MODULE 4. BASIC SOFTWARE

Learning objectives

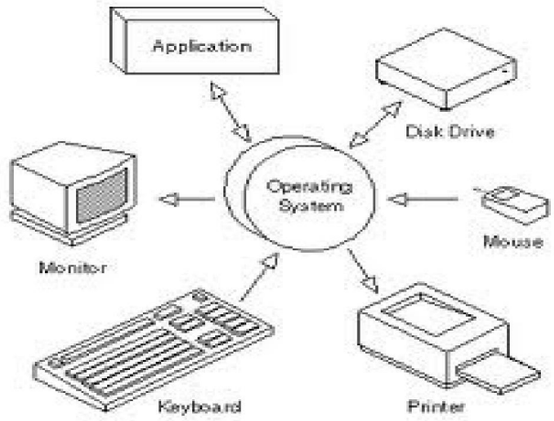
In this lesson, you will learn how to:

- Extract relevant information form texts about system software
- Recognize the characteristics of a typical graphical user interface or GUI
- Make a summary of a written text
- Talk about word processors
- Identify the function of different word-processing capabilities: search and replace, cut and paste, spell checkers, etc.
- Understand the basic features of spreadsheets and databases
- Acquire specific vocabulary related to Internet utilities.

Lesson 1. Operating Systems

I. Warm-up

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



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

Operating Systems

An operating system is a piece of software that presents an interface between the computer and the user. One of the first operating systems was the GM OS or General Motors Operating System created in 1955.

There are two major kinds of operating systems, Command Line Interfaces (CLI), and more recently, Graphical User Interfaces (GUI). CLIs use only text and no graphics to display information and the user navigates by means of the shell. Examples of popular CLI operating systems still in use today are MS-DOS and Linux. Examples of popular GUI operating systems are Windows, [X-Windows], and Macintosh OS.

Perhaps the most popular OS up until the 1990's was Unix on the mainframe and [MS-DOS] on the PC. Unix was created by mavericks Dennis Ritchey and Ken Thompson in 1970 from an older MULTICS system which they both used but did not like very much. All versions of Linux and Mac OS X can trace their roots to directly back to the original Unix. MS-DOS was Microsoft Corporation's predecessor to Windows. Bill Gates liked the Unix-like functionality of a program designed by Tim Paterson of Seattle Computer Products called QDOS, and he bought it, rebranded it MS-DOS, and licensed it to IBM. MS-DOS became the underlying CLI for all of Microsoft's GUI operating systems up to and including Windows XP.

The main operating system today on PCs is of course Microsoft Windows with over 90% market share. Windows started out as a home and office OS but has recently become a serious challenger to Unix systems even in the enterprise, where UNIX-derived systems still have a solid foothold.

What exactly is an operating system composed of? The base unit of the operating system is a collection of programs called the kernel. The kernel is the most basic layer which controls the hardware and the file system. Other programs which help the kernel interface with the components and peripherals are called device drivers. Another main task for an operating system is to control which users have access to specific parts of a computer's resources. Most operating systems have a facility to require users to authenticate with a username and password before being permitted to use the system resources. For example, the OS will allow a system administrator to set permissions on a file or a directory.

Modern operating systems also offer many utilities and conveniences including the ability to easily install and uninstall software applications, monitor hardware, upgrade itself through a network connection, and more. Even basic productivity applications such as web browsers and text editors are now included as standard on most operating system releases.

II. Reading

Read the text and answer these questions:

1) What is an operating system ?
2) What are two major kinds of operating systems?
3) Name one of popular GUI operating systems?
4) What was the most popular OS up until the 1990's?
5) Whom was Unix created by?
6) Which is the main operating system today on PCs?
7) What exactly is an operating system composed of?
8) What is the kernel?
9) What is another main task for an operating system?
10) What do modern operating systems offer?

III. Basic DOS commands

Match the DOS commands on the left with the explanations on the right. Some commands are abbreviations of English words.

1	FORMAT	a	erases files and programs from your disk
2	CD (or CHDIR)	b	copies all files from one floppy disk to another
3	DIR	c	changes your current directory
4	MD (or MKDIR)	d	initializes a floppy disk and prepares it for use
5	DISKCOPY	e	displays a list of the files of a disk or directory
6	BACKUP	f	changes names of your files
7	REN (RENAME)	g	creates a subdirectory
8	DEL	h	saves the contents of the hard disk on floppy disk for security purposes

IV. Language work: Revision of the passive

A. The present simple passive

We form the present simple passive with *am/is/are + past participle*.

Example:

- This program **is written** in a special computer language.
- Programs and data **are** usually **stored** on disks.

Remember that the word data takes a singular verb (3rd person singular) when it refers to the information operated on in a computer program.

- The data **is** ready for processing.

B. Fill in the blanks with the correct form of the verbs in brackets.

1) Various terminals (connect) …… to this workstation.
2) Microcomputers (know) …… as 'PCs'.
3) Magazines (typeset) …… by computers.
4) When a particular program is run, the data (process) …… by the computer very rapidly.
5) Hard disks (use) …… for the permanent storage of information.

6) The drug-detecting test in the Tour de France (support) …… by computers.
7) All the activities of the computer system (coordinate) …… by the central processing unit.
8) In some modern systems information (hold) …… in optical disks.

V. Quiz

Work with a partner. Try to answer as many questions as possible.

(Use the Glossary if you need to)

1) What name is given to the set of programs that interface between the user, the applications programs, and the computer?
2) What types of programs are designed for particular situations and specific purposes?
3) What does 'MS-DOS' stand for?
4) What is the basic DOS command for copying a file?
5) The Macintosh operating system is kept in various locations. Where exactly are these?
6) Can you give synonym for the term 'routine'?
7) What is the abbreviation for 'International Business Machines'?
8) Which company developed UNIX?
9) Which programming language allows you to play animations on the Web?
10) What are the effects of computer viruses?

Lesson 2. The graphical user interface

I. A user-friendly interface

The picture below illustrates a user interface based on graphics.

Read the definitions in the HELP box and then match with the concept in the right column:

The interface elements of the Windows XP

HELP box

a. Is an area of the computer screen where you can see the contents of a folder, a file, or a program. Some systems allow several windows on the screen at the same time and windows can overlap each other. The window on the top is the one which is 'active', the one in use.

b. Are small picture on the screen. They present programs, folders, or files. For example, the Recycle Bin icon represents a program for deleting and restoring files. Most systems have a special area of the screen on which icons appear.

c. Give the user a list if choice. You operate the menu by pressing and releasing one or more buttons on the mouse.

d. Is the arrow you use to select icons or to choose options from a menu. You move the pointer across the screen with the mouse. Then you click a button on the mouse to use the object selected by the pointer.

e. Containers for documents and applications, similar to the subdirectories of a PC platform.

1. window
2. menu
3. pointer
4. icons
5. folders

II. Reading

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

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

GUIs

The terms ***user-interface*** refers to the standard procedures the user follows to interact with a particular computer.

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.

B. Look at the text again and guess the meaning of the words in bold and italics in your own language.

C. 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?

III. Exercise work

Add to the statements (1-10) using the extra information (a-j).

1. A barcode is a pattern of printed black lines	a. it contains the main electronic components.
2. A floppy is a disk	b. it adds features to a computer
3. A mother is a printed circuit board	c. it is about the size of a piece of paper.
4. A password is a secret set of characters	d. supermarkets use them for pricing
5. A monitor is an output device	e. it reads and writes to disks.
6. A disk drive is a unit	f. it can hold 1.44Mb of data.
7. An expansion card is an electronic board	g. it allows access to a computer system
8. A CD-ROM drive is a common storage device	h. it controls all the other boards in a computer
9. A notebook is a portable computer	i. it displays data on a screen.

10. The system unit is the main part of the computer	j. it read data from a CD_ROM disk

IV. Language work: Short relative clauses

We can join these sentences by using a relative clause.

1) Her house has a network.
2) It allows basic file-sharing and multi-player gaming.

1) + 2) Her house has a network which allows basic file-sharing and multi-player gaming.

Relative clauses with certain active verbs can be shortened by omitting the relative word and changing the verb to its '-ing' form. We can shorten the relative clause like this:

Her house has a network ***allowing basic file-sharing and multi-player gaming.***

Note how these two sentences are joined by a relative clause.

3) The technology is here today.
4) The technology is needed to set up a home network.

3) + 4) The technology which is needed to set up a home network is here today.

Relative clauses like this with passive verbs can be shortened by omitting the relative word and the verb 'to be'.

The technology ***needed to set up a home network*** is here today.

Now link each group of sentences into one sentence using short relative clause.

1	a	The technology is here today.
	b	It is needed to set up a home network.
2	a	You only need one network printer.
	b	It is connected to the server.
3	a	Her house has a network.
	b	It allows basic file-sharing and multi-player gaming.
4	a	There is a line receiver in the living room.
	b	It delivers home entertainment audio to speakers.
5	a	Eve has designed a site.
	b	It is dedicated to dance.
6	a	She has built in links.

	b	They connect her site to other dance sites.
7	a	She created the site using a program called Netscape Composer.
	b	It is contained in Netscape Communicator.
8	a	At the centre of France Telecom's home of tomorrow is a network.
	b	It is accessed through a Palm Pilot-style control pad.
9	a	The network can simulate the owner's presence.
	b	This makes sure vital tasks are carried out in her absence.
10	a	The house has an electronic door-keeper.
	b	It is programmed to recognize you.
	c	This gives access to family only.

Using short relative clauses is one way of reducing sentences. Other ways of reducing sentences are:

- Taking out relative pronouns where possible
  e.g. The software (that) we bought last year.
- Omitting qualifying words (adjectives, or modifying adverbs)
  e.g. (quite) complex/(very) similar
- Taking out *that* in reported speech or thoughts
  - e.g. It is well known (*that*) computers…
  - I think (*that*) there's something wrong with this program.
- Cutting out unnecessary phrases
  - e.g. Macintosh computers were designed with a clear aim: to facilitate the user's interaction with the computer.
    = Macintosh computers were designed to facilitate the user's interaction with the computer.

V. Writing

Summarize the text in Task 2 in 70 – 75 words. You may like to follow these steps.

1. Read through the whole text again and think of a suitable title for it.
2. Make sure you understand all the main points. Go through the text and **underline** the relevant information in each paragraph.
3. **Make notes** about the main points:
   - Omit repetitions and unnecessary phrases
   - Leave out details, such as examples

E.g. notes on the first paragraph: *In the past, only experts used computers. But now, emphasis on user-friendly interfaces.*

4. **Make sentences** from the notes and connect the sentences by using **linking** words (*and, but, also, because, that's why, in fact, therefore*, etc.) Write your **first draft.**
5. Improve your first draft by **reducing sentences**.
6. Check grammar, spelling, and punctuation. Write the **final version** of your summary.

Lesson 3. Spreadsheets

I. Looking at a spreadsheet

Look at this spreadsheet and try to answer the questions.

1 What is a spreadsheet?

What is it used for?

2 In a spreadsheet, there are 'columns', 'rows', and 'cells'. Give an example of each from the sample spreadsheet.

3 What type of information can be keyed into a cell?

4 What will happen if you change the value of a cell?

This sample spreadsheet shows the income and expenses of a company. Amounts are given in $ millions

II. Reading

Read the text below and decide whether these sentences are right (√) or wrong (X)

1) A spreadsheet program displays information in the form of a table, with a lot of columns and rows.
2) In a spreadsheet, you can only enter numbers and formulas.
3) In a spreadsheet you cannot change the width of the columns.
4) Spreadsheet programs can produce visual representations in the form of pie charts.
5) Spreadsheets cannot be used as databases.

A spreadsheet program is normally used in business for financial planning – to keep a record of accounts, to analyze budgets or to make specific calculations. It's like a large piece of paper divided into columns and rows. Each column is labeled with a letter and each row is labeled with a number. The point where a column and a row intersect is called a cell. For example, you can have cells A1, B6, C5, and so on.

A cell can hold three types of information: text, numbers and formulas. For example, in the sample spreadsheet, the word *sales* has been

keyed into cell A2 and the values 890, 478 and 182 have been entered into cells B2, B3, and B4 respectively. So when the formula 'B2 + B3 + B4' is keyed into cell B5 the program automatically calculates and displays the result.

Formulas are functions or operations that add, subtract, multiply or divide existing values to produce new values. We can use them to calculate totals, percentages or discounts.

When you change the value of one cell, the values in other cells are automatically recalculated. You can also update the information in different worksheets by linking cells. This means that when you make a change in one worksheet the same change is made in the other worksheet.

The format menu in a spreadsheet usually includes several commands allowing you to choose the font, number alignment, borders, column width and so on.

Most spreadsheet programs can generate documents with graphic representations and some include three-dimensional options. The values of cells are shown in different ways such as line graphs, bar, or pie charts.

Some programs also have a database facility which transforms the values of the cells into a database. In this case, each column is a field and each row is a record.

III. Vocabulary

Match the terms in the box with the explanations below.

a. formul	**b.** cell	**c.** sales	d. payroll
e. shares	f. revenue	g. interest	h. expenses

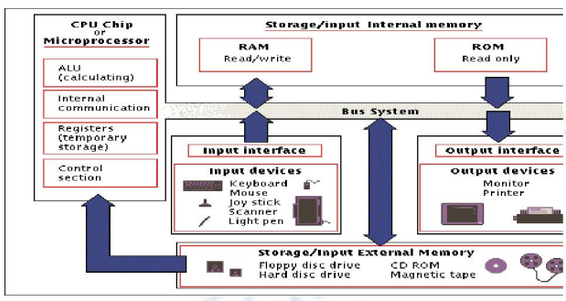
1) A sum of money that is charged or paid as a percentage of a larger sum of money which has been borrowed or invested, e.g. *High rates./ 7 percent ~ on a loan.*
2) The intersection of a column and a row in a spreadsheet, e.g. *the ~ B2.*
3) The quantity sold, e.g. *The ~ of PCs rose by 10 percent last year.*
4) The income – or money – received by a company or organization, e.g. *The annual ~ of this multinational company is…*
5) A ~ in a company is one of the equal parts into which the capital of the company is divided, entitling the holder of the ~ to a proportion of the benefits, e.g. *£10 ~s are now worth £11*
6) Financial costs; amounts of money spent, e.g. *Travelling ~.*

7) A function or operation that produces a new value as the result of adding, subtracting, multiplying, or dividing existing values, e.g. *If we enter the ~ B5-B10, the program calculates ...*

8) 1 A list of people to be paid and the amount due to each. **2** Wages or salaries paid to employees, e.g. *He was on the company's ~.*

IV. Language work: Prepositions of place

A. Study these examples of prepositions of place.



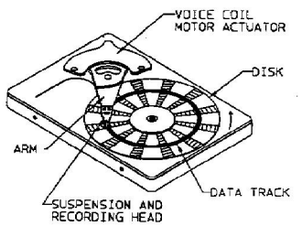
1 Data moves *between* the CPU and RAM.

2 Data flows *from* ROM *to* the CPU.

3 A program is read *from* disk *into* memory.

4 Data is transferred *along* the data bus.

5 The address number is put *onto* the address bus.



6 The hard disk drive is *inside* a sealed case.

7 Heads move *across* the disk.

8 Tracks are divided *into* sectors.

B. Now complete each sentence using the correct preposition.

1) The CPU is a large chip ……. the computer
2) Data always flows ……. the CPU ……. the address bus.
3) The CPU can be divided ……. three parts.
4) Data flows ……. the CPU and memory.
5) Peripherals are devices ……. T he computer but linked ……. it.

6) The signal moves ……. the VDU screen ……. one side ……. the other.

7) The CPU puts the address ……. the address bus.

8) The CPU can fetch data ……. memory ……. the data bus.

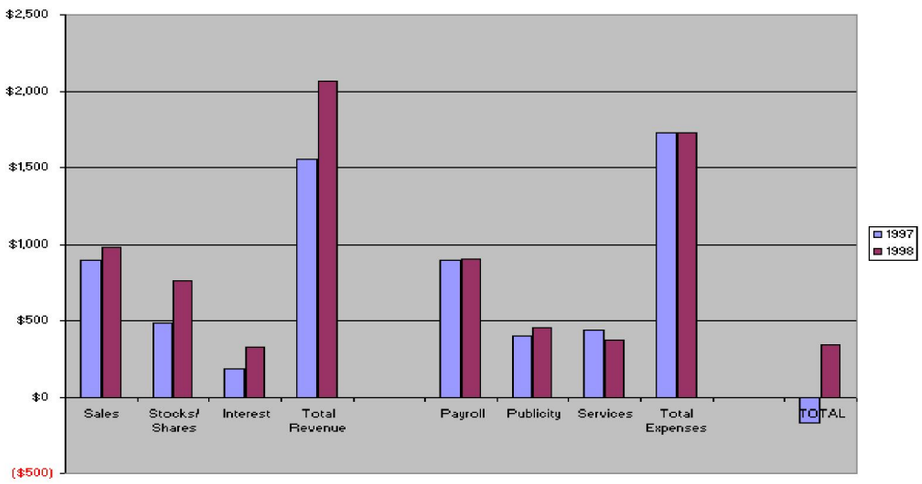
V. Graphic representation

A. Look at the graph below and, with the help of a partner, check that it is an exact visual representation of the spreadsheet in Task 1.

B. Can you calculate the net profits of this firm during the period 1997-98?

C. What type of image is this: a pie chart, a bar chart, an area graph, or a line graph?

D. What is the advantage, if any, of displaying information as a graph, rather than as a spreadsheet?



VI. Extension

A. Spreadsheet programs are also used to make out invoices. Look at the invoice below and fill in the blanks with the right words from the box.

Quantity	Description	Price	VAT (Value Added Tax)
Reference	TOTAL	Address	Company

Name:	**Redwood Comprehensive School**			
	Springbank Road, Easthill		**Invoice**	
Telephone:	436171		**Date:** 12 May 2003	
Ulysses Classic	64 MB of RAM, 9 GB HD	12	£ 1,050	£ 12,600
XGA Monitor	Colour 16"	9	225	2,025
Video Card	Millions of colours	5	316	1,580
Portable Ulysses	32 MB RAM, 2 GB HD	3	1,190	3,570
Laser SAT	PostScript	1	825	825
Scanner JUP	Flabed, includes OCR	2	675	1,350
			Subtotal	£ 21,950
			17,5%	3,841
Ulysesses Computer, Inc				£ 25,791

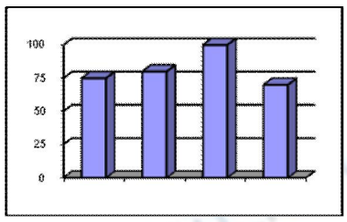
B. Have you got a spreadsheet program at work or school? If so, try to produce a similar invoice.

Lesson 4. Databases

I. Warm-up

Companies often use databases to store information about customers, suppliers and their own personnel. Study the illustrations and then try to answer these questions.

1) What is a database?
2) Which tasks can be performed by using a database? Make a list of possible applications.
3) What do the terms mean in your language: **file, record, field**?



Name: James Powell

Address: 12, Back St.

Marital status: single

Identification 8994989

Job ENGINEER

SALARY £18,750

Home phone: 456367

Department: Data processing

Commission: £18,750

II. Reading

A. Here is a part of an article about databases. First, read all the way through and underline the basic features of a database.

Basic features of database programs

With a **database**, you can store, organize, and retrieve a large collection of related information on computer. If you like, it is the electronic equivalent of an indexed filing cabinet. Let us look at some features and applications.

- Information is entered on a database via **fields.** Each field holds a separate piece of information, and the fields are collected together into **records.** For example, a record about an employee might consist of several fields which give their name, address, telephone number, age, salary, and length of employment with the company. Records are grouped together into **files** which hold large amounts of information. Files can easily be updated: you can always change fields, add new records, or delete old ones.

With the right database software, you are able to keep track of stock, sales, market trends, orders, invoices, and many more details that can make our company successful.

- Another feature of database programs is that you can automatically look up and find records containing particular information. You can also search on more than one field at a time. For example, if a managing director wanted to know all the customers that spend more than £7,000 per month, the program would search on the name field and the money field simultaneously.

A computer database is much faster to consult and update than a card index system. It occupies a lot less space, and records can be automatically sorted into numerical or alphabetical order using any field.

The best packages also include networking facilities, which add a new dimension of productivity to businesses. For example, managers of different departments can have direct access to a common database, which represents an enormous advantage. Thanks to security devices, you can share part of your files on a network and control who sees the information. Most aspects of the program can be protected by user-defined passwords. For example, if you wanted to share an employee's personal details, but not their commission, you could protect the commission field.

In short, a database manager helps you control the data you have at home, in the library or in your business.

B. Now make a list of the words you don't understand. Can you guess their meaning? Compare your ideas with other students.

C. Using the information in the text, complete these statements.

1) A database is used to ……..……..……..……..
2) Information is entered on a database via ……..……
3) Each field holds …….
4) 'Updating' a file means ……
5) The advantages of a database program over a manual filing system are …
6) Access to a common database can be protected by using ……

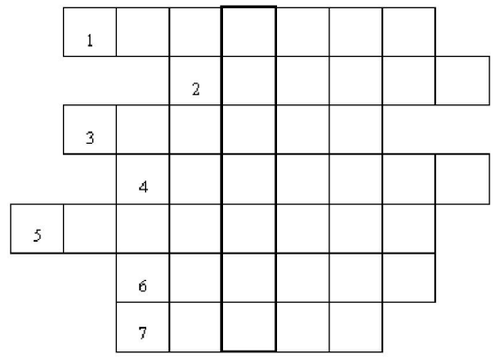
III. Puzzle

Complete the sentences by using a term from the list. Then write the words in the crossword to find the hidden message.

database field layout merging

record sorted updated

1. In order to personalize a standard letter, you can use 'mail …….' (a technique which consists of combining a database with a document made with a word processor).
2. Records can be automatically ……. into any order.



3. You can decide how many fields you want to have on a …….
4. Files can easily be ……. by adding new information or deleting the old one.
5. A ……. program can be used to store, organize and retrieve information of any kind.
6. The ……. of the records can be designed by the user.

   Each piece of information is given in a separate ……. .

IV. Language work

Requirements: Need to, have to, must, be + essential, critical

Note how we describe requirements of particular jobs:

1. You *need* to be able to empathise with the person at the other end of the phone.
2. IT managers *have to* take responsibility for budgets.
3. You *must* be interested in your subject.
4. You *must have worked* for at least two years in systems analysis.

We can also treat *need* as a modal verb and use the negative form needn't:

7. You *needn't* have a degree in computing science.

***Have to* is an ordinary verb. Its negative form is made in the usual way:**

8. You *don't have to* be an expert in everything.

***Mustn't* has a quite different meaning. It means it is important not to do**

5. Experience with mainframes *is essential/ critical.*

We can describe things which are not requirements like this:

6. You *don't need* to have a degree in computing science.

something. It is used for warning, rules, and strong advice. For example:

9. You *mustn't* make unauthorized copies of software.

A. Now fill in the blanks with the appropriate form of the verbs, *need to, have to, and must*, to make sensible statements. More than one answer is possible in some examples.

1) Technical qualifications …….. to be renewed at intervals to ensure they do not go out of date.
2) You …….. become an expert in too narrow a field.
3) You …….. to have good communication skills to become an IT Manager.
4) You …….. be an expert in hardware to become a programmer.
5) You …….. have worked with IBM mainframes for at least two years.
6) You …….. be able to show leadership.
7) You …….. have a degree but it …….. be in computing science
8) You …….. to have experience in JavaScript
9) You …….. be able to use C++
10) These days you …….. study BASIC

B. Study these requirements for different jobs in computing advertised on the Internet. Then describe the requirements using the methods studied in this unit.

Systems Manager/ Programmer	**Support Analyst: IBM Mainframe MVS**	**Programmer**
• Technical specialist • Min. 2 yrs work in systems programming	• IBM MVS support technician • 1 yr exp. of VTAM, NCP, SSP, NPM, IBM 3745-900	• 3 yrs exp. SAP Basic Technical Environment • Team player with strong analytical and