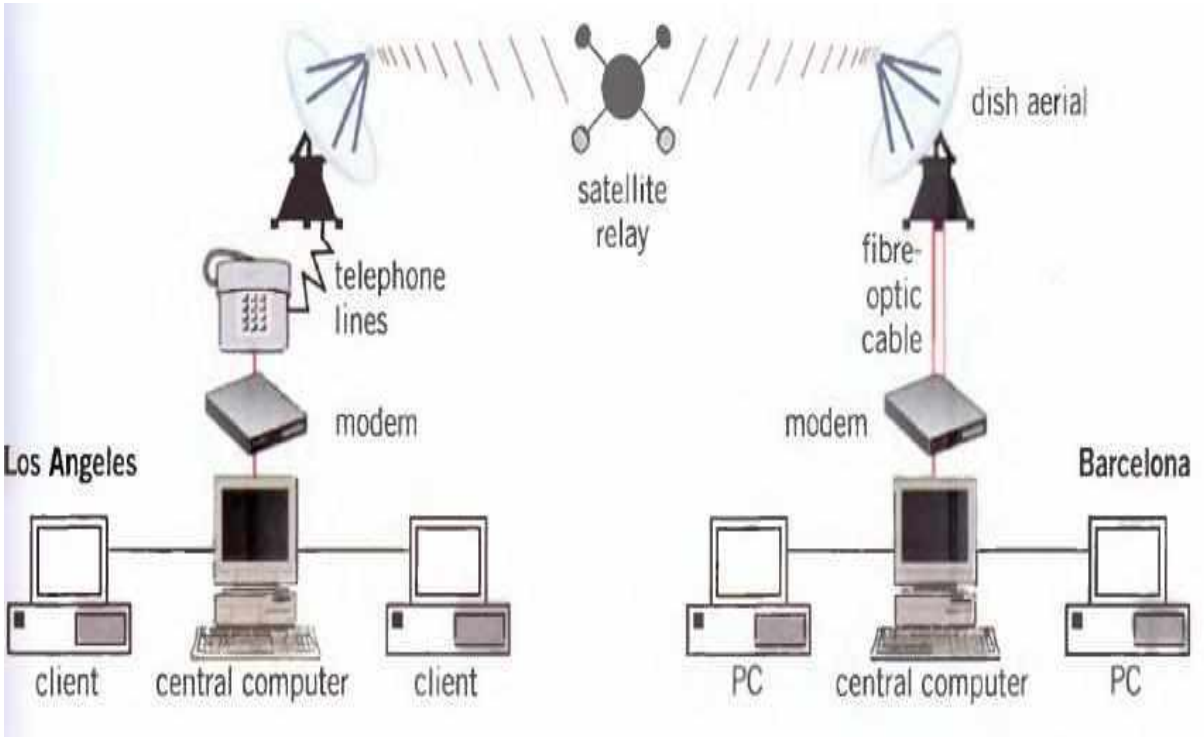
For long-distance or worldwide communications, computers and LANs are usually connected into a wide area network (WAN) to form a single, integrated network. Two good examples of wide area networks arc Internet and Arpanet. They transfer data and e-mail for university researchers and academics, commercial groups, military installations and ordinary people.

Networks can be linked together by either telephone lines or fibre-optic cables. For example, ISDN (integrated services digital network) is an international standard for transmitting digital text, sound, voice and video data over telephone lines. On the other hand, FDDI (fibre distributed data interface) is an optical-fibre network. This new standard transmits data at great speed − 100 megabits per second.

Modern telecommunications use fibre-optic cables because data can be transmitted at a very high speed through the extremely wide bandwidth of glass fibres. The fibre system operates by transmitting light pulses at high frequencies along the glass fibre. This offers considerable advantages (i) the cables require little physical space; (ii) they are safe because they don't carry electricity; (iii) they avoid electromagnetic interference.

Networks on different continents can also be connected via satellite. Computers are connected by a modem either to ordinary telephone wires or fibre-optic cables, which are linked to a dish aerial. This aerial has a large concave reflector for the reception and sending of signals. Then, when signals are received by the satellite, they are amplified and sent on to workstations in another part of the world.

X. Study and discuss the illustration below. Then prepare a description and give an oral report.



- ✓ This diagram represents a wide area network or WAN Iwo networks are linked via satellite. One network is in ……. and consists of …… . The other LAN is in …….…… and contains …… .
- ✓ In Los Angeles, the computers are connected to the telephone line by ……... However, in Barcelona ……...…….
- ✓ The satellite receives signals from …… . Then the signals are retransmitted to …….…… .
- ✓ The purpose of this integrated network may be …… It allows large companies and institutions to …….…… .

INTERESTING FACTS

1. Read the text quickly and say what this text is about.

Networks connect computers together, helping them share data or other resources. The computers can be linked to each other, and to other devices, such as printers. This can be done either by wires or fibers − forming a wired network – or wirelessly, using radio signals. Local area networks (LANs), which can be wired or wireless, cover small areas and are used within schools, offices, and other public places. LANs can be connected to each other over wide area networks (WANs). The number of networked computers and other devices is steadily growing, and so is the amount of data they share with each other. It is our insatiable hunger for bandwidth − the capacity to transfer data − that drives the quest for better technology.

Computers are networked partly so that people can use them as communication devices, sending not only text-based messages to each other, but images, audio files, and videos, too. Networking also allows computers to work together, for instance − by sharing data, software, and processing power, and by accessing other devices, such as projectors and scanners. Networked computers are less likely to lose data, since it can easily be copied between machines.

There are two main ways to connect computers together so that resources such as files and applications can be shared − peer-to-peer and client-server connections. In a peer-to-peer network, each computer shares all or part of its resources, and all the computers on the network have equal importance. Client-server networks have a central computer − the server − that manages resources such as storage space and web access on the network and sends data to other computers − clients.

Most computers come loaded with the software needed to set up a peer-to-peer network. Each computer is known as a peer. These networks are prone to being hacked because the peers only handle their own security and not that of the network. Peer-to-peer networks can also be slow because each peer handles requests from the user as well as from other peers.

In a client-server network, the server controls security and distributes software upgrades across the network, so the users of the client computers do not need to worry about these things. This makes

these networks more secure. Client-server networks are often faster, and it is usually easier to add new computers to them. However, servers can be expensive and complex to maintain.

In many schools and offices, the computers that make up a LAN are connected together by wires. Devices called hubs, switches, or routers connect computers into wired networks. Usually, such wired networks use the Ethernet systems in which packets of data, called frames, are exchanged. Each frame has a data header that identifies its starting point and destination on the network.

In a wireless network, radio waves link computers together. Devices called wireless routers send and receive the radio waves. People often use wireless LANs, or WLANs, in homes and public places, such as cafes, airport lounges, or even parks. Though WLANs are much more convenient than wired networks, they are less reliable and less secure − radio waves can suffer interference from electrical equipment and can be intercepted by anyone with the right software on their wireless laptop. One popular wireless technology is called Wi-Fi − a special wireless communication system that allows devices to connect to each other and provides Internet access.

Some wireless networking systems are designed to work over short distances. Transferjet is one such technology − it makes use of radio waves and has a range of only a couple of inches. Simply touching two Transferjet enabled devices together triggers a transfer of data between them. Each device can identify other device nearby that are enabled and users can set them up to transfer only to and from selected devices. For example, placing this digital camera on top of this media storage device transfers the contents of the camera to the device at a very high speed.

Optical fibres are used in many long distance computer networks. Light travels down the fibres over long distances – this is possible because it travels down the core of the optical fibre by constantly bouncing off the sides of the fibre, using a principle called total internal reflection. Light transmits all kinds of data as short flashes arranged in coded patterns. Undersea bundles of fibres can transfer as much as 100 gigabits of data per second. In many cases optical fibres have replaced metal wires because they are unaffected by electrical interference and the data signals can typically travel 60 miles (100 km) before fading.

Cell phones can share data via Bluetooth. This is another short range wireless networking technology designed to work between devices of different types. Bluetooth technology uses frequency hopping, a system in which the radio frequency used to send data changes rapidly. Frequency-hopping signals are less affected by radio interference and also do not interfere with signals sent by other systems.

2. Represent the text schematically and retell it using your scheme.

TEST YOURSELF

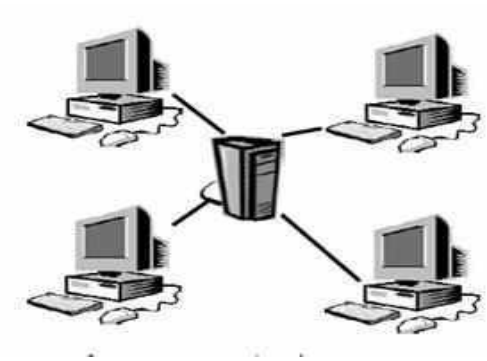
1. LAN. Fill in the gaps.

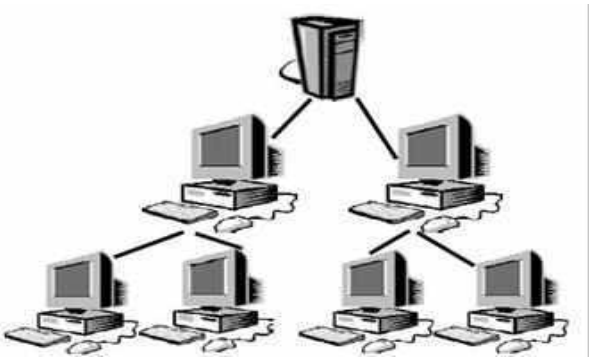
intranet	Local	log onto	network card
satellite	server	terminals	WAN

LAN is pronounced 'lan', and stands for [1]_____ Area Network. In a typical LAN, there is a central network [2]_____ which supports a number of [3]_____. Users have to [4]_____ the network server. Pages of information that can be viewed within a LAN are called an [5]_____ . A number of LANs connected to each other via [6]_____ or other form of communication are called a [7]_____. To be used as network terminals, each computer needs to have a [8]_____ installed.

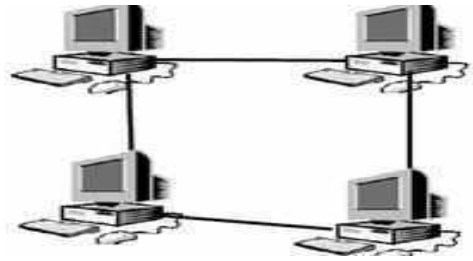
2. Determine the type of network topologies.

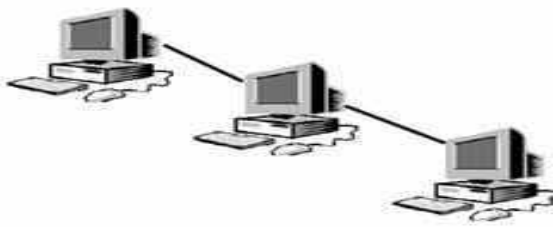
line (or bus)	ring	star	hierarchical





1) _____ topology 2) _____ topology



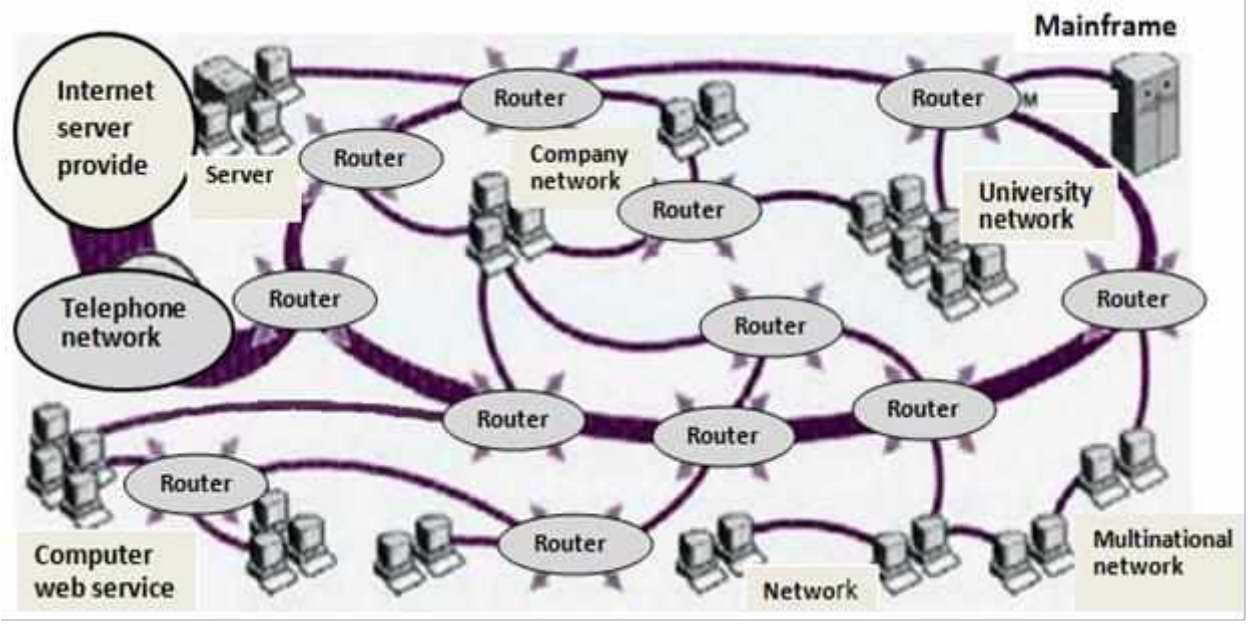


3) _____ topology 4) _____ topology

UNIT VII. INTERNET

I. Answer the questions.

1) Do you use the Internet?
2) What do people use the Internet for? Make a list and discuss it with your group.



II. Study this diagram of the Internet. With its help, match these definitions to the correct item on the diagram.

1) a device which selects the best route to send data from one network to another;
2) a specialist computer which provides a service to a network;
3) a company which provides Internet access;
4) a large multi-user computer for processing very large amounts of data;
5) computers connected together to share hardware and software.

III. Study this email. Answer these questions.

1. Who is the sender?
2. What is his email address?
3. Who is it sent for?
4. What is it about?
5. What time was the message sent?
6. In what form is the main part of the message?

From: jeastlegh@gllech ac.uk
Date: 9/10/14, 15.35
To: gpark@ed.ac.uk,pricel@aol.com, aperez@kmc.ed.uk
Subject: Party
Dear all,
too lazy to type. I've recorded this message as an attachment.
John

IV. You can exchange views on almost any subject by joining an Internet newsgroup. Which of these groups would interest the following people (1-6)?

a) alt.algebra.help
b) alt.asian movies
c) alt.comics.batman
d) alt.education.disabled
e) alt.fashion
f) alt.sport.soccer.euroteam
g) alt.tasteless-jokes
h) rec.antiques.bottles
i) alt.food.wine
j) alt.music.world

1) a football fan
2) a student with maths problems
3) a bottle collector
4) a comic book collector
5) a fan of Indian cinema
6) someone interested in clothes

V. Study this exchange between subscribers to a newsgroup and find the answers to these questions.

1. What newsgroup is this?
2. Who sent the first message?
3. When did he send it?
4. Where was flight KN162 going?
5. What did the pilot see?
6. Who sent the second message?
7. What was the object?
8. Why do they think so?
9. What did the coastguard see?
10. What was he doing?

From: rsony@hotmail .com Data: 06 March 1998 05.39
Newsgroup: alt.alion.vis.tors
The pilot of flight KN162 from Dallas to Fargo on February 17th 1998 reported a UFO heading north-east at an altitude of 10,000 metres and a speed of more than 2,000 km/h. He described the vessel as silver in colour, cigar shaped and with short wings. Did anyone else see this?
Paul

From: Ben & Thelma Subject. Re. UFO Report
This could be an experimental military plane. There are no reports of alien ships with wings.
Most UFOs are saucer-shaped like the one which crashed at Roswell.

From: Steve Subject. Ro: UFO Report
Nonsense. Winged alien craft are quite common. US coastguard Harry Pitman saw a winged craft over Cape Cod on 4th Match 1995 while searchina for a missina fishina boat.

VI. Study the Help box below and put the verb in brackets into the Past simple or the Past continuous.

1. The plane_____ (go) to Fargo.
2. The UFO_____ (fly) at 10,000 metres.
3. The pilot _____ (notice) it had short wings.
4. The pilot _____ (report) the incident.
5. He _____ (describe) the vessel as silver in colour.
6. No one else _____ (see) the UFO.

7. The UFO _____ (head) north-east.
8. The coastguard _____ (see) three winged cralt.
9. He _____ (search) for a missing fishing boat.
10. A UFO _____ (crash) at Roswell.

HELP box
Language work: Past simple vs Past continuous

We make the Past continuous with ***was/were + Ving***. We often use it to provide the context for actions in the past.

*He **was flying** from Dallas to Fargo. He **saw** a UFO.*
(action 1) (action 2)

To show that one past action happened in the middle of another past action, we can link them using ***when, as and while***.

*He **was flying** from Dallas to Forgo **when** he **saw** a UFO.*
***As** he **was flying** from Dallas to Fargo, he **saw** a UFO.*
***While** he **was flying** from Dallas to Fargo, he **saw** a UFO.*

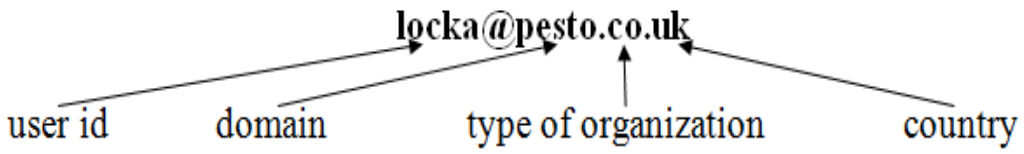
We use the **Past simple** for completed actions, especially those which take very **little time**. We use the **Past continuous** to describe actions which happen over a **period of time**.

*He **saw** a UFO. It **was heading** north-east.*
*It **was travelling** at 2,000 km/h.*

VII. Link these actions to show that one action happened during the other action. Put each verb in the correct tense, and use an appropriate time word: *while, as or when*.

1. He _____ (fly) from London to Edinburgh. He _____ (see) a UFO.
2. Her computer _____ (crash). She _____ (search) the Internet.
3. They _____ (study). A fire _____ (start) in the Computer Lab.
4. She _____ (print) out her email. The printer _____ (develop) a fault.
5. They_____ (work) on the computer. Someone _____ (switch) off the power.

VIII. Problem-solving. Study this typical email address. It belongs to Anna Lock who works for the Pesto Company in the UK.



Study these examples of types of organizations and countries.

Organizations		Countries	
com or **co**	commercial organization	**at**	Austria
edu/ac	education	**au**	Australia
gov	government	**ca**	Canada
int	international organizations	**ch**	Switzerland
mil	military	**de**	Germany
net	network provider	**es**	Spain
org	not-for-profit and other organizations	**fr**	France
		it	Italy

IX. Whose email addresses are these? Match the addresses (1-8) to the list of users (a-h).

1) redcrossyouthf@algonet.se

2) webmaster@fao.org.it

3) today@bbc.co.uk

4) jsmilh@smith.senate.gov

5) rossl@cantsoc.com.it

6) sales@demon.net

7) lunchx@swtol.usace.army.mil

8) s.larrleu@ly.ac.fr

a) a UN organization based in Italy
b) a US politician
c) a Swedish charity
d) a student at a French university
e) a news programme on a public broadcasting service in the UK
f) an Italian wine co-operative
g) a military organization based in the US
h) an ISP

X. The picture below illustrates a typical Web page. Look at the HELP box and then find the following features in the picture:

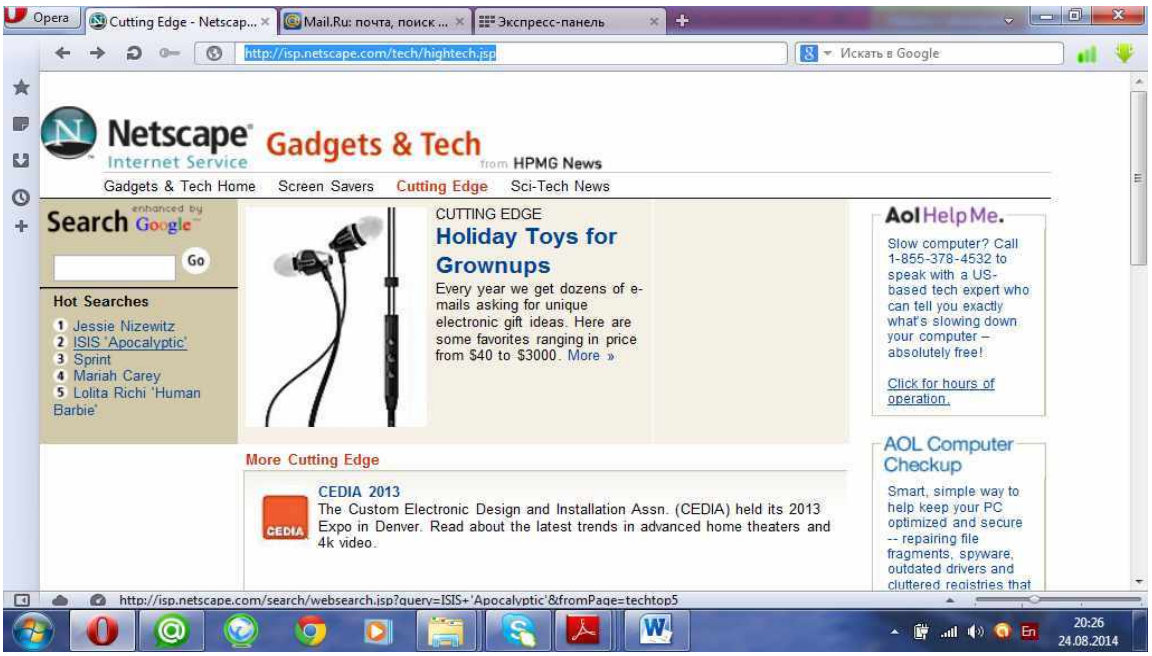
1. URL address
2. Basic functions of the toolbar
   a) go forward one page
   b) go backward one page
   c) update a page
3. Clickable image link
4. Clickable hypertext link

HELP box

- **URL:** uniform resource locator, the address of a file on the Internet. A URL looks like this:

  http://isp.netscape.com/tech/hightech.jsp

  - ✓ '**http://**' means hypertext transfer protocol and tells the program to look for a Web page
  - ✓ '**www**' means World Wide Web
  - ✓ '**netscape.com**' is the domain name and tells people that it is a commercial enterprise
- **Navigation buttons:** buttons on the toolbar which allow you to go back or forward to other Web pages. You can also return to your start-up page or stop the transfer when the circuits are busy
- **Links:** shortcuts (underlined text or images) that, when clicked, take you to other Web pages
- **Security on the Web:** just a few Web sites are secure. When the page is not encrypted, the security lock is open



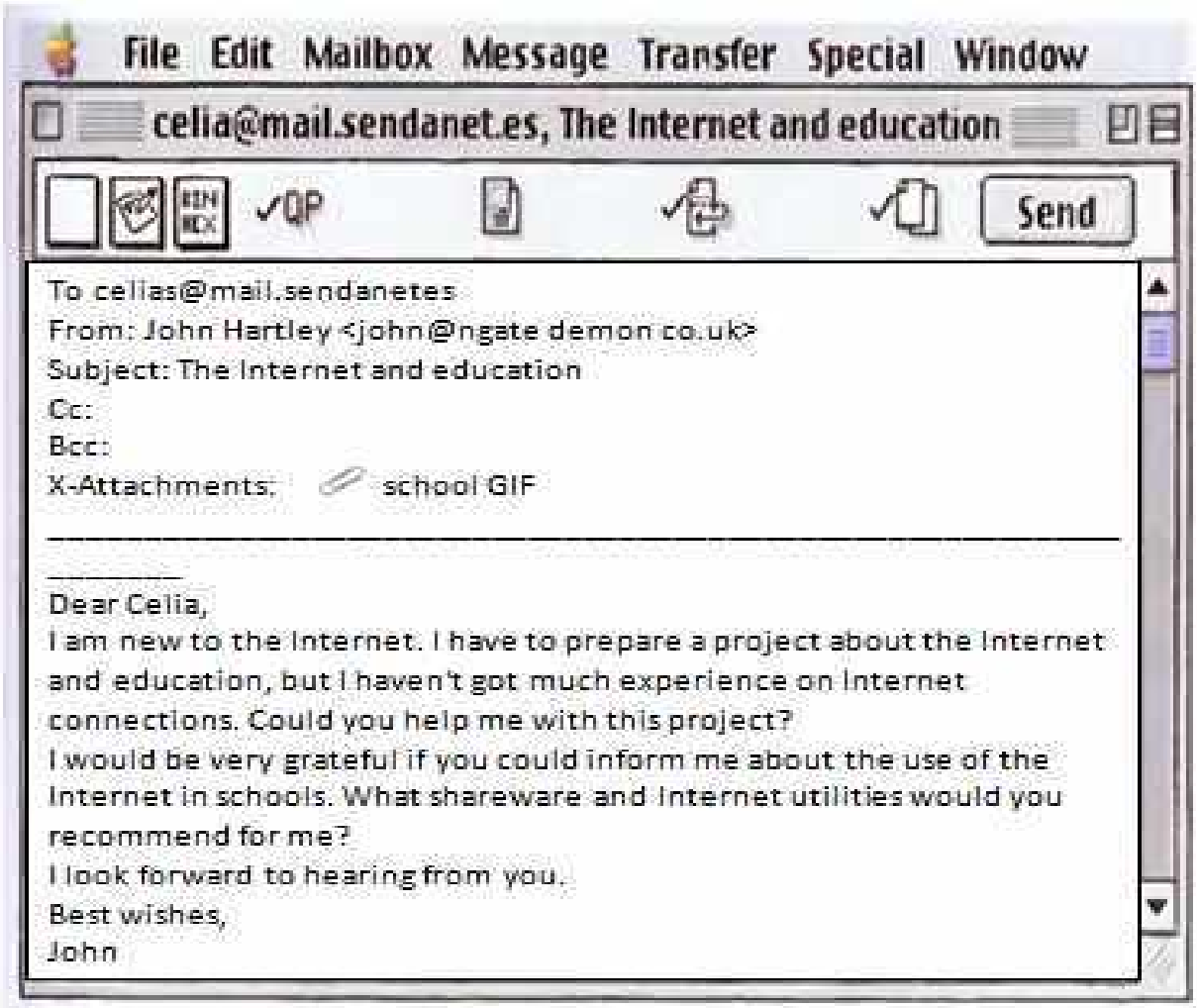
XI. How often do you surf the Web? What are your favourite Web sites? Tell your partner about them.

XII. Look at these tasks and choose the most suitable Web site from the cyberlist.

1. Read about environmental problems
2. Get news reports
3. Find out about specific hardware and software
4. Make flight reservations
5. Read about films and Hollywood awards
6. Search for Web addresses

a) http: /www yahoo com/
b) http ://www.greenpeace. org/
c) http://www. ibm.com/
d) http: www fly.virgin.com/
e) http://www telegraph .co. uk
f) http://www oscars.org/

XIII. Read the header of the e-mail below and identify the sender, the recipient and the line that describes the content. Is there an attached file? How do you say 'attachment' in your language? Write a reply to the e-mail message.



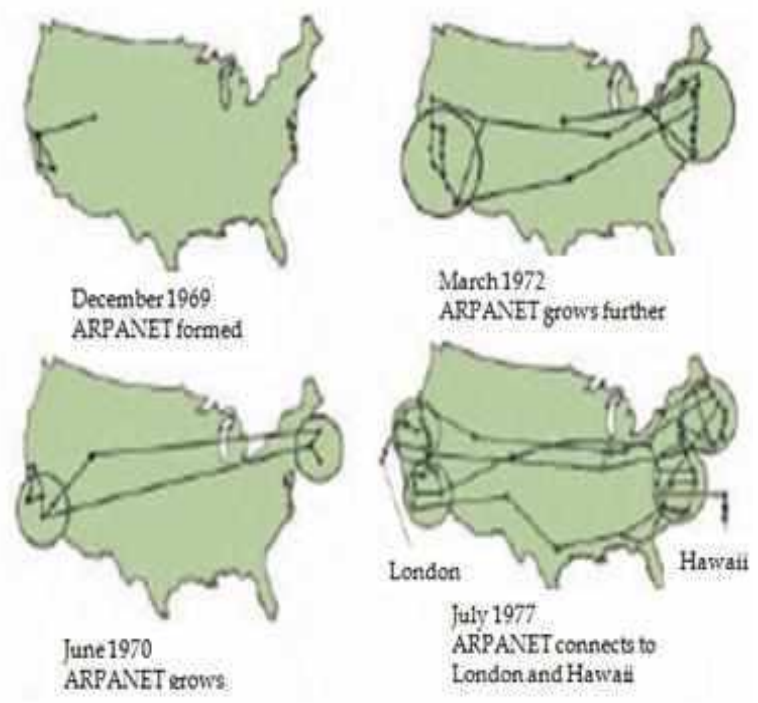
INTERESTING FACTS

1. Read the text quickly and say what this text is about.

A computer on a network relies on a direct connection to a central server or to other networked computers in order to transfer data. When a connection snaps, communication within the network is affected. In the 1960s, the US government realized that its computer network was vulnerable to attack – a few disconnections could prevent the network from functioning, which could be a serious problem during wartime. The solution to this problem was an internetwork − a network of networks that eventually became known as the Internet. If one connection was broken, data could travel via another route. This internetwork ran according to a set of rules – the same ones that ensure the smooth flow of data on the Internet today.

A computer sends data through the Internet in small bundles, or packets. Each packet has an address showing w here it is headed and hops along many Internet servers, down miles of cable, until it reaches its destination. The data packets from one dataset, such as from a photo, do not have to travel the same route, or even arrive in the correct order. Once all the packets arrive at the destination computer, it reassembles them into their original form.

The first system to work like today's Internet was the Advanced Research Project Agency Network (ARPANET). This began in 1969, when four American universities joined their networks, forming the first connection points, or nodes. The network grew steadily, and by 1981, hundreds of nodes had spread across North America and western



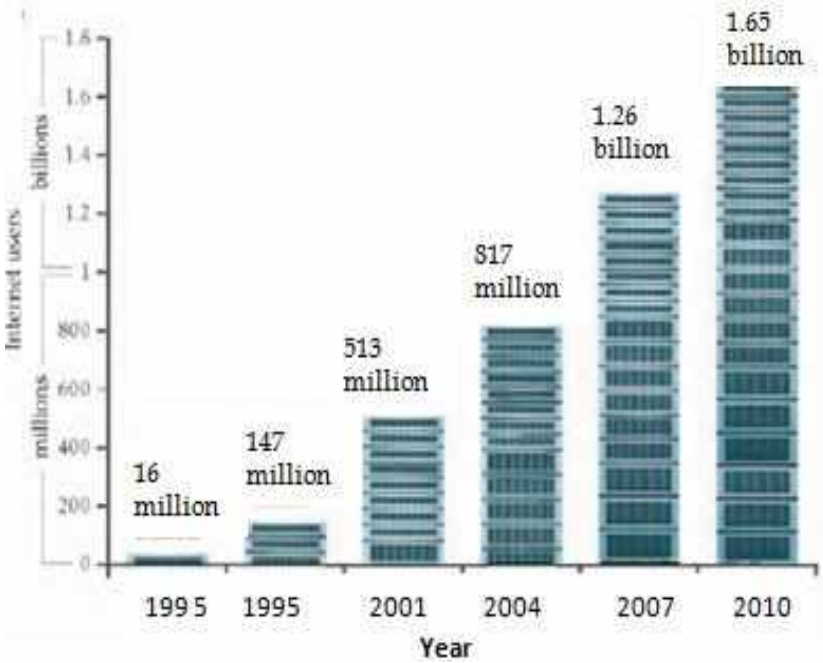
Europe, and had even reached as far as Hong Kong and

Australia. In the late 1980s, several similar networks merged with ARPANET to become a network of networks − the Internet was born.

Servers are the information warehouses of the Internet. These specialized computers store data, such as emails and web pages, which can be accessed by other computers and devices, or clients, connected to the Internet. Key servers of the Internet handle so much traffic that they require server farms − thousands of individual servers working together. Servers are usually kept in a secure and separate room. They need a cool environment, since all the computers working together can get very hot.

The Internet employs a range of connection types. Many homes are connected through copper telephone lines or television cables. Cell phones and laptops receive Internet traffic over wireless radio links. Optical fibers carry data along the Internet's 'backbones' − thick cables that connect nodes and even run over the seabed. A single cable carries hundreds of high-speed optical fibers bundled together, each see-through fiber carrying data in the form of flickering laser light.

For the first 20 years of its life, only governments, computer experts, and large organizations used the Internet. In the 1990s, the invention of the World Wide Web made the Internet useful for ordinary people. At first, connection speeds were slow. In the early and mid-1990s, only a few kilobits of data could be transferred in a billion second, making users wait minutes for a large picture to download. By 1995, the Internet had 16 million users − 0.3 percent of the world's population. As web technologies improved, more people got connected. By early 2011, about 2 billion people were using the Internet.



To many people, the Internet and the World Wide Web (WWW) are the same thing. However, the Internet is the physical network that spans the globe-including the actual cables and computers, and the set of rules that allows data to flow seamlessly. One of the first applications of the Internet was the Bulletin Board System that began in the 1970s, letting users leave messages for each other on public computers, and eventually gave rise to chatrooms. Another was the file transfer protocol (FTP) system for exchanging large files. And of course, the Internet now carries millions of emails every day. Most people connect to the Internet to access the web, an ever-growing collection of interconnected pages, carrying a mix of text, images, and videos.

The British scientist Tim Berners-Lee invented the World Wide Web (WWW) in 1989 as a way of sharing data. His system allowed users to view information on other computers, so a web-enabled computer could access far more data than could be stored in it. Berners-Lee made his invention public, and the web has since changed the world dramatically.

Web traffic surging through the Internet contains fragments of text and images. Each little piece means something to someone, but when put together, it is just a mixture of raw data. *The Listening Post* display at the Science Museum in London, England, pulls random strings of text from chatrooms – places on the web where people can have conversations with one another − and flashes them on a series of screens. The displayed fragments of text are often meaningless, but occasionally something readable appears.

As the number of web pages grew, it became harder to find information of interest. Search engines were developed to pinpoint the right web pages. Early engines used web crawlers − software that reads text on a web page and indexes it, before moving to the next one. Modern search engines, such as Google, still use web crawlers to find pages, and also complex mathematics to highlight the ones that might be most suitable in response to a particular search.

The Internet can be used to share data and resources in many ways. Scientific research programs need powerful computers to perform

complex calculations to help solve problems quickly. The Einstein@Home project uses the Internet to harness the power of computers volunteered by users. When the machines are not being used, Einstein@Home runs a program on them, using their spare capacity to process data collected by astronomers searching for pulsars − small superdense stars that spin around hundreds of times in a second. The program displays a spherical map of the sky with known pulsars shown in magenta. On August 12, 2010, the Einstein@Home system announced a previously unknown pulsar.

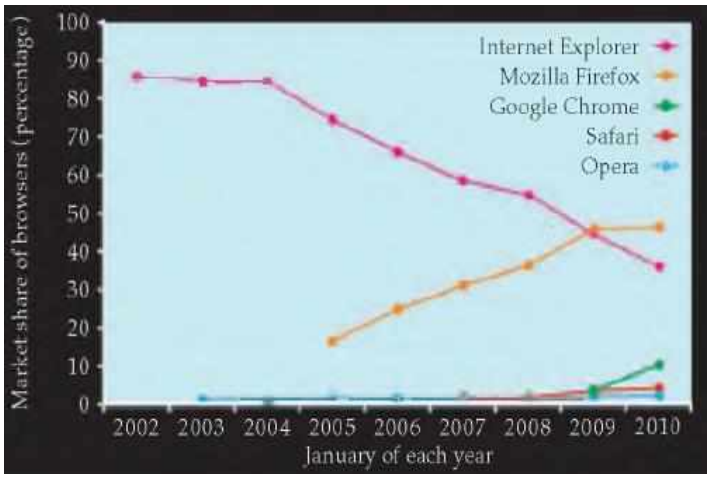
Every web page has a unique address called its URL, or uniform resource locator. Web pages are delivered from servers to browsers using a set of rules called the hypertext transfer protocol (http), so a web page's URL always begins with 'http.' The domain name comes next and often starts with 'www' to show human users it is part of the World Wide Web. Many commercial domain names end in 'com.' The domain-name part of the URL tells a computer which server it should contact to access the web page.

Tim Berners-Lee included hyperlinks in his first web pages. These connected certain words and pictures on a page with other pages. Instead of reading from the first page to the last, web users could switch between pages by clicking on the links that interested them. Web programmers encode pages using a language called HTML (hypertext mark-up language), which marks specific words and images that will form hyperlinks.

No one knows how much data is stored on the Internet. There may be around 600 billion web pages − almost 100 for every person alive today. One thing that can be measured is Internet traffic. The speed of data transfer between computers is measured not in bytes but in bits sent in a second. This diagram shows the Internet's bandwidth, or capacity to carry data, between the world's continents, measured in gigabits per second (Gbps).

Users view web pages through applications called browsers. These send out a request for a certain web page into the Internet and display the data that comes back. Tim Berners-Lee programmed the first web browser − known simply as WorldWideWeb − but more advanced browsers, such as Mosaic, Cello, and WebRunner, followed. These

browsers are now defunct. Competition between modem browsers to attract the most number of users is intense.



The web is now part of our daily life. The Internet connects telephones, game consoles, and even refrigerators. Scientists are developing new ways of connecting to the Internet. For instance, the Sixth Sense system allows people to access the Internet by projecting a keyboard or a screen anywhere. A user can even dial a phone number via a keypad that is projected on the user's hand.

2. **Can this text be represented schematically? Represent the text so it would be easier for you to retell it.**

TEST YOURSELF

1. **The Internet. Choose the best words.**

1) ADSL[1] is more commonly known as _____.

a) longband **b)** broadband **c)** wideband

2) Broadband internet connection is much faster than _____.

a) dial-in **b)** dial-through **c)** dial-up

3) Before you can connect to the Internet for the first time, you have to _____ an account with an ISP.

a) set **b)** set up **c)** set in

4) Each time you want to connect to your ISP's system, you have to enter a log-in name and a _____.

a) security word **b)** safe word **c)** password

---

[1] **ADSL** stands for asymmetric digital subscriber line, but the full term is almost never used.

5) You can set your computer to _____ your log-in details, so you don't have to type them in each time.

a) store **b)** remember **c)** recall

6) With a broadband connection, you usually have to pay a _____.

a) fixed monthly price **b)** fixed monthly fee **c)** fixed monthly cost

7) With dial-up, you can usually choose a _____ tariff.

a) pay-as-you-go **b)** pay-what-you-want **c)** pay-if-you-like

8) Some broadband contracts limit the amount of _____ you can have each month.

a) pages **b)** traffic **c)** use

9) Looking at web pages can be called 'navigating the Web' but is more commonly called _____.

a) 'surfing the net' **b)** 'skiing the net' **c)** 'swimming the net'

10) You can often find the answer to a question by _____ on the Internet.

a) looking at it **b)** looking for it **c)** looking it up

11) When your computer is not connected to the Internet, it is _____.

a) out of line **b)** offline **c)** off the line

12) Internet banking is also called _____.

a) online banking **b)** on the line banking **c)** inline banking

13) An unexpected disconnection from the Internet is called a _____.

a) lost connection **b)** missed connection **c)** dropped connection

14) A file which is copied from the Internet onto your computer is called _____ .

a) an upload **b)** a download **c)** a load

15) Downloading files from the Internet can _____ your computer with a virus.

a) infect **b)** contaminate **c)** dirty

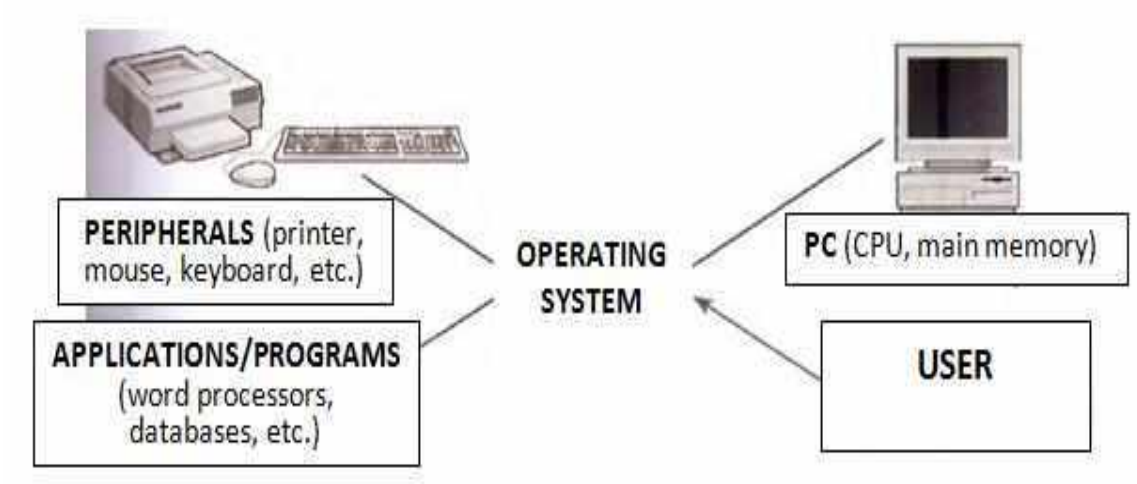
2. Match the browser toolbar button with the function.

1. Back
2. Forward
3. Stop
4. Refresh[1]/Reload[2]
5. Home
6. Search
7. Favourites[1]/Bookmarks[2]
8. Media
9. History
10. Mail
11. Print

a. Shows a list of the websites you have visited recently.
b. Opens the media bar, accessing internet radio, music, video etc.
c. Displays the page you were on before.
d. Shows the latest version of the page.
e. Opens the search panel.
f. Displays the page you were on before using the Back button.
g. Displays the page you have set as your home page.
h. Prints the current page.
i. Stops a page from downloading.
j. Displays the web addresses you have chosen as your favourites.
k. Shows email options.

UNIT VIII. SOFTWARE

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



[1] Microsoft Internet Explorer
[2] Netscape Navigator/Mozilla Firefox

II. Read the text below and complete it with the phrases in the box.

applications software	operating system	software system	software

Information provided by programs and data is known as (1) ..... Programs are sets of instructions that make the computer execute operations and tasks. There are two main types of software:

• The (2) ..... refers to all the programs which control the basic functions of a computer. They include operating systems, system utilities (e.g. an anti-virus program, a back-up utility) and language translators (e.g. a compiler − the software that translates instructions into machine code).

• The (3) ..... refers to all those applications − such as word processors and spreadsheets − which are used for specific purposes. Applications are usually stored on disks loaded into the RAM memory when activated by the user.

The (4) ..... is the most important type of system software. It is usually supplied by the manufacturers and comprises a set of programs and files that control the hardware and software resources of a computer system. It controls all the elements that the user sees, and it communicates directly with the computer. In most configurations, the OS is automatically loaded into the RAM section when the computer is started up.

III. Read the text and find:

1) the text-based operating system delivered with most PCs
2) the mail package included with Windows ’98
3) the function of the Finder in Macintosh computers
4) the meaning o f ‘multitasking’
5) the operating system which is written in C language and has been adopted by many corporate installations as standard
6) the OS that is freely redistributable under the GNU general public license
7) the OS used by Digital computers
8) the OS created to run Java applications.

Operating systems	
MS-DOS	This is the disk operating system developed in 1981 by Microsoft Corp. It is the standard OS for all IBM PC compatibles or clones. In this text-based operating system, you communicate with the computer by typing commands that exist within its library. For example, some basic DOS commands include DIR (shows a list of all the files in a directory), COPY (makes a duplicate of a file), DEL (deletes files).
Windows ’95/’98 **Windows 2000**	**Windows ’95** is a bootable operating system in its own right. It has a graphical interface with many Macintosh-like features. It supports multimedia applications and comes with Internet software. The program manager is called Windows Explorer. Buttons and scroll-bars have an attractive, three-dimensional look. With **Windows ’98**, Internet access becomes part of the user interface. Its active desktop lets you find information easily with the same view of content on your PC network or the Web. The system includes Outlook Express for e-mail, NetMeetin conferencing software, a chat program and a Web-page editor. It offers support for new technologies like DVD and it also enables you to watch TV on your PC. This OS is an update to all Windows versions, including Windows NT.
Macintosh *(Apple)*	Most of the Mac OS code is in the ROM chips. These contain hundied of routines (sequences of instructions) which perform such tasks as starting up the computer transferring data from disks to peripherals and controlling the RAM space. Large parts of the Mac OS are also inside the System file and the Finder, kept in the System folder. The content of the System file is loaded automatically at start-up, and contains information which modifies the routines of the OS in the ROM chips. The Finder displays the Macintosh’s desktop and enables the user to work with disks, programs and files. It allows multitasking. It has an Internet set-up assistant, an e-mail program and a Web browser.
OS/2 Warp	This is the PC world’s most technically sophisticated operating system. It provides true multitasking, allowing a program to be divided into ‘threads’ , many of which can be run at the same time. Thus not only can numerous programs run simultaneously, but one program can perform numerous tasks at the same time. The IBM OS/2 Warp includes easy access to networks via modem, support for Java applications and voice recognition technology.

UNIX	This operating system, designed by Bell laboratories in the USA for minicomputers, has been widely adopted by many corporate installations. From the very first, it was designed to be a multitasking system. It is written in C language. It has become an operating environment for software development, available for any type of machine, from IBM PS/2s to Macs to Cray supercomputers. UNIX is the most commonly used system for advanced CAD programs.
Linux (Linus Torvalds)	Protected under the GNU general public license, Linux is the open source, cooperatively-developed POSIX-based, multitasking operating system. Linux is used as a high value, fully-functional UNIX® workstation for applications ranging from Internet Servers to reliable work group computing. Linux is available for Intel®. Alpha™ and Sun SPARC® platforms.
Open VMS *digital*	The Open VMS operating system is Digital's popular general purpose OS for all VAX computers. It provides data and access security. Open VMS supports all types of Digital and multivendor networks.
JavaOS *(JavaSoft)*	This is designed to execute Java programs on Web-based PCs. It is written in Java, a programming language that allows web pages to display animation, play music, etc. The central component of JavaOS is known as the Java Virtual Machine.

IV. Read the definitions then study the Helpbox and add to the statements (1-10) using the extra information (a-j).

- **Window** is a viewing area less than or equal to the screen size. By using different windows you can work on several documents or applications simultaneously.
- **Pull-down menu** is a menu that the user 'pulls down' from a name in the menu bar at the top of the screen by selecting the name with the mouse.
- The **pointer** is an arrow, controlled by the mouse, that allows you to move around the screen or to scroll up and down through the document or to give commands.
- **Icons** are graphic images (or intuitive symbols) used to represent an object or task.
- **Folders** are containers for documents and applications, similar to the subdirectories of a PC platform.

HELP box

Language work: Making definitions

Study these descriptions of an icon.

An icon is a small picture on a computer screen.
An icon represents items such as floppy disks.

We can link these sentences to make a definition of an icon.

An icon is a small picture on a computer screen which represents items such its floppy disks.

Study these other examples of definitions.

A mainframe is a very large computer which is used by universities, businesses, and government departments,
A palmtop is a very small computer which can be held in one hand.
A byte is a small unit of memory which can hold one character of data.

Example *A barcode is a pattern of printed black lines which supermarkets use for pricing.*

1. ~~A barcode is a pattern of a printed black lines~~
2. A floppy is a disk
3. A motherboard is a printed circuit board
4. A password is a secret set of characters
5. A monitor is an output device
6. A disk drive is a unit
7. An expansion card is an electronic board
8. A CD-ROM drive is a common storage device
9. A notebook is a portable computer
10. The system unit is the main part of the computer

a) it contains the main electronic components.
b) it adds features to a computer.
c) it is about the size of a piece of paper.
d) ~~supermarkets use them for pricing~~.
e) it reads and writes to disks.
f) it can hold 1 44Mb of data.
g) it allows access to a computer system.
h) it controls all the other boards in a computer.
i) it displays data on a screen.
j) it reads data from a CD-ROM disk.

V. Read the article below and decide which of the expressions in the box best describe a graphical user interface (GUI).

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

The term **user interface** refers to the standard procedures the user follows to interact with a particular computer. A few years ago, the way in which users had access to a computer system was quite complex. They had to memorize and type a lot of commands just to see the content of a disk, to copy files or to respond to a single prompt, in fact, only experts used computers, so there was no need for a user-friendly interface. Now, however, computers are used by all kinds of people and as a result there is a growing emphasis on the user interface.

A good user interface is important because when you buy a program you want to use it easily. Moreover, a graphical user interface saves a lot of time: you don't need to memorize commands in order to execute an application; you only have to point and click so that its content appears on the screen.

Macintosh computers − with a user interface based on graphics and intuitive tools – were designed with a single clear aim: to facilitate interaction with the computer. Their interface is called WIMP: Window, Icon, Mouse and Pointer and software products for the Macintosh have been designed to take full advantage of its features using this interface. In addition the ROM chips of a Macintosh contain libraries that provide program developers with routines for generating windows, dialog boxes icons and pop-up menus. This ensures the creation of applications with a high level of consistency.

Today; the most innovative GUIs are the Macintosh, Microsoft Windows and IBM OS/2 Warp. These three platforms include similar features: a desktop with icons, windows and folders, a printer selector, a file finder, a control panel and various desk accessories. Double-clicking a folder opens a window which contains programs, documents or further nested folders. At any time within a folder, you can launch the desired program or document by double-clicking the icon, or you can drag it to another location.

The three platforms differ in other areas such as device installation, network connectivity or compatibility with application programs.

These interfaces have been .so successful because they are extremely easy to use. It is well known that computers running under an attractive interface stimulate users to be more creative and produce high quality results, which has a major impact on the general public.

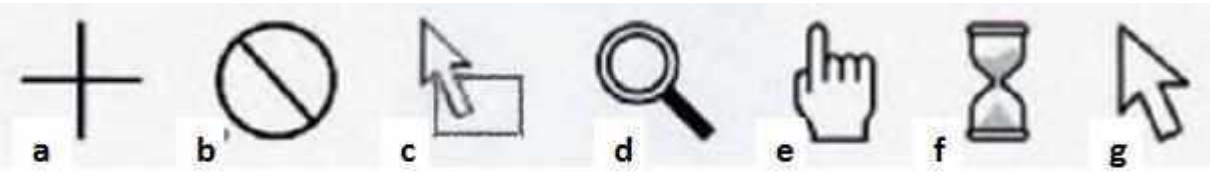
VI. Look at the text again, find the following words in it and guess their meanings; you may explain them in your own language.

1) user interface
2) commands
3) tools
4) program developer
5) platform
6) desktop
7) file finder
8) nested folders

VII. Find answers to these questions.

1. What does the abbreviation 'GUI' stand for?
2. What is the contribution of Macintosh computers to the development of graphic environments?
3. What does the acronym 'WIMP' mean?
4. What computing environments based on graphics are mentioned in the text?
5. How do you run a program on a computer with a graphical interface?
6. Can you give two reasons for the importance of user-friendly interfaces?

VIII. Work in pairs. Study these forms the cursor can take on your computer. Try to match each icon to one item from tie list below.



1) hourglass
2) arrow pointer
3) pointing finger
4) not available
5) crosshair
6) magnifying glass
7) drag and drop arrow

IX. Write a description of the Exit Windows dialog box. Your description should answer these questions.

1. What does a computer screen show?
2. What do you use this dialog box for?
3. What features does the dialog box contain?
4. What happens if you click on each button?

X. General purpose packages such as word processors and spreadsheets have a number of features in common. Match these commands (1-7) to their meanings (a-g).

1. Open	**a)** alter data in the document
2. New	**b)** begin a new file containing no data
3. Save	**c)** alter the appearance of the text (e.g. change the font)
4. Print	**d)** start the application ready for use
5. Insert	**e)** enter Information into the file
6. Edit	**f)** save the document to disk
7. Format	**g)** send the data to the printer to be printed out

XI. Read the text on and underline any word-processing capabilities.

Word-processing facilities

Writing letters, memos or reports are the ways most people use computers. They manipulate words ant text on a screen − primarily to print at some later time and store for safe keeping. Computers alleviate much of the tedium associated with typing, proofing and manipulating words. Because computers can store and recall information so readily, documents need not be retyped from scratch just to make corrections or changes. The real strength of word processing lies in this ability to store, retrieve and change information. Typing is still necessary (at least, for now) to put the information into the computer initially, but once in, the need to retype only applies to new information.

Word processing is more than just typing, however. Features such as ***Search*** and ***Replace*** allow users to find a particular phrase of word no matter where it is in a body of text. This becomes more useful as the amount of text grows.

Word processors usually include different ways to view the text. Some include a view that displays the text with editor's marks that show hidden characters or commands (spaces, returns, paragraph endings, applied styles, etc). Many word processors include the ability to show exactly how the text will appear on paper when printed. This is called WYSIWYG (What You See Is What You Get, pronounced 'wizzy-wig'). WYSIWYG shows **bold**, *italic,* <u>underline</u> and other type style characteristics on the screen so that the user can clearly see what he or she is typing. Another feature is the correct display of different typefaces and **format** characteristics (margins, indents, super- and sub-scripted characters, etc). This allows the user to plan the document more accurately and reduces the frustration of printing something that doesn't look right.

Many word processors now have so many features that they approach the capabilities of **layout applications** for desktop publishing. They can import graphics, format multiple columns of text, run text around graphics, etc.

Two important features offered by word processors are automatic **hyphenation** and **mail merging**. Automatic **hyphenation** is the splitting of a word between lines so that the text will fit better on the page. The word processor constantly monitors words typed and when it reaches the end of a line, if a word is too long to fit, it checks that word in a hyphenation dictionary. This dictionary contains a list of words with the preferred places to split it. If one of these cases fits part of the word at the end of the line, the word processor splits the word, adds a hyphen at the end and places the rest on the next line. This happens extremely fast and gives text a more polished and professional look.

Mail merge applications are largely responsible for the explosion of 'personalized' mail. Form letters with designated spaces for names and addresses are stored as documents with links to lists of names and addresses of potential buyers or clients. By designating what information

goes into which blank space, a computer can process a huge amount of correspondence substituting the 'personal' information into a form letter The final document appears to be typed specifically to the person addressed.
Many word processors can also generate tables of numbers or figures, sophisticated indexes and comprehensive tables of contents.

XII. Make your own list of word-processing capabilities and compare it with your partner.

XIII. Look at the words in the box and complete the following sentences with them. Use the information in the text or dictionary if necessary.

type style	WYSIWYG	formal	indent
font menu	justification	mail merging	

1. _____ stands for 'What you see is what you get'. It means that your printout will precisely match what you see on the screen.
2. _____ refers to the process by which the space between the words in a line is divided evenly to make the text flush with both left and right margins.
3. You can change font by selecting the font name and point size from the _____ .
4. _____ refers to a distinguishing visual characteristic of a typeface, 'italic:', for example is a _____ that may be used with a number of typefaces.
5. The _____ menu of a word processor allows you to set margins, page numbers, spaces between columns and paragraph justifications.
6. _____ enables you to combine two files, one containing names and addresses and the other containing a standard letter.
7. An _____ is the distance between the beginning of a line and the left margin, or the end of a line and the right margin. Indented text is usually narrower than text without _____ .

XIV. Match the words and expressions on the left with their explanations on the right.

1) retrieve 2) typefaces 3) header 4) footer 5) subscripted character **6)** hyphenation	**a)** text printed in the top margin **b)** recover information from a computer system **c)** letter, number or symbol that appears below the baseline of the row of type; commonly used in Maths formulas **d)** text printed in the bottom margin **e)** division of words into syllables by a short dash or hyphen **f)** styles for a set of characters; sometimes called 'fonts'

XV. Write a short report on the following topic "The advantages of a printed text over a typed one".

INTERESTING FACTS

1. Read the text quickly and say what this text is about.

The ''welcome' screen that pops up when someone switches on a computer would not appear without software. Software refers to the sets of coded instructions – programs − and the data that they need. This is different from hardware, which is a computer's circuitry, casing and the rest of its physical parts. Most people use software through a graphical user interface (GUI) with drop-down menus, windows, and a moveable pointer. The GUI acts as a visual arena where the user interacts with the computer.

The software that controls the computer's basic functions is called its operating system (OS). It is the master software, controlling how all other running software uses the processing power of the CPU and the computer's memory. It is kept in the RAM and run by the CPU whenever the computer is on. The OS also controls input and output. It interprets the meaning of the keys pressed on the keyboard and the clicks on the mouse, translating them into signals that programs can use.

Since the early 1980s, operating systems have communicated with their human users through a graphical user interface (GUI). Microsoft Windows is the most widely used OS series today − the GUI here belongs to Windows 7.

Computer users store data in blocks called files. Files are often grouped together into folders, or directories, to make finding them easier. Different types of files can be distinguished by the last few letters of their names − their 'file extension'. Extensions are used by the OS to select relevant applications to open different files. A file that ends with 'wav' or 'mp3', for instance, is a type of audio file, while 'bmp', 'jpg', or 'gif' are extensions of different image files.

When users need to access information on the Internet, they use programs called web browsers that allow them to search or surf the web. When accessing a web page, the browser sends a request for the page and then displays the data it receives. This is the logo of Mozilla Firefox, a web browser second only to Internet Explorer in popularity. Firefox is an example of freeware − a type of software that can be used without paying a fee. Firefox is not the original name of the browser – it was previously called Phoenix and then Firebird, but both names had already been used for other software.

Many types of software have developed mainly for use in business. People use spreadsheet programs to store and analyze data, such as sales figures. Once a user enters figures, the program calculates statistics such as totals and averages, and displays the data in a whole range of charts. Students commonly use programs such as word processors and presentation software for their schoolwork.

Computers, especially those connected to the Internet, are vulnerable to a wide range of security threats, including viruses and worms. Special software is essential to protect computers, the data they contain, and their users. Firewalls and antivirus programs help users defend themselves against computer-borne threats.

2. Write summery of the text.

TEST YOURSELF

1. Choose the correct word to fill the spaces.

1) Turn on your computer. It will usually take a few minutes to _____.
a) boot itself **b)** boot up **c)** get booted

2) Windows XP, Macintosh OSX and Linux are _____.
a) operating systems **b)** operating tools **c)** operators

3) On my computer, I have a picture of my cat as the _____.
a) desktop background **b)** desktop picture **c)** desktop scene

4) Microsoft Word, Adobe Acrobat and CorelDraw are programs or _____.
a) applicators **b)** appliers **c)** applications

5) To open Microsoft Word, click on the _____.
a) picture **b)** symbol **c)** icon

6) I keep all my digital photos in a _____ called 'Photos'.
a) folde) **b)** packet **c)** box

7) Is it possible to open Microsoft Excel _____ in Word?
a) texts **b)** files **c)** pages

8) In Microsoft Word, to start typing a new letter, open a new _____.
a) document **b)** page **c)** paper

9) When you _____ a document, it's sent to the recycle bin.
a) destroy **b)** erase **c)** delete

10) Deleted documents stay in the recycle bin until you _____ it.
a) wash **b)** empty **c)** clean

11) In Windows, the icon is just a _____ to the application. If you delete the icon, the application will still be on your computer.
a) connector **b)** shortcut **c)** link

12) If the computer crashes, you can try pressing the _____ button.
a) restart **b)** recommence **c)** replay

13) When I've finished using my computer, I always _____.
a) close it down **b)** shut it down **c)** shut it off

14) If I leave my computer on without using it, after a while it goes into _____ mode.
a) stand down **b)** waiting **c)** standby

2. Choose the best words.

1) The text about typewriters is divided into three _____.
a) sections **b)** paragraphs **c)** chunks

2) Times, Arial and Courier are types of _____.
a) lettering **b)** character **c)** font

3) The text about typewriters is _____.
a) single spaced **b)** double spaced **c)** one-and-half spaced

4) "Inventions that Changed the World" is the _____.
a) header **b)** footer **c)** footnote

5) Do you think the margins are too _____ or _____?
a) big / small **b)** wide / narrow **c)** long / short

6) Do you like the page _____?
a) layout **b)** organisation **c)** pattern

UNIT IX. PROGRAMMING

I. What is programming? Give your own definition, and then compare with the definition in the dictionary. Complete the following definitions with the words and phrases below.

a) the various parts of the program
b) may occur in programs
c) language
d) binary numbers
e) a given problem

1) algorithm
The step-by-step specification of how to reach the solution to _____ .
2) flowchart
A diagram representing the logical sequence between _____ .
3) coding
The translation of the logical steps into a programming _____ .
4) machine code
The basic instructions understood by computers. The processor operates on codes which consist of _____ .
5) debugging

The techniques of detecting, diagnosing and correcting errors (or 'bugs') which _____ .

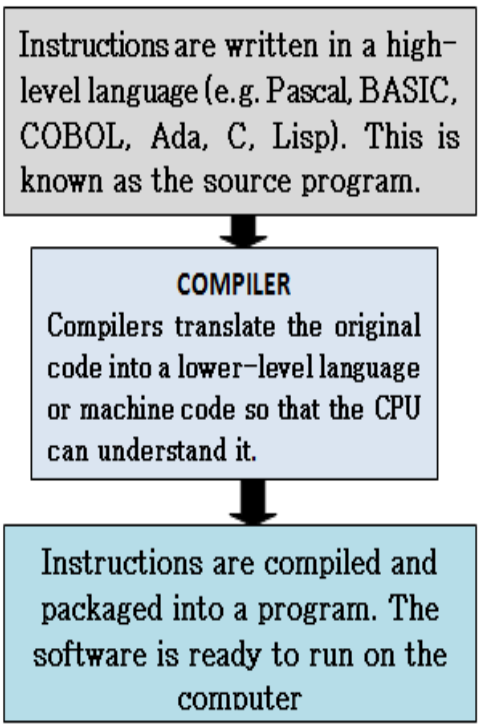
II. Read the text and find answers to these questions.

1. Do computers understand human languages?
2. What are the differences between low-level and high-level languages?
3. What is an assembler?
4. What is the function of compilers?
5. What do you understand by the terms source program and object program?
6. In the future, could computers be programmed in Spanish, French or Japanese?

Programming languages

Unfortunately, computers cannot understand ordinary spoken English or any other natural language. The only language they can understand directly is called **machine code**. This consists of the 1s and 0s (binary codes) that are processed by the CPI.

However, machine code as a means of communication is very difficult to write. For this reason, we use symbolic languages that are easier to understand. Then, by using a special program, these languages can be translated into machine code. For example, the so-called **assembly languages** use abbreviations such as ADD, SUB MPY to represent instructions. These mnemonic codes are like labels easily associated with the items to which they refer.



Basic languages, where the program is similar to the machine code version, are known as **low-level languages**. In these languages, each instruction is equivalent to a single machine code instruction, and the program is converted into machine code by a special program called an **assembler**. These languages are still 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 machines, higher-level languages were designed such as BASIC, COBOL, FORTRAN or Pascal. These are all problem-oriented rather than machine-oriented. Programs written in one of these languages (known as **source programs)** are converted into a lower-level language by means of a **compiler** (generating the **object program**). On compilation, each statement in a **high-level language** is generally translated into many machine code instructions.

People communicate instructions to the computer in symbolic languages and the easier this communication can be made the wider the application of computers will be. Scientists are already working on Artificial Intelligence and the next generation of computers may be able to understand human languages.

III. Look at the groups of words and decide what part of speech each word is. Then complete the sentences with the correct word.

compile ***compiler*** ***compilation***

1. Programs written in a high-level language require _____ , or translation into machine code.
2. A _____ generates several low-level instructions for each source language statement.
3. Programmers usually_____ their programs to create an object program and diagnose possible errors

program ***programmers*** ***programming*** ***programmable***

4. Most computer _____ make a plan of the program before they write it. This plan is called a flowchart.
5. A computer _____ is a set of instructions that tells the computer what to do.
6. Converting an algorithm into a sequence of instructions in a programming language is called _____ .

bug ***debug*** ***debugger*** ***debugging***

7. New programs need _____ to make them work properly.
8. Any error or malfunction of a computer program is known as a _____ .

9. The best compilers usually include an integrated _____ which detects syntax errors.

IV. Study this table about Java and answer the questions below.

Language	*Date*	*Characteristics*	*Users*
Java Invented by Sun Microsystems	1995	Cross-platform language that can run on any machine. Small Java programs, called 'applets', let you watch animated characters, play music and interact with information.	Designed to create Internet applications. When you see a Web page containing Java links, a Java program is executed automatically.

1. Who invented Java?
2. When was Java developed?
3. Can Java run on any computer (Mac. PC or UNIX workstation)?
4. What are Java's small programs called? What can you do with them?

HELP box
Language work: The passive

The passive is formed with the verb ***to be*** in the correct tense and the ***past participle*** of the main verb.

*Instructions **are processed** by the CPU.*
*The computer **was invented** by Charles Babbage.*

V. Look at the HELP box and then complete these sentences with a suitable verb form.

1. COBOL _____ (use) for business applications.
2. Original programs _____(write) in a high-level language.
3. All computer languages must _____(translate) into binary commands.
4. The ADA language _____ (develop) in 1979.
5. In the 1970s, new languages such as LISP and PROLOG _____ (design) for research into Artificial Intelligence.

6. A new version of Turbo Pascal _____ just _____(release).
7. In the next century; computers _____ (program) in natural languages like English or French.

VI. Read the passage and complete it with verbs in brackets in the correct form. Then represent the text in a graphic form.

BASIC is a general purpose high-level programming language, originally designed (1) _____ (develop) programs in conversational mode. The name BASIC (2) _____ (stand) for Beginner's All-purpose Symbolic Instruction Code. This language is (3) _____(find) on most microcomputers because it (4) _____ (be) user-friendly and easy to learn.

BASIC (5) _____ (consist) of two main parts: **the source language statements** − the instructions which form the program − and the system commands which (6) _____ (allow) us to control and edit a program.

BASIC enables the user (7) _____ (interact) with the program while it is being (8) _____ (execute) which means that data can be (9) _____ (input) while the program is running. Each instruction is (10) _____ (give) a line number which defines the logical sequence of statements within the program. Some well-known system commands in BASIC are RUN, which executes a program (11) _____(hold) in a BASIC file; LIST, which prints a listing of a program on the screen; and DELETE, which (12) _____ (remove) a program from a file.

A large number of PC manufacturers adopted BASIC. At present, however, there (13) _____ (be) so many versions and extensions that programs written for one type of PC are not directly portable to another.

VII. Work in pairs. The stages in programming (1-7) are listed below. Fill in the gaps with the missing stages (a-d). Compare with other students.

1. Analysing and defining the problem to be solved
2. _____
3. Coding
4. _____
5. _____
6. _____
7. Obtaining feedback from users

a) Training the users
b) Testing
c) Designing the program
d) Documenting

VIII. Read one of the texts below and complete the table. Then complete two similar tables.

Text A

System errors affect the computer or its peripherals. For example, you might have written a program which needs access to a printer. If there is no printer present when you run the program the computer will produce a system error message. Sometimes a system error makes the computer stop working altogether and you will have to restart the computer. A sensible way of avoiding system errors is to write code to check that peripherals are present before any data is sent to it. Then the computer would warn you by a simple message on the screen, like 'printer is not ready or available'.

Text B

Syntax errors are mistakes in the programming language (like typing PRNIT instead of PRINT). Syntax errors cause the program to fail. Some translator programs won't accept any line that has syntax errors. Some only report a syntax error when they run the program. Some languages also contain special commands such as debug, which will report structural errors in a program. The programming manual for the particular language you're using will give details of what each error message means.

Text C

Logic errors are much more difficult to detect than syntax errors. This is because a program containing logic errors will run, but it won't work properly, for example, you might write a program to clear the screen and then print 'hello'. Here is a code for this:

```
10// Message          30 CLS
20 PRINT 'Hello'      40 END.
```

The code has a logic error in it, but the syntax is right so it will run. You can get rid of logic errors from simple programs by 'hand testing' them or doing a 'dry run' which means working through each line of the program on paper to make sure it does what you want it to do. You should do this long before you type in the code.

HELP box
Language work: Problem and Solution

Study these ways of linking a ***problem*** and a ***solution***.

Problem: *get rid of logic errors*
Solution: *hand-test the program*
A) *You can get rid of logic errors by hand-testing the program.*
B) *To get rid of logic errors, hand test the program.*

IX. Match these problems and solutions using the HELP box

Problems	Solutions
1) connect a computer to a telephone line	**a)** write code to check a peripheral
2) identify items for pricing	**b)** is present before any data is sent
3) add extra facilities to a computer	**c)** use the debug command
4) get more file storage space	**d)** add more memory
5) find syntax errors	**e)** format the disk
6) avoid marking the surface of a CD-ROM	**f)** use a removable disk
7) improve the speed of your computer	**g)** install an expansion card
8) avoid system errors	**h)** install a modem
9) prepare a new disk for use	**i)** fit a bigger hard disk
10) transfer information between computers	**j)** use barcode labels
	k) hold it by the edges

X. Problem solving. Suggest solutions to these problems. Then link the problem and your solution.

1. Make sure there are no viruses on a floppy disk.
2. Prevent unauthorized access to a network.
3. Avoid the risk of losing data.
4. Avoid eye-strain when using computers.
5. Avoid back problems when using computers.

XI. Read the description and draw a flowchart.

A 'Start' symbol indicates where the program begins. When the program has started, the initial cost of the item is input. A decision is then taken on which rate of tax to use. This depends on the initial cost. If the cost is greater than 100, the program follows the 'Yes' route and sets the tax rate at 15%. Otherwise the program follows the 'No' route and sets the tax rate at 10%.The two different paths then come back together at the 'connector' symbol and follow the same route. The actual sales tax is now calculated by multiplying the cost by the lax rate. Finally, the amount of tax is printed out and the program stops.

XII. Try to answer these questions.

1. What is a computer virus?
2. How are viruses spread?
3. How can you deal with viruses?
4. Name me any viruses you know.

XIII. Read this text to check your answers.

Computer viruses

The Maltese Amoeba may sound like a cartoon character, but if it attacked your computer, you wouldn't be laughing. The Maltese Amoeba is a computer virus. It is a form of software which can 'infect' your system and destroy your data. Making computer viruses is only one type of computer crime. Others include hacking (changing data in a computer without permission) and pirating (illegally copying software programs).

Viruses are programs which are written deliberately to damage data. Viruses can hide themselves in a computer system. Some viruses are fairly harmless. They may **flash** a message on screen, such as 'Gotcha! Bet you don't know how I crept in'. The Yankee Doodle virus plays this American tune on the computer's small internal speaker every eight days at 5 p.m. Others have serious effects. They attach themselves to the operating system and can wipe out all your data or turn it into **gobbledegook**. When the Cascade virus attacks, all the letters in a file fall into a heap at the bottom of the screen. This looks spectacular but it's hard to see the funny side when it's your document.

Most viruses remain **dormant** until activated by something. For example, the Jerusalem B virus is activated every Friday the 13th and erases any file you try to load from your disk. The Michelangelo virus was programmed to become active on March 6th 1992, the 517th birthday of Michelangelo. It attacked computer systems throughout the world, turning data on hard disks into nonsense.

Viruses are most commonly passed via disks but they can also spread through bulletin boards, local area networks, and email attachments. The best form of treatment is prevention. Use an antivirus program to check a floppy before using it. Always download email attachments onto a floppy and check for viruses. If you do catch a virus, there are antivirus programs to hunt down and **eradicate** the virus. The problem is that around 150 new viruses appear every month and you must constantly update your antivirus package to deal with these new forms.

XIV. Find the answers to these questions then complete this table.

1. List three computer crimes.
2. What do you think these words in the passage mean?
   a) flash
   b) gobbledegook
   c) dormant
   d) eradicate
3. Why is it difficult to remove all viruses?

Virus	Effect
Yankee Doodle	
Cascade	
Michelangelo	
Jerusalem B	

HELP box
Language work: Making Guidelines and Rules

Study these guidelines for preventing and treating viruses.
Download e-mail attachments onto a floppy.
Don't use a floppy without checking it.

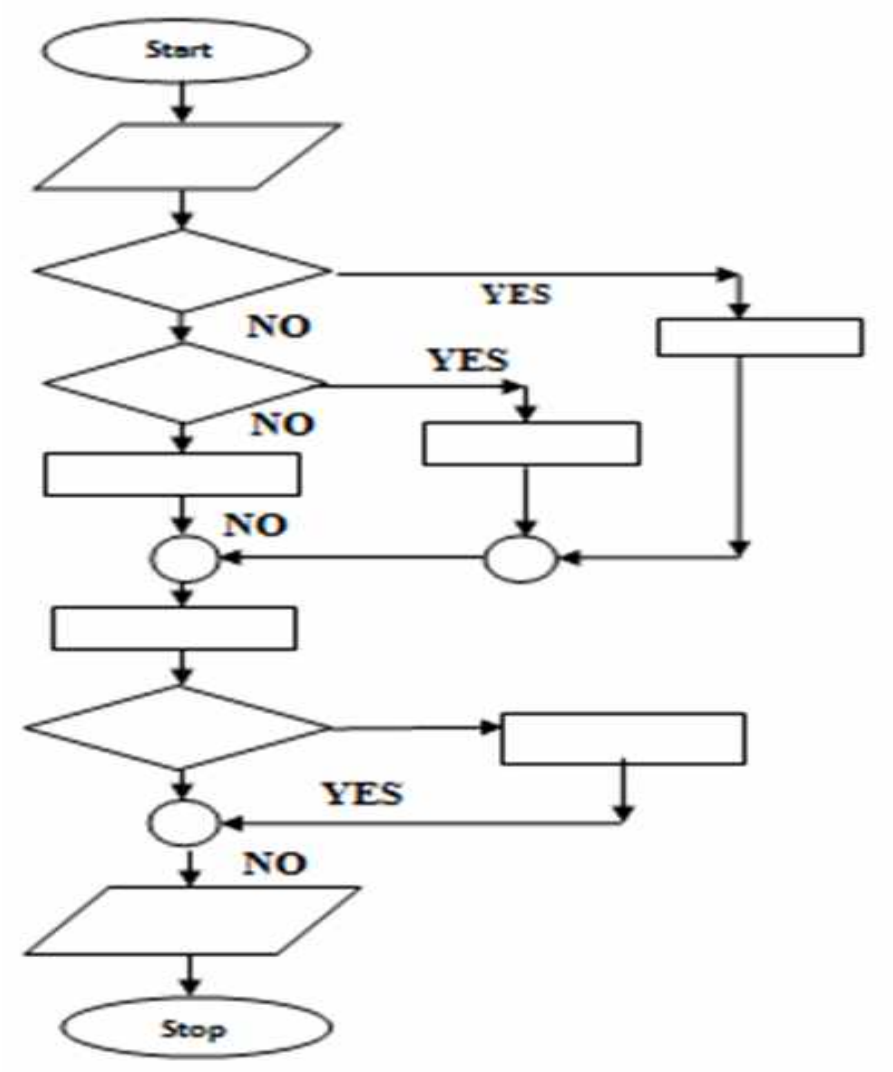
We can make them stronger by adding ***always*** and ***never***.
Always *download email attachments onto a floppy.*
Never *use a floppy without checking it.*

We can make them into rules by using ***must*** and ***mustn't***.
You ***must*** *download attachments onto a floppy.*
You ***mustn't*** *use a floppy without checking it.*

XV. Rewrite this advice using must or mustn't.

1. Keep your network password secret.
2. Don't try to access other people's data.
3. Always make a backup copy of all your important files.
4. Never use commercial software without a license.
5. Check your email regularly.
6. Never install software before it is virus-checked.
7. Don't re-use Web images from pages which have a copyright symbol.
8. Never change other people's data without permission.
9. Don't believe every email message that warns you about viruses.
10. Always virus-check an email attachment before opening it.

XVI. Write your own description of the flowchart below.



INTERESTING FACTS

1. **Read the text and say what it is about.**

Computers exist to run programs. A program is a series of instructions that tells a computer what to do next. In a simple program, a task is broken down into its most basic steps. The computer doesn't understand what links each step and just follows the instructions. A more complex program is divided into sections called subroutines. Each one performs a smaller part of the program, can be used many times, and exchanges data with other subroutines. This makes the program smaller and easier to understand. Programmers write their programs in one of many specialized computer languages, which they call 'code'. Regardless of the programming language, a computer converts, or

compiles, the program into machine code − a string of numbers that microprocessors recognize. Some programmers write snippets of code and store them in libraries on the Internet. Others use these fragments to build their own programs easily, without having to start from scratch each time.

In 1801, the French inventor Joseph Marie Jacquard invented a loom that could weave finely patterned cloth automatically − and do it much more quickly than by hand. Although this loom was not a computer, people could program it using punch cards. These were long strips of cardboard filled with holes that corresponded to the threads making up each pattern. In the 1950s and 1960s, people used punch cards in a similar way to input the programs that ran on early computers.

In the 1840s, Lady Ada Lovelace, the daughter of the English poet Lord Byron, worked with Charles Babbage, the inventor of some early mechanical computers. She created a program on punch cards for one of Babbage's machines, the Analytical Engine. This complicated machine was never built and the program was not used. Nevertheless, Ada Lovelace is regarded as the first computer programmer. In 1979, the US military named a new programming language Ada in her honor.

In the 1980s, small robots – called turtles − were used to teach the type of very precise instructions needed in programming. The robots drew patterns on the floor according to their program and could make this spiral by following a few steps − distance equals one unit, move forward one unit, turn right, repeat steps 2 and 3, distance equals 2 units, and so on. Programs could apply the same technique on a screen to make a line graphic.

Programs need to be cleared of mistakes. However, bugs, or errors, still get through. As the year 2000 approached, experts found an error that came to be called the Millennium Bug. Old programs recorded a year as just two numbers – 1999 was 99, and the following year would be 00. So there was a possibility that the world's computers would record year 00 as 1900 not 2000, causing computers to stop working properly − or at all! Programmers worked hard to beat the bug by making computers record a year as four numbers. When 2000 rolled in, no major problems were found.

A badly designed program can cause a disaster. The European Space Agency uses Ariane 5 rockets to launch spacecraft. In 1996, an

Ariane 5 rocket exploded on its first test flight. The guidance program was written for an older rocket and did not work with the Ariane 5 rocket's new launch system. Spacecraft often run using old-fashioned computer systems, because engineers are confident their programs do the job well and making a new one is risky and expensive. NASA's Space Shuttles used a computer designed in the 1970s with less processing power than most mobile phones!

2. Write a summary of the text.

TEST YOURSELF

1. Presentation software. Fill in the gaps with a suitable word.

1) In Microsoft PowerPoint, when creating a new presentation, you can choose between a blank presentation, a design template and the AutoContent _____.
a) witch **b)** wizard **c)** bogeyman

2) PowerPoint can be used to create presentation _____.
a) slideshows **b)** picture shows **c)** exhibitions

3) You can choose a _____ to move from one slide to another.
a) changing effect **b)** moving effect **c)** transition effect

4) You can include moving pictures in your presentation. These are called _____.
a) films **b)** movies **c)** animations

5) You can choose a _____ for your presentation.
a) colour pattern **b)** colour arrangement **c)** colour scheme

6) You can give your presentation over the internet as an _____.
a) online broadcast **b)** online show **c)** online spectacle

7) It's usually clearer to present statistics in the form of a table or _____.
a) chart **b)** figure **c)** track

8) If you wish, the software will help you _____ of your presentation.
a) practice the times **b)** rehearse the timing **c)** try out the times

9) You can choose to record the _____ on your computer…
a) narration **b)** speaking **c)** voice

10) …rather than giving it _____.
a) in real life **b)** for real **c)** live

2. **Can you answer these questions in English?**

1) Which application do you use most often? Why?

_____

_____

2) How does it help you in your work?

_____

_____

3) Which features do you find most useful?

_____

_____

4) Does it have any limitations which annoy you? What are they?

_____

_____

5) Is there an application you'd like to learn to use? What would you use it for?

_____

_____

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