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COURSE CODE: COM 111

COURSE TITLE: INTRODUCTION TO COMPUTERS ANDAPPLICATIONS
JAN-APRIL 2018

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COURSE OUTLINE

UCU 002: COMPUTER APPLICATIONS

Purpose of the course

The aim of this course is to provide a comprehensive understanding of how computers work and the use of application software in businesses today.

Main course text

C.S. French, Computer science (Fifth Edition)

Reference Books

i. White R., How Computers Work (Millennium edition).
ii. Capron H.L., Computers: Tools for an information age (5th Edition).

Assessment: Examination - 70%: Coursework - 30%

Computer Applications - TOPICS - Details

I. Introduction to Computer and its components

A. History of computers
B. Generations of computers
C. Characteristics of computers
D. Types of computers
E. Software and Hardware

II. Hardware and software

A. Hardware: input and output devices, backup storage, central processing unit, memory (ROM, RAM).
B. Software: Categories of software, System software, applications software, general purpose software, integrated packages and software suites.

III. The key role of the central processing unit.

A. The fetch execute cycle
B. The Control unit and the arithmetic/logic unit (ALU)

IV. Peripheral Devices

A. Input: keyboard, mouse, tracker ball, graphics tablet, scanner, digital camera, touch screen, OMR, OCR, bar code scanner, magnetic stripe reader, microphone.

B. Output: monitor (CRT and LCD), printer (dot matrix, ink jet, laser), plotter, speakers.

V. Word-processing software.

A. word processing terms
B. Creating new documents and open existing ones
C. Typing and editing text
D. Using Save and Save As
E. Spelling and grammar check
F. Applying formatting to text and page
G. Print previewing a document and print it
H. Mail Merging

VI. Spreadsheets

A. Spreadsheet terms
B. Creating new spreadsheets and open existing ones
C. Inputting text, numbers and simple formulae
D. Employing simple functions such as SUM, AVERAGE
E. Creation of and modification charts/graphs to illustrate data

VII. Database

A. Common database terms
B. Opening and use an existing database
C. Designing and creating a simple database
D. Saving database objects with appropriate names
E. Creating simple queries
F. Designing input forms
G. Designing output reports

VIII. Presentation software

A. Preparing a presentation
B. Using pictures and objects
C. Using animation
D. Using organization charts
E. Using graphs

IX. Internet and E-mail

A. Requirements for connecting to the Internet.
B. Features of common Internet services.
C. e-mail terms
D. Reading, replying to and forwarding messages
E. Sending attachments

CHAPTER ONE

INTRODUCTION TO COMPUTERS

Objectives

At the end of the chapter the learner shall be able to;

i. Explain the evolution of computing technology and the technological advancement in computer architecture to current technologies
ii. Explain the characteristics of computers and how they are different from humans.
iii. Explain the different types of computers categorized based on size, price and capabilities
iv. Explain the fundamental difference between computer hardware and software

1.1. History of Computers

When the human race started doing some trade, it felt a need for a calculating device. The first calculating device, which was used 2000 years ago was called **abacus** and the improvements in the calculating device in that age were slow. The next change came after about 1600 years. Following this, the changes were frequent and the mechanical desk calculator was developed around 1800 A.D.

In 1833, Prof. Charles Babbage, the father of the computer, developed a machine called **analytical engine** which was the vase for the modern digital computer.

1.2 Generation of Computers

1.2.1 Computer generations

First generation computers (1946-1956)

They made use of vacuum tubes to store and process information. The tubes consumed a lot of power and generated a lot of heat (overheating). They were huge in size and occupy a room. They used magnetic tape. Storage capacity was very low i.e. 2kb and speed of processing was also very low. First machine in this category was ENIAC (electronic discrete variable automatic computer) and later came UNIVAC (universal automatic computers).these computers were mostly computational machines. Their input /output capabilities were usually limited to the keyboard and or punched card input and printer and or punched cart output. The speed of these machines was described in milliseconds (1/1000 of a second)

Second generation computers (1957-1967)

These computers used transistors after invention of transistors. The transistor is smaller cheaper and produced less heat than vacuum tubes and consumed less power. The cost of computers decreased and the speed increased. The second generation saw the introduction of more complex ALU and CPU, the use of high

level languages and provision of system software with the computer. Data access time was measured in micro-seconds. Removable disk storage units were developed for use on these machines. The speed of these machines was described in microseconds (1/1000, 000 of a second). These computers had programming languages whose vocabularies are close to the human natural language, English language.

Third generation computers (1965-1980)

Introduced the use of very small electronic circuit called integrated circuits (IC) by combining several transistors together between 3 transistors to make 1 IC. With IC you can house thousands of transistors in one IC. This change further decreased the size, heat output and the maintenance complexity of the computers while increasing its speed. The small circuitry that resulted improved the processing speed i.e. 10 times the past. The speed of these machines was described in nanoseconds (1/1,000,000,000 of a second). They have higher main memory capacity, reliable and increased processing power (have the capability of holding more than one set of instructions and operate on them) than the second generation computers. Invention of IC revolutionalised electronics and started the error of micro-electronics. The IBM 360 is an example of third generation computers.

Fourth generation computers (1980s)

Use large scale integration circuits which housed hundreds of transistors and very large IC which are between 200,000 to 400, 000 in one IC. Memory used includes magnetic disc and optical disc. Memory size expanded up to several MB and speed was 10 times faster. This generation marked the origin of mini computers in use today.

Fifth generation computers (1990-current)

The design of these computers was based on VLSI (very large scale integration) technology, the micro chip technology that gave rise to the smaller computers known as the micro computers in use today. These computers are used in networking .examples of micro computers are IBM PCs BBC micro etc. the micro computers are usually described as PCs or stand alone or desktop computers because they were designed primarily to serve single person at a time. The fifth generation is still a state of the art technology that relies on predictions and further technological refinements.

Summary

Research shows that the trend in computer technology revolution is that there is;

- Continual decrease in computer size
- Improved speed and power processing
- Decrease in computers and the related facilities cost

- Number of components in computer per circuit (IC) greatly increased over 500,000 physical elements e.g. transistors, capacities, diodes etc per chip(IC).

1.3 Characteristics of Computers

1. **Speed** – a computer is a very fast machine. It can perform in a very few seconds the amount of work that a human being can do in a year if he/she worked day and night doing nothing else.
2. **Accuracy** – the computer accuracy is consistently high.
3. **Diligence** – computers are free from monotony, tiredness and lack of concentration etc. It can therefore work for hours without creating an error. For example if 10 million calculations are to be done, a computer will do the tenth million calculations with exactly the same speed and accuracy as the first one.
4. **Versatility** – a computer performs various tasks with ease. I.e. it can search for a letter, the next moment prepare an electricity bill, and write a report next then do an arithmetic calculation all with ease.
5. **Power of remembering** – a computer can store and recall any information due to its secondary storage capability.
6. **No intelligence Quotient (IQ)** – a computer cannot make its own decisions and has to be instructed on what to do.
7. **No feelings** – computers are devoid of emotions. They have no feelings or instincts and none possesses the equivalent of a human heart and soul.

1.4 Basic Computer Concepts

Definition of a computer

A computer is an electronic device capable of executing instructions, developed based on algorithms stored in its memory, to process data fed to it and produce the required results faster than human beings.

The definition from the Merriam-Webster Dictionary :

"one that computes; *specifically* : a programmable electronic device that can store, retrieve, and process data"

1.5 Types of Computers

What different types of computers are there ?
This categories are based on **size, price and capabilities**

Super computers

They are very large in size and use multiple processors and superior technology. Super computers are biggest in size, the most expensive in price than any other is classified and known as super computer. It can process trillions of instructions in seconds. This computer is not used as a PC in a home neither by a student in a college. Governments specially use this type of computer for their different calculations and heavy jobs. Different industries also use this huge computer for designing their products.

In most of the Hollywood"s movies it is used for animation purposes. This kind of computer is also helpful for forecasting weather reports worldwide. They are known for von Newman"s design i.e. multiple processor system with parallel processing. In such a system a task is broken down and shared among processes for faster execution. They are used for complex tasks requiring a lot of computational power.

Mainframe computers

A mainframe is another giant computer after the super computer and can also process millions of instruction per second and capable of accessing billions of data .They are physically very large in size with very high capacity of main memory. This computer is commonly used in big hospitals, air line reservations companies, and many other huge companies prefer mainframe because of its capability of retrieving data on a huge basis. They can be linked to smaller computers and handle hundreds of users they are also used in space exploitation. The term mainframe was mainly used for earliest computers as they were big in size though today the term is used to refer to large computers. A large number of peripherals can be attached to them. They are expensive to install.

Minicomputers

They are smaller than the main frame but bigger than minicomputers. They support concurrent users. They can be used as servers in companies. They are slower and less costly compared to mainframe computers but more powerful, reliable and expensive than micro computers.

Micro computers

They are of advanced technology i.e. the micro era based on large scale integration that confines several physical components per small elements thumb size IC, hence the size reduced. It is the smallest of the three computers. They are usually called personal computers since they are designed to be used by individuals. The micro chip technology has enabled reduction of size of

computers. Microcomputers can be a desktop, laptop, notebooks, or even palmtop

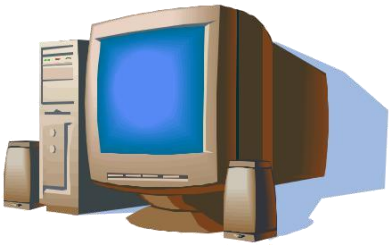
- **Notebook computer** An extremely lightweight personal computer. Notebook computers typically weigh less than 6 pounds and are small enough to fit easily in a briefcase. Aside from size and portability,. Notebook computers use a variety of techniques, known as *flat-panel technologies,* to produce a lightweight and non-bulky display screen.
- **Desktop Computer** is an independent personal computer that is made especially for use on a desk in an office or home. The term is used mainly to distinguish this type of personal computer from portable computers and laptops, but also to distinguish other types of computers like the server or mainframe.
- **Laptop** A small portable computer light enough to carry comfortably, with a flat screen and keyboard that fold together. Laptops are battery-operated, often have a thin, backlit or sidelit LCD display screen, and some models can even mate with a docking station to perform as a full-sized desktop system back at the office. Advances in battery technology allow laptop computers to run for many hours between charges, and some models have a set of business applications built into ROM. Today's high-end (Advanced) laptops provide all the capabilities of most desktop computers.
- **Palmtop** A small computer that literally fits in your palm. Compared to full-size computers, palmtops are severely limited, but they are practical for certain functions such as phone books and calendars. Palmtops that use a pen rather than a keyboard for input are often called *hand-held computers* or *PDAs.* Because of their small size, most palmtop computers do not include disk drives. However, many contain PCMCIA slots in which you can insert disk drives, modems, memory, and other devices. Nowadays palmtops are being integrated into the mobile phones as multipurpose devices.

1.6 Software and Hardware

A computer has to main components;

I. Hardware
II. Software

Computer hardware refers to the physical components of a computer such as the monitor, Keyboard, Mouse, system unit etc shown in the diagram below.



Computer software
A set of programs associated with the operation of a computer

The two components (hardware, software) will be discussed later in other chapters.

1.7 Chapter Review Questions

1. The second generation of computers used
   (a) Vacuum tubes (b) Capacitors (c) Transistors (d) Integrated circuits

2. The third generation of computers used
   (a) Vacuum tubes (b) Capacitors (c) Transistors (d) Integrated circuits

3. The **analytical engine** was the vase for the modern digital computer in which year was is developed?
   (a) 1833 (b) 1933 (c) 1923 (d) 1893

4. Which one of the following types of computers is commonly used in offices
   (a) Supercomputers (b) Mainframe (c) Mini computer (d) Micro computer

5. Computers have continued to decrease in size but the processing power has increased. **True or false**?

CHAPTER 2

BASIC HARDWARE UNITS OF A COMPUTER

At the end of the chapter the learner shall be able to;

- Explain the different hardware units of a computer system such as input, output, Central processing unit (CPU), main memory and secondary storage
- Explain how the different units of a computer interact witch each other to give the user output
- Explain how information is stored in a computer
- Explain the different storage units of a computer such as byte, Kilobyte, megabyte, Gigabyte and Terabyte

Hardware units (Devices) of a computer can be categorized into five units;

I. Input unit
II. Output
III. Central processing unit (CPU) or processor
IV. Main Memory
V. Secondary storage/Backing Storage

2.1 Input Devices

An input device lets you communicate with a computer. They are used to enter information and issue commands to the computer. Commands tell the computer to do something, like save the file. A keyboard, mouse, scanner, digital camera, touch pads and joystick are examples of input devices.

- **Keyboard** Used to type data into the computer. It has special keys for giving the computer commands called command or function keys
- **Pointing Devices** Pointing devices move some object on the screen and can do some action Mouse is a common pointing device
- **Scanner** allows you to scan documents, pictures, or graphics and view them on the computer. You can also use software to edit the items you scan. Used to put printed pictures and text into a computer. It Converts an image into dots that the computer can understand .To scan text, optical character recognition (OCR) software is needed
- **Digital Camera** Used to take electronic pictures of an object. The pictures taken by a digital camera can be used directly by a computer
- **Microphone** Used to put sound into a computer. Need sound recording software
- **Video Capture Card** Usually place inside the computer's case. Use to put video into a computer. Need a video source, either a video camera or video recorder

- **Voice input device-**A computer I/O device in which vocal commands may be entered into a computer system.
- **Optical character recognition (OCR)** is computer software designed to translate images of handwritten or typewritten text (usually captured by a scanner) into machine-editable text, or to translate pictures of characters into a standard encoding scheme representing them (e.g. ASCII or Unicode).
- **Optical Mark Reader (OMR)** A special scanning device that can read carefully placed pencil marks on specially designed documents. OMR is frequently used in forms, questionnaires, and answer-sheets
- **Magnetic Stripe reader** Cards with magnetic stripes are used as credit cards, debit cards, railway tickets, phone cards and many other applications. The magnetic stripe can be encoded with up to 220 characters of data. A magnetic stripe reads the information held in the magnetic stripe.
- **Magnetic Ink Character Recognition (MICR)** In this method, human readable characters are printed on documents such as cheque using special magnetic ink. The cheque can be read using a special input unit, which can recognize magnetic ink characters.

2.2 Output devices

An output device displays information on a screen, creates printed copies or generates sound. A monitor, printer, and speakers are examples of output devices.

- **Monitors and Displays** Shows the processed information on a screen. A monitor uses a Picture Tube like a television with the image displayed on the front of the tube, which is called the screen.
- **Printers** produce a hard copy. The information is printed on paper and can be used when the device is off. It is also called a printout. There different types of printers;

  - **Dot-matrix printers (impact printer)**
    - Uses metal pins to strike an inked ribbon to make dots on a piece of paper.
    - Lowest print quality of all of the printers.
    - Very low in cost per page to use.
  - **Ink jet printers (non-impact printer)**
    - Use drops of magnetic ink to produce dots on a page to produce text or images.
    - The print quality is almost the same as a laser
    - printer's. The ink is very expensive
    - The ink is water soluble and will run if the paper gets wet

- Highest cost per page of all the printers
- For producing color documents, it has the highest quality at a reasonable price.

➢ **Laser printers (non-impact printer)**

- A laser or LEDs make dots on a light sensitive drum
- Toner (very tiny particles of plastic) stick to the drum where the dots where made
- For black and white printouts, very low cost per page
- Printout is permanent
- Color laser printers are still fairly expensive

- **Speakers** Used to output sound
- **LCD Projectors** Similar to monitors but projects an image on to a screen. They are mainly used for presentations.

2.3 Central Processing Unit (CPU)/Processor:

It is the main part of a computer system like the brain of a human being. It interprets the instructions in the program and executes one by one. The CPU of a microcomputer is called a microprocessor. Central Processing Unit is implemented in a single piece of silicon device known as a computer chip.

The processor and main memory of a PC are commonly held on a single board called a mother board. The processor has the following functions:

- It controls the transmission of data from input devices to memory;
- It processes the data held in main memory;
- It controls the transmission of information from main memory to output devices.

The processor contains the **control unit** and the **arithmetic/logic unit(ALU).**

The **control unit** coordinates and controls all the operations carried out by the computer. The **control unit** operates by repeating three operations which are:

- **Fetch** – cause the next instruction to be fetched from memory;
- **Decode** – translate the program instruction into commands that the computer can process
- **Execute** – cause the instruction to be executed

The **arithmetic/logic unit(ALU)** plays two roles.

- **Arithmetic** operations – these operations are addition, subtraction, multiplication and division..
- **Logical** operations – it compares two data items to determine whether the first one is smaller than, equal to or greater than the second item.

2.4 Main Memory:

The cycle (input - processing - output) would not be possible without a holding place for the instructions and data that the processors (CPU) can easily reach. This holding place is known as memory also called main storage and is internal to the computer consisting of RAM and possibly ROM.

Random Access Memory (**RAM)**

- Is the basic kind of internal memory that holds data and instructions while the computer is in use.
- It can be read from and written to.
- It is called random access because the processor or computer can access any location in memory in any order as contrasted with sequential access devices which must be accessed in order.
- RAM is volatile; losing the stored information in an event of power loss, and quite expensive.

There are two basic types of RAM.

Static RAM does not need to be refreshed, which makes it faster; but it is also more expensive than dynamic RAM. **Dynamic RAM** needs to be refreshed thousands of times per second. Both types of RAM are *volatile,* meaning that they lose their contents when the power is turned off.

ROM (Read only memory)

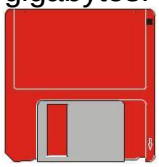
- Is also random access but only for reads, once data has been written onto a ROM chip, it cannot be removed and can only be read.
- It refers to special memory used to store programs that boot the computer and perform diagnostics. Most personal computers have a small amount of ROM (a few thousand bytes).
- Retains its contents even when the computer is turned off and is therefore referred to as being *nonvolatile*.

2.5 Secondary storage

These are devices which are used to store huge information for future use. This is mostly hard drives and removable media such as floppy disks, optical media (CD ROM) etc.

Hard Drive:

Floppy Disk: Floppy disks allow information to be transported easily from one computer to another they have limited storage capacity, generally 1.44 MB. Saving and retrieving information from a floppy disk is slower than on a hard drive. They are more susceptible to physical damage and viruses than the hard drive. The size of a hard drive is usually expressed in terms of megabytes and gigabytes.



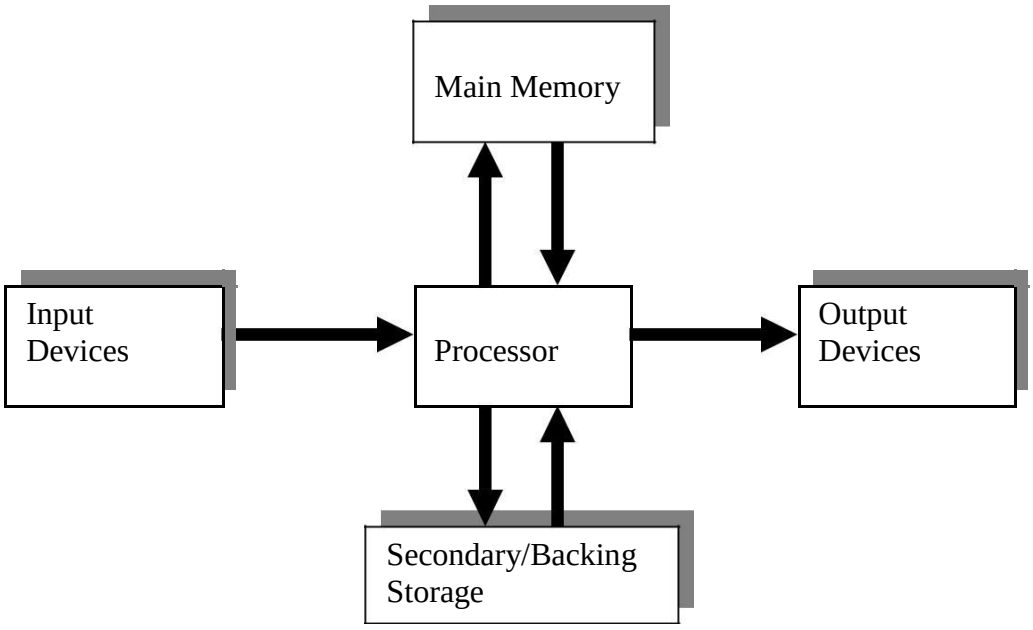
Compact Disk Read Only Memory (CD ROM): CD ROMs are read only storage medium. Typically, a CD ROM holds up to 650 MB of information. While information retrieval is faster than from a floppy disk, it is still not as fast as from the hard drive.

Compact Disk-Writable (CD-R): A CD-R is highly effective for storing a large amount of data. Can hold up to 700MB of information. A CD-R is a one time recordable compact disc.

Compact Disk-Re-Writable (CD-RW):

A CD-RW allows you to read, write, erase and write again. Writing takes place in a single pass of the focused laser beam. This is sometimes referred to as direct overwriting and can be repeated several thousand times per disc.

2.6 Computer units interaction diagram



The diagram above shows how the units interact with each other in the processing of data. Input devices enter information to be processed by the processor. The processor can read and write into the secondary storage devices.

The processor also stores the instructions being currently executed into the main memory. So can be able to read and write into the main memory (RAM). Once the data has been processed by the processor, the data can be displayed by the output devices. Please note the direction of the arrows as it depicts the flow of the data and instructions.

2.7 How information is stored in computers

Information is stored in computers in the form of **bits**. A bit is used to represent information in the computer. They are referred to as binary digits i.e. the 0"s and 1"s with 0 representing an OFF state and 1 representing an ON state.

The stored bits are usually retrieved from computers memory for manipulation by the processor

A single bit alone cannot represent a number, letters or special characters, to represent information; bits are combined into groups of eight. A group of eight bits is called a **byte**. Each byte can be used to represent a number, letter or special character.

2.8 Size

Byte – a string of 8 bits

Kilobyte – 1,000 bytes
Megabyte – 1,000,000 bytes
Gigabyte – 1,000,000,000 bytes
Terabyte – 1,000,000,000,000 bytes

2.9 Chapter Review Questions

1. Which are the five basic units of a computer?
   (a) Central processing unit, Arithmetic and Logic Unit, Input Unit, Output Unit, Visual Display unit
   (b) Central processing unit, Random Access Memory, Input Unit, Output Unit, Visual Display unit
   (c) Central processing unit, Random Access Memory, Input Unit, Output Unit, Visual Display unit
   (d) Central processing unit, Main Memory, Input Unit, Output Unit, Backing Storage

2. Which of the following is **not** an input device
   (a) Mouse (b) speaker (c) Scanner (d)Digital Camera

3. Which of the following is **not** an output device
   (a) Printer (b) Scanner (c) speaker (d) Monitor

4. Which of the following is **not** a task of the Central Processing Unit?
   (a) It controls the transmission of information from application programs to output devices
   (b) It controls the transmission of data from input devices to memory;
   (c) It processes the data held in main memory;
   (d) It controls the transmission of information from main memory to output devices

5. Which of the following is used to store programs and data that are currently being used
   (a) Read only Memory (b) Hard Disk
   (c) Random Access Memory (d) Magnetic Disk

CHAPTER THREE

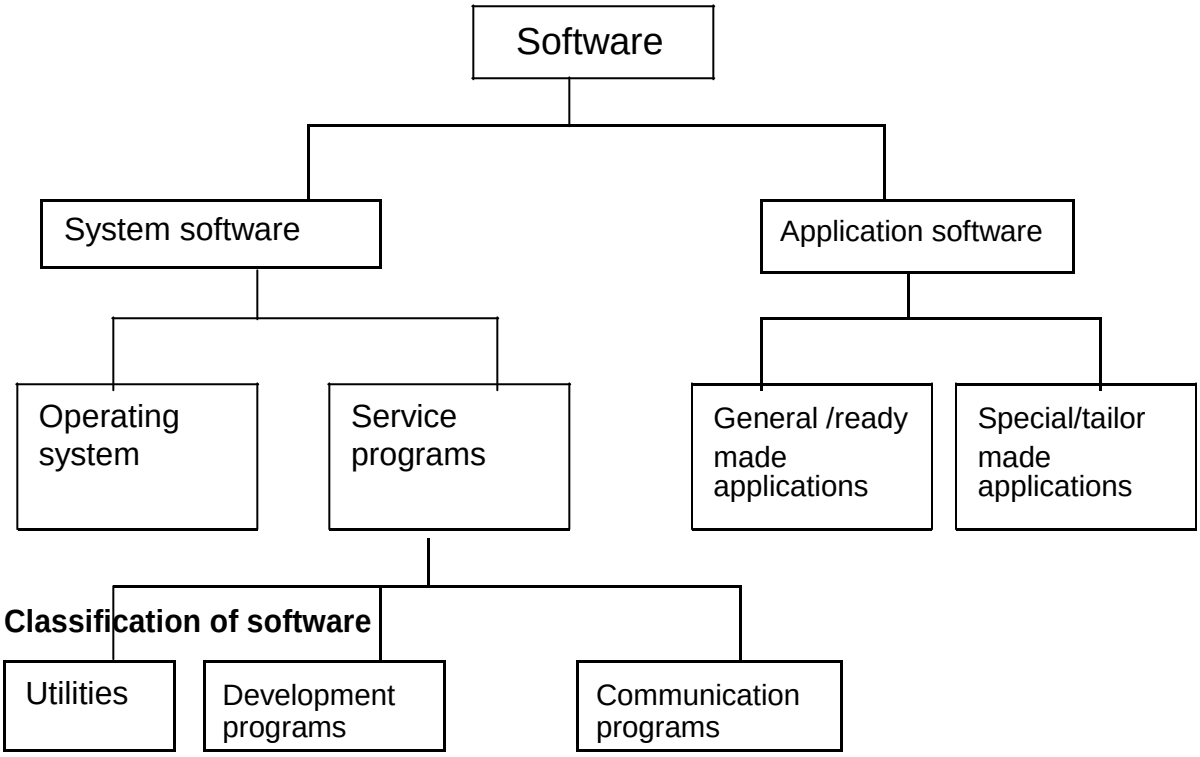
COMPUTER SOFTWARE

At the end of the chapter the learner shall be able to;

- Explain computer software and the classification of computer software
- Explain system software and the different software in that category and their application and importance in computing
- Explain application software and the different software in that category such general purpose and special purpose software
- Explain Ready made software vs tailor made software

Software is a Program commercially prepared and tested in software by one or a group of programmers and system analyst to perform a specified task. Software is simply set of instructions that cause a computer to perform one or more tasks. The set of instructions is often called a program or, if the set is particularly large and complex, a system. Computers cannot do any useful work without instructions from software; thus a combination of software and hardware (the computer) is necessary to do any computerized work. A program must tell the computer each of a set of tasks to perform, in a framework of logic, such that the computer knows exactly what to do and when to do it. Data are raw facts and ideas that have not been processed while Information is data that has been processed so as to be useful to the user

3.1 Classification of software



Software can be broadly classified into **system software** and **application software**

3.2 System software

Consists of programs that control operations of the computer and enable user to make efficient use of computers. They coordinate computer activities and optimize use of computers. They are used to control the computer and develop and run application programs examples of jobs done by the system software are management of computer resources, defragmentation etc. They can be divided into;

(i) Operating system – is a complex program and most important program that runs on a computer and which controls the operation of a computer. It perform basic tasks, such as recognizing input from the keyboard, sending output to the display screen, keeping track of files and directories on the disk, and controlling peripheral devices such as disk drives and printers. In general the operating system supervises and directs all the software components and the hardware components. Sophisticated operating system could handle multi-processors, many users and tasks simultaneously. Examples of computers operating systems are UNIX, Microsoft windows 95/98, Windows NT, Windows 2000, Windows XP, Windows Vista and Linux.

(ii)Service programs are programs designed for general support of the processes of a computer; "a computer system provides utility programs to perform the tasks needed by most users". The service programs can further be divided into;

- **Utilities** Performs a variety of tasks that maintain or enhance the computer"s operating system Utility programs are generally fairly small.
  Each type has a specific job to do. Below are some descriptions of utilities.
  - **Anti-virus applications** protect your computer from the damage that can be caused by viruses and similar programs
  - **Compression utilities** make files smaller for storage (or sending over the Internet) and then return them to normal size.
  - **Data recovery utilities** attempt to restore data and files that have been damaged or accidentally deleted.
  - **Disk defragmenters** reorganize the data stored on disks so that it is more efficiently arranged.
  - **Firewalls** prevent outsiders from accessing your computer over a network such as the Internet.

- **Development programs** are used in the creation of new software. They comprise of sets of software tools to allow programs to be written and tested. Knowledge of appropriate programming language is assumed**.** Tools used here are
  - **Text editors** that allows one to enter and modify programs statements

- **Assembler-** allows one to code in machine programs language .i.e. processor specific
- **Compilers-**makes it possible for programmer to convert source code to object code which can be stored and saved on different computers.
- **Interpreters-**used to convert source programs statement by statement as it executes the program without being compiled first.
- **Libraries**- commonly used parts or portions of a program which can be called or included in the programmer"s code without having to recode that portion.
- **Diagnostic utilities**-used to detect bugs in the logic of program during program development

- **Communication programs-** refer to programs that make it possible to transmit data.

3.3 Application software

Are programs for user to do their jobs e.g. typing, recording keeping, production of financial statements, drawing, and statistics.

- **General/ready made software** is developed to perform a variety of tasks, usually determined by use. Such software can be customized by user to achieve specific goals e.g. ms office which is a suit of programs performing a variety of tasks e.g. word processing for producing documents, database for storing, retrieving and manipulating data and various calculations on spreadsheets. General purpose programs are discussed below;
  - **Word processing applications.** Writing tasks previously done on typewriters with considerable effort can now be easily completed with word-processing software. Documents can be easily edited and formatted. Revisions can be made by deleting (cutting), inserting, moving (cutting and pasting), and copying data. Documents can be stored (saved) and opened again for revisions and/or printing. Many styles and sizes of fonts are available to make the document attractive. Example: MS Word, Word Pad etc.
  - **Spreadsheet applications.** spreadsheet software permits performance of an almost endless variety of quantitative tasks such as budgeting, keeping track of inventory, preparing financial reports, or manipulating numbers in any fashion, such as averaging each of ten departmental monthly sales over a six-month period. A spreadsheet contains cells, the intersection of rows and columns. Each cell contains a value keyed in by the user. Cells also contain formulas with many capabilities, such as adding, multiplying, dividing, subtracting, averaging, or even counting. An outstanding

feature is a spreadsheet's ability to recalculate automatically. If one were preparing a budget, for example, and wanted to change a variable such as an increase in salary or a change in amount of car payments, the formulas would automatically recalculate the affected items and the totals.. Example: Excel, Lotus1-2-3 etc.

- **Database software**: A database contains a list of information items that are similar in format and/or nature. An example is a phone book that lists a name, address, and phone number for each entry. Once stored in a database, information can be retrieved in several ways, using reports and queries. For example, all the names listed for a given area code could be printed out and used for a commercial mailing to that area. Examples of database software is Ms Access, Dbase, Oracle etc.

- **Presentation software:** for making slide shows. Allows users to create visual presentation A speaker may use presentation software to organize a slide show for an audience. Text, graphics, sound, and movies can easily be included in the presentation. An added feature is that the slide show may be enhanced by inclusion of handouts with two to six slides printed on a page. The page may be organized to provide space for notes to be written in by the audience as the presentation ensues. An example of this is Power Point. Preparation of the software is simplified by the use of 'wizards' that walk the user through the creation of the presentation.

- **Desktop publishing software:** This software permits the user to prepare documents by using both word-processing devices and graphics. Desktop publishing software uses word-processing software, with all its ease of entering and revising data, and supplements it with sophisticated visual features that stem from graphics software. For example, one can enhance a printed message with virtually any kind of illustration, such as drawings, paintings, and photographs. . Examples of Desktop publishing software is PageMaker, Corel Draw, and Ms Publisher

- **Multimedia applications** for creating video and music. Allows users to create image, audio, video etc. Example: Real Player, Media Player etc.

- **Activity management programs** like calendars and address books

NB: Nowadays most of the general purpose software is being sold as a complete **software suites** such as Microsoft office or Lotus SmartSuite. These suites offer four or more software products packaged together at a much lower price than buying the packages separately.

- **Tailor made/special purpose software** Tailor-made computer system refers to computer application developed by in-house IT personnel or outside software house according to specific user requirements in a firm. They are developed for given purpose e.g. Payroll system, stock control system etc.

3.4 Chapter Review Questions

1. Which of the following is **not** General Purpose software?
   (a) Stock Control (b) Word Processing (c) Internet software (d) Presentation
2. Which of the following is **not** part of the Ms. Office suite?
   (a) Ms Word (b) Ms Access (c) Outlook (d) Ms QuickBooks
3. Which of the following is **not** an operating system
   (a) Windows XP (b) Windows Explorer (c) Ms Dos (d) Linux

4. Which of the software below would assist a secretary in preparing a report for an annual general meeting?
   (a) Ms Word (b) Ms Access (c) Outlook (d) Ms QuickBooks

5. Which of the software below would assist a salesman in recording daily sales for different items for which he needs totals among other analysis?
   (a) Ms Word (b) Ms Access (c) Outlook (d) Ms Excel

CHAPTER FOUR

WINDOWS BASICS

At the end of the chapter the learner shall be able

- to; Explain the process of booting a computer
- Start a computer system and log on to windows operating system
- Start a program using the all programs menu#
- Turn off and restart a computer
- Retrieve files, create a folder and a shortcut to a program

4.1 Windows operating system Boot up Process

Booting Up

It is useful to understand what happens behind the scenes when you switch on your computer from an idle machine to an operable and functional system. There are essentially two forms of booting - the **soft boot** and the **hard boot**. The **warm boot or hard boot** involves powering the computer up from an initial zero power supply. A **cold boot** on the other hand takes place when a software application or operating system triggers the computer to perform a reboot.

A successful boot is dependent on 3 conditions - the hardware, BIOS and operating system files to function without errors. When an error occurs, you will be notified by error messages, beeping sounds or in the worst scenario, a blank screen.

Boot-up Process

The boot-up process is a list of detailed procedures that the system undergoes to perform all system checks and load all necessary files to bring the computer to an operable state.

The Windows XP boot-up process comprises of the following procedures:

a. **The Power-On Self Test Phase**

b. **BIOS ROM Phase**

c. **Boot Loader Phase**

d. **Operating System Configuration Phase**

e. **Security & Logon Phase**

4.2 Logging On to Windows XP

You must log on to the PC before you can use it. Each user is given a user name and a password which must be entered in the log-on screen before Windows will start up. When you log on you will have access to your own personal space.

The default Login screen for Windows XP computers is appears when you switch on the machine. To login; Enter your **user** and **password** in the respective boxes.

When you enter your password, Windows XP will display a series of ●●●●●●●●●●●s to protect your password from wandering eyes.

Press ***ENTER*** on the keyboard or click ***OK***

4.3 Windows XP Desktop

Desktop is your work area on which program and files icons are located. it is basically a workspace where you can access everything you need to operate your computer, such as system components, applications, the Internet, etc.

The desktop contains: **icons**

Start button
System Tray

taskbar

The desktop contains:

- **Start button**: one of the most important tools you will use while working with Windows XP. The Start button allows you to open menus and start applications.

- **Taskbar**: primarily used to switch between open windows and applications

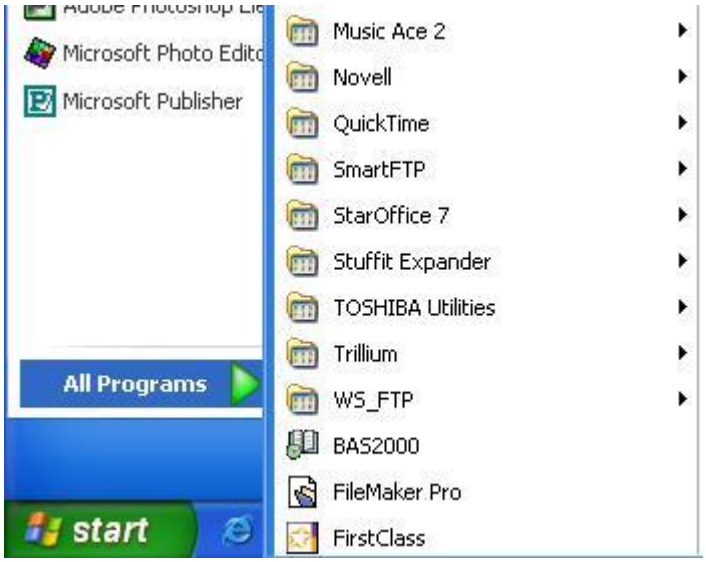
- **Icons (or graphical pictures)**: represent applications, files, and other parts of the operating system. By default Windows XP provides you with one desktop icon, the Recycle Bin. Learn more about the Recycle Bin in a later module.
- **My Computer.** The My Computer icon provides access to the resources on your computer. You can access your drives and other peripherals by

clicking on the My Computer icon. You can also access the Control Panel through My Computer.

- **Internet Explorer.** The Internet Explorer icon launches the Internet Explorer browser.
- **My network places.** If you are working on a network, this displays all of the computers on the network
- **System Tray**. The part of the taskbar that holds the clock, volume control, and icons for other utilities that runs in the background of your system.
- **Recycle Bin**. This is where you dump any files you want to delete.

4.4 Starting a Program

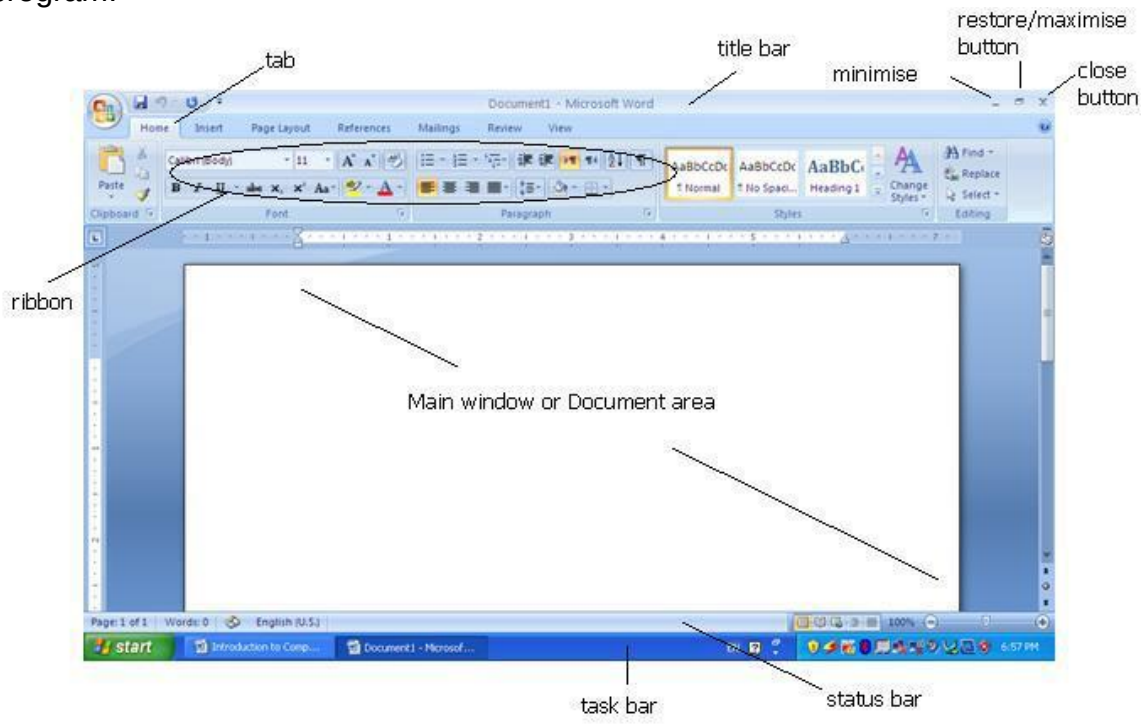
1. Click the **Start button**, the Start menu will pop up. 2. Point your cursor to **All Programs**. A Menu listing the different program categories pops up.



3. **Point your cursor** to Microsoft Office Another menu will appear to the right of the All Programs menu, as shown below. 4. Click on Microsoft Word.

Parts of a Window

Windows contain buttons and menus to control the program and window. Windows are used in most programs, but the good news is once you learn the window of one program, you will be familiar with the windows for most programs since the window, menu and button layout appears in just about every window program.



Close Button Closes the window or program, removing it from the screen and the computer"s memory. **Minimize Button** Minimizes a program from view. The program is still ready for use and can be found in the task bar.

Maximize Button Enlarges the window so that it fills the entire screen, allowing you to see your entire workspace. Notice, when a window is maximized, this button is not shown.

Restore Button When a window is maximized, this button is shown. Clicking it will make the window smaller.

Tab Controls what a program does. The menu functions listed will change from program to program, but the bar is always located at the top.

Status Bar Displays information about the program, such as instructions or special information.

Title Bar Displays the name of the program and name of the file in use.

Main Window .This is where you work within a program. If it is Microsoft Word, this is where you would type, if it is a web browser this is where the web page would be displayed.

Ribbon. Have shortcuts to the menu items

Log off and Switch Users

More than one person may use your computer. For example several coworkers may be able to access your computer on a computer network. Windows XP allows everyone who uses your computer to have separate computer accounts. A computer accounts tracks each person's unique settings, documents, and email accounts.

Windows XP even enables you to log off the computer so someone else can log on without having to restart the computer.

To log off/switch users:

- Click the **Start menu** and click **Log Off**.
- A dialog box appears asking you if you want to **Switch User or Log Off**.
- **Switch User** allows someone else to log on to the computer. If you choose to Switch User, your applications will continue to run in the background while the new user logs on.
- If you choose **Log Off**, your applications will close.
- In any case, you're taken to a Windows XP logon screen where you're prompted to enter your username and password.

Turn Off and Restart the Computer

When you've finished using Windows XP, be sure to turn off (or shut down) the computer correctly.

To turn off the computer:

- Click the **Start menu**.

- Click **Turn Off Computer**.
- A dialog box opens. Click **Turn Off**.

If you're experiencing computer problems or have installed something new, you can simply **restart** your computer.

To restart the computer:

- Click the **Start menu**.
- Click **Turn Off Computer**.
- A dialog box opens. Click **Restart**.

Always turn off or restart your computer using this method. Do not turn off your computer by switching the power off and on. If you do so, you may damage Windows XP.

4.5 Working With Files and Folders

Open your Folders

- Double click my computer and locate your file.
- Double click on the folder.
- The contents of the folder will be displayed in the open window. To get back to the previous folder, click the Back Button.

Creating a Folder

- Locate the place to create your folder e.g. My Documents, Desktop, C Drive
- Go to File – New – Folder. Or if creating on the desktop right click on the desktop and use the new option to create a folder.
- The folder will appear at the bottom of your list. When it displays as a black rectangle with the words **New Folder** highlighted in blue, it is prompting you to give it a name. Type the name of your folder and hit **Enter**.

Renaming a Folder

To rename an existing folder, move your mouse over the name and right click. A menu will appear. Close to the bottom you will see the word **Rename**. Click it, and the black rectangle with the word highlighted in blue will appear. Rename your folder and hit **Enter**.

Deleting a folder

- Right click on the folder and select delete or.
- Select the file, go to file menu and select delete
- A dialog box appears asking if you want to delete the folder, click yes

Once files are deleted they go to the recycle bin which is a holding or storage location for files not required. Such files are still in the hard disk. These files can be retrieved from recycle bin as long as recycle bin have not been emptied.

Retrieving files

Go to recycle bin.

Locate the file and right click on it and select restore.

Moving and copying files in folders

Using menu command

- Select the file
- Go to edit and click on copy
- Select the folder
- Go to edit and click on

paste. By dragging

- Click on the file and hold
- Drag it to the folder and release the button

Procedure of creating shortcuts

- Locate the item
- Right click and select shortcut
- Drag the shortcut created to the desktop.

To set a program to start when windows start

- Right click on the start button and select open.
- Click on the program or file you want and hold and drag it to the start menu on the icon for programs.

Printing

If any printers are already set up their icon appears in the printer folder (on start, then printers and faxes).

To set up a printer;

Click start menu, control panel.

Select printers and other hardware.

4.6 Chapter Review Questions

1. Which of the following is not contained in the Windows XP desktop
(a) Recycle Bin (b) Task Bar (c) Start Button (d) File menu

2. Which of the following has the command for turning off the computers system
(a) Recycle Bin (b) Task Bar (c) Start Button (d) File menu

3. A user can create a folder on the desktop. True or false

4. Which of the following is not part of a window?
(a) Task Bar (b) Menu Bar (c) Title Bar (d) Close Button

5. Explain the steps you would follow to create a folder in my documents location.

CHAPTER FIVE

WORD PROCESSING

At the end of the chapter the learner shall be able to;

- Explain the different word processing terms
- Creating new documents and open existing
- ones Type and edit text
- Use Save and Save As
- Perform spelling and grammar check after typing a document
- Apply formatting to text and page
- Print preview a document and print it
- Follow the mail Merging wizard to mail merge a document

Word processors are programs that enable you to Create, Edit and Format documents. Examples of word processors are, Microsoft Word, Word perfect, Word star.

Microsoft Word (MS-WORD)

Ms Word is a powerful word processing program that helps the user create, edit, format and save documents.

5.1 Loading Ms-Word

- Click start button at the task bar
- Point at programs
- Click at Microsoft word

Loading can also be achieved by clicking the Ms Word icon on the Microsoft shortcut bar (only if it is available)

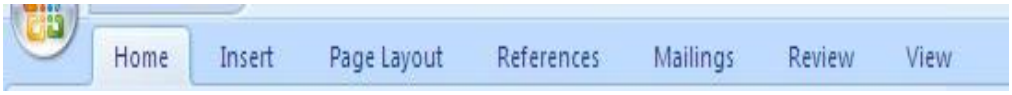
5.2 The Ms-Word Screen

The Ms Word screen contains various features. The common ones are:

1. **TITLE BAR:** This bears the name of the application followed by the name of the current document or the file.

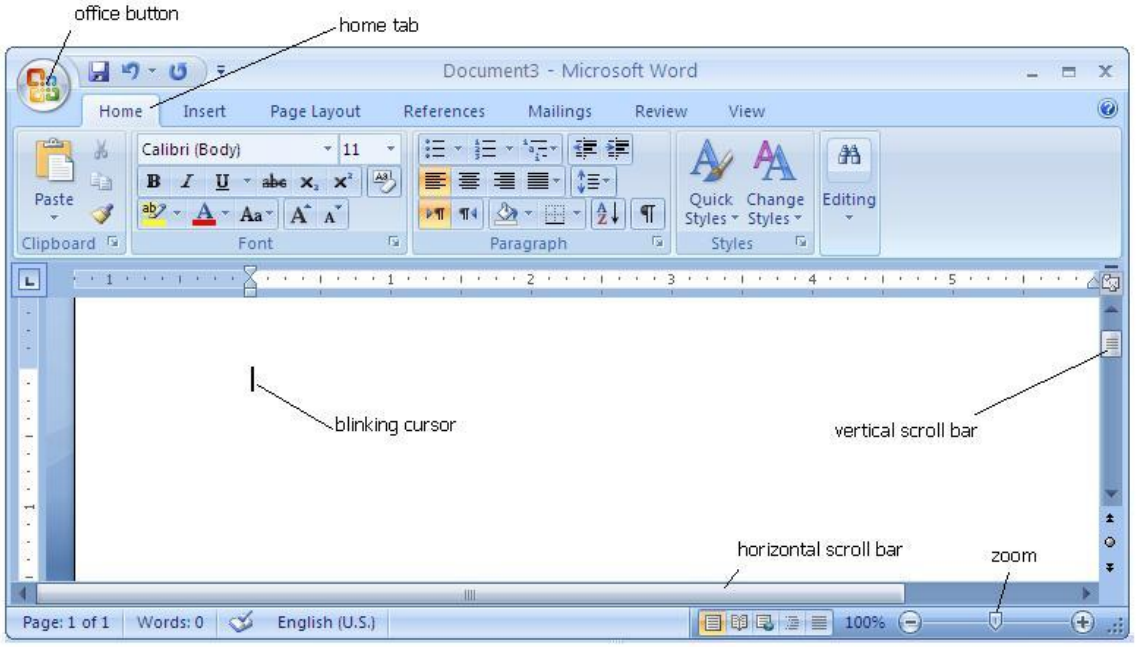
2. **OFFICE BUTTON:** It contains commands such as new for creating a new file, open, save, save as etc and commonly used commands.

3. **TABS:** There are seven tabs in word 2007, Home, insert, page layout, references, mailings, review, view each of them has a ribbon with a set of commands.



Ms-Word Screen

When the program starts, the following document window will be displayed on the screen.



5.3 Creating, Saving and Closing Documents

Creating

Option 1

1. From the office button, click New then double click the Blank Document icon.

Saving

To save a new document

- On the office button click Save As.
- Type the file name on the File name box that appears.
- Chose the location to save the file in the Save in box e.g. floppy (A), hard disk(C) etc
- Click the Save button.

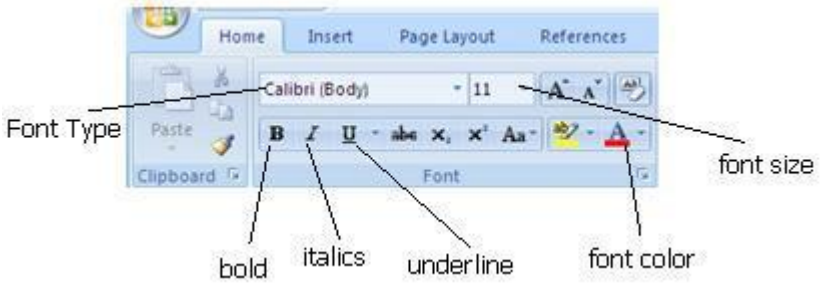
Closing

- Click close button on the Ms- Word desktop *or*
- From the file Menu click Exit.

Selecting Text/Block of Text

SELECT	**DO THIS**
A word	Drag over the word or Double click it
A graphic	Click anywhere within the graphic
A line of text	Drag over the text or Double click at the start of line
A sentence	Hold Down Ctrl key and click anywhere in the Sentence
A paragraph	Triple click anywhere in the paragraph to select
Entire document	From Edit, click Select All

5.4 Formatting



To bold text

- Select or highlight the text.
- In the home tab click bold.

To Italicize text

- Select or highlight the text.
- In the home tab click italics

To underline text

- Select or highlight the text.
- In the home tab click underline.

To change Font size

- Select or highlight the text.

- In the home tab click font size.
- Under font size choose and click the font size desired.

To change Font type of text

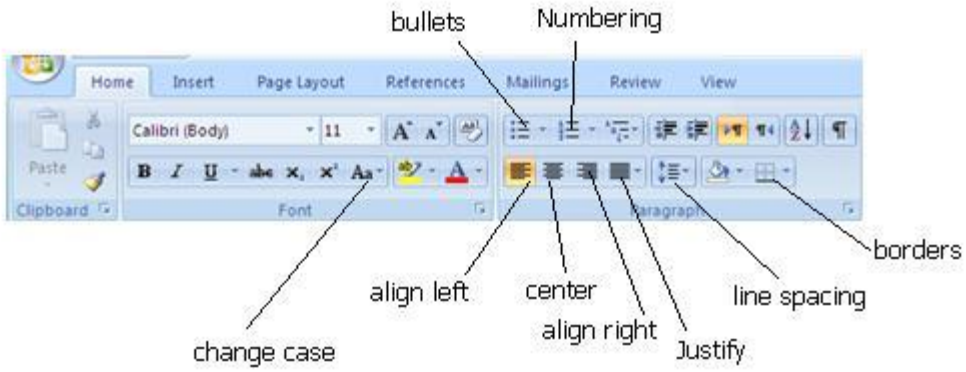
- Select or highlight the text.
- In the home tab click font type.
- Under font choose and click the font type desired.
- Click Ok.

To change the font color

- Select the text.
- In the home tab click font color.
- Under color box, choose the color desired.

Formatting Paragraphs

Word displays text, as it will appear when printed.



About line spacing

Line spacing determines the amount of vertical space between the lines and text. Word uses single line spacing by default.

Inserting line spaces

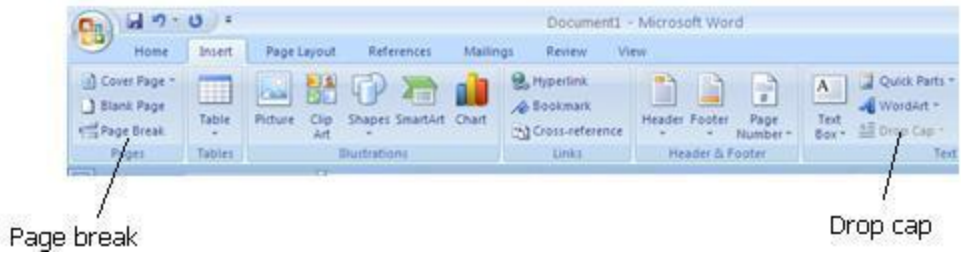
- In the home tab.
- Under line spacing, choose and click the desired line spacing.

Aligning text

- Select or highlight the text.
- In the home tab.
- Under alignment, choose and click alignment desired i.e. left, right or center.
- Click Ok.

Creating drop caps

- Place the cursor at the beginning of the line/paragraph you want to have a drop cap on.
- In the insert tab, click drop cap.
- Chose the desired option



Change case

- Highlight or select the text.
- In the home tab choose and click the desired case option e.g. upper, lower, title or sentence cases.

Adding bullets and numbers

- Select the items, which you want to add bullets or numbers.
- In the home tab click on the Bulleted or Numbered tab.
- Choose and click Bullet or Number format desired.

Remove bullets or numbering

- Select the items, which you want to remove bullets or numbers.
- On the format menu, click Bullets and Numbering.
- Choose none.
- Click Ok.

Page Break

1. Position the cursor where you want the page break to appear.
2. From the insert tab click on page break.

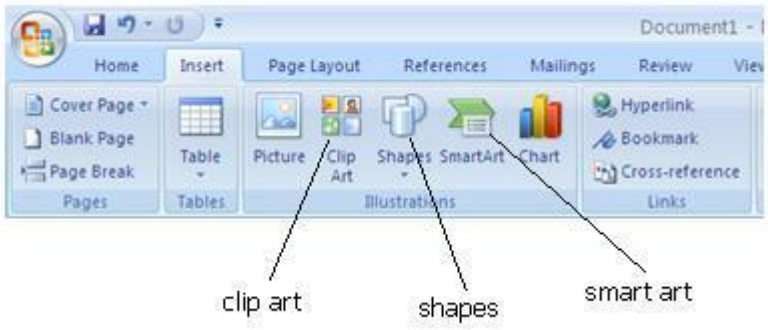
Add a background

You can add different backgrounds to Word documents.

1. On the home tab, point to background and then check the color you want or click more colors to see additional color choices. Click fill effects for special effects such as textures.
2. Select the option that you want.

Note: To remove a background, click NO FILL option.

Using SmartArt



This feature enables you to create visually compelling text affects e.g. slanting, curving text in a document.

1. From the insert tab, select smartart and click the smart art graphic desired.

Shapes

The insert tab has a variety of features used to create different shapes in a document.

1. From the shapes icon, select a tool that you will use to draw a certain shape e.g. a rectangle.
2. Click and drag to the desired position.

Insert a picture

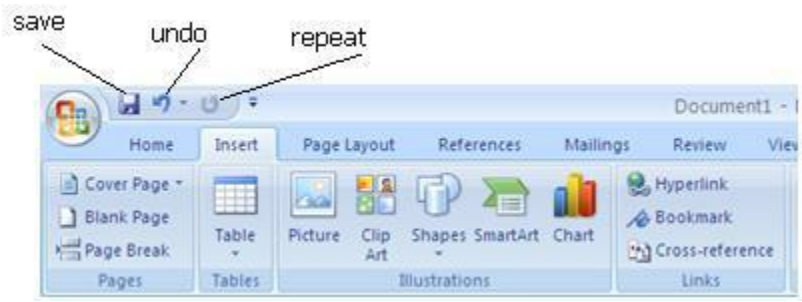
You can insert a clip art or a picture from the clip Gallery.

1. Position the insertion point(cursor) where you want to insert a clip art or a picture.
2. From the Insert tab, click the clip art icon.
3. Click a clip art category then choose a clipart and click insert clip.

To resize the objects

1. Click inside the object i.e. clipart, word art or a drawing.
2. Position the mouse pointer in either of the placeholders.
3. Click and drag to the desired size.
4. Release the mouse button.

5.5 Editing Your Document



To undo mistakes

Next to the office button, click undo or click the Undo button.

To undo several actions

1. Click the arrow next to the Undo button to see a list of the most recent actions.
2. Click the action you want to undo. If you don‟t see the action, scroll through the list.

5.6 To insert page numbers

- Select insert, page numbers from the insert
- tab Choose the position of page numbers
- Choose alignment of page numbers

Removing Page Numbers

- Select the page numbers icon to see the remove page numbers option as the last option in the list.

Adding Headers and Footers

A header is the text that appears repeatedly at the top of a document while footers is that text that repeatedly occurs at the bottom of a document.

To add a Header and Footers

- Under the Insert tab chose either the header or the
- **footer** Type the header/footer text
- You can switch from the header to the footer by clicking the switch button to move to the footer
- Click close button to return to the document.

To remove a header /footer - refer to removing page numbers

Copying and Pasting Text

An existing piece of text may be required in a different document. Ms word allows the user to copy this text rather than retype then paste it to the required area. when text or graphic is copied or cut, it is stored in the clipboard and can be pasted into as many documents as desired.

To copy and paste text

- Select the text to copy.
- Select Copy or copy icon on the home tab.
- Position the cursor where the text is to be placed.
- Select Edit, Paste or Paste icon on standard toolbar.

Moving text

- Select the text to move.
- Select Cut or click cut icon on the home tab.
- Position the cursor where you want the text placed.
- Select Edit, Paste or click paste icon on standard toolbar.

Note: When you cut, the text is completely removed from the original location.

To spell check a Document

- Select Spelling and Grammar… on the review tab.
- Follow the instructions as given to replace a word, ignore, edit etc
- Click Ok button when spelling and grammar is complete.

To find text

- On the home tab, click on Find.
- In the find what box, type the word/text being sought
- Click find next button
- To close the dialogue box, click cancel button

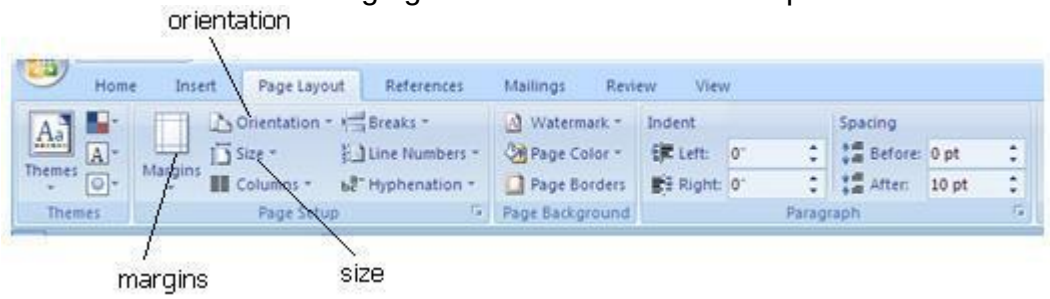
To Replace Text

- You can find and replace test at the same
- time On the home tab, click on replace
- In the find what box type word / text as above
- In replace with box type the word/ text to replace the sought word / text
- Click replace all button
- To close the dialogue box click cancel button

Changing Page Setup

Depending on the size of the paper required and / or paper orientation and layout,

Ms –word will allow changing of the default to users requirement.



To change page setup

- On the page layout tab, click size to change the paper to A4, A5, DL
- etc Under orientation check the circle for either portrait or landscape

Working With Tables

A table is made up of rows and columns that can be filled with text and graphics. You can sort and perform calculations on them. Tables make it easy to read information that would otherwise have to be written in a representative and lengthy fashion. Use tables to organize information and create interesting page layouts with side-by-side columns of text and graphics.

The simple table:

1. In the insert tab click table.
2. In the no. of columns box enter the number of columns.
3. In the no of rows box enter the number of rows.
4. Click Ok.

Creating a table with a different format

1. In the insert tab click table
2. Choose a table format of your choice under quick tables
3. Click Ok.

Merging cells in a tab

1. Select the cells to be merged.
2. Right click to see the merge cells option.

Splitting the cells

1. Select cell to be split
2. From the shor tcut menu obtained by right clicking choose split cells
3. Type the number of columns and rows each cell is to be cell splitted

To delete rows and columns in a table

1. Select the row or the column to be deleted
2. From the shortcut menu choose deleted cells
3. In the deleted cell dialog box choose an option i.e. entire row or column
4. Click Ok

Adjusting column width

1. Position the mouse pointer over the column boundary until it changes shape
2. Drag the column boundary to the right or left

Adding rows to a table

1. Select the row to row as above which you want to insert a new row
2. From the table menu choose insert cells
3. In the insert cells dialog box choose an option e.g. insert the entire row.
4. Click Ok.

To delete cells in a table

1. Select the cells you want to delete
2. From the layout tab choose the delete cells option

5.7 Columns

Newspaper style columns

You can format text into multiple newspaper style columns. This is best applied when creating documents like newspaper, newsletters or brochures.

Option 1

Using the columns button on the page layout tab

1. Highlight the text to be columned.
2. Select the number of columns you want.

Templates

A template is a document that contains predefined settings. The use of templates ensures that there is consistency between documents.

1. From the office menu choose new.
2. Click on the relevant tab depending on the type of document you want to create e.g. letters and faxes, legal document, menus etc.
3. Select the template that you want to use.
4. Click Ok.
5. Delete the default text and type your own.

To Print a Document

1. From the office menu, click print.
2. In the name box select a printer.
3. Choose an option for the number of pages to be printed
   i.e. **ALL**: -Prints the entire document
   CURRENT PAGE: -prints the current page
   PAGE: -you can select certain pages within a document
4. .In the number of copies box, specify the number of copies you want in each page.
5. Click Ok.

Mail Merging

If you had to type the same form letter 100 times, you know what boring and back breaking work it can be. Never again, by setting up the form letter as a Ms Word merge documents, you need type the letter only once.

STEP 1

1. From the mailings tab click **Mail Merge and choose letters**

STEP 2

Select recipients

One can select from an existing file or by creating a new data source

Creating a new data source

1. Choose **get data** type new list
2. Create data source dialogue appear as shown below
3. Remove the fields not needed and / or create new field
4. When you have finish creating the fields click ok
5. Type the data to be stored

STEP 3

1. Place the cursor to position of field insertion
2. From the mail merge toolbar click **insert merge field**
3. Repeat field insertion until all the fields have been inserted
4. Choose Finnish merge

5.

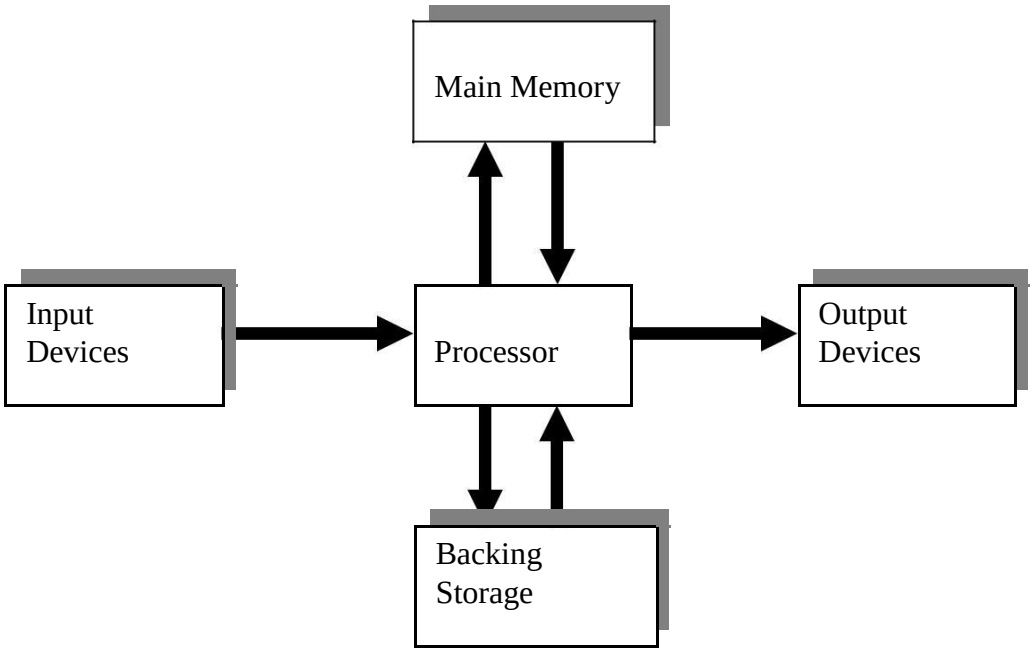
Instructions: Reproduce the document below in MsWord

Definition of a computer A

Different types of computers

- Supercomputer
- Mainframe computer
- Minicomputer
- Workstations
- Personal computer
    - Desktop (e.g., PC's, I-Macs ...)
    - Notebook and Laptop

BASIC UNITS



1 Kilobyte	1024 bytes
1 Megabyte	1024 Kilobytes
1 Gigabyte	1024 Megabytes

CHAPTER SIX

SPREADSHEETS

At the end of the chapter the learner shall be able to;

- Explain the different Spreadsheet terms
- Create a new spreadsheet and open an existing one
- Input text, numbers and simple formulae
- Employ simple functions such as SUM, AVERAGE
- Create and modify charts/graphs to illustrate data

Spreadsheets are application packages used for manipulation of figures. A spreadsheet usually consists of a series of rows and columns. The figures or text are inserted into cells. Examples include Ms Excel, Lotus 1-2-3,Supercalc, Quattro Pro.From the examples given, we shall tackle Ms Excel.

Applications of Spreadsheets

1. Can be used to record sales, produce invoices and compile statements.
2. Researchers can compile and analyze their results.
3. Teachers can compile their students" marks and produce overall results.
4. Clerks and secretaries can easily create tables of figures and manipulate.

6.1 MICROSOFT EXCEL

START EXCEL

Option 1

Click the start button moves to programs move to Microsoft excel and click

Option 2

Click the excel button on the Microsoft shortcut if only if the option available

6.2 THE EXCEL WINDOW

Window

When you work in Excel, you use workbook files to hold your information. Each workbook consists of several worksheets made up rows and columns of information.

A workbook therefore allows you to organize various kinks of related information in a single file (or workbook)

Worksheet

A worksheet is one sheet in an Excel workbook. Each worksheet consists of 256 columns and 65,536 rows.

Columns

Columns are the vertical divisions of a worksheet that are identified by letters. The columns begin with A and proceed through the alphabet. The 27^{th} column is AA followed by AB, AC, and this convention for naming continues through the entire alphabet until you end up with the last column (column 256) which is designated IV.

Rows

Rows are the horizontal divisions of a worksheet and are identified by numbers.

Cells

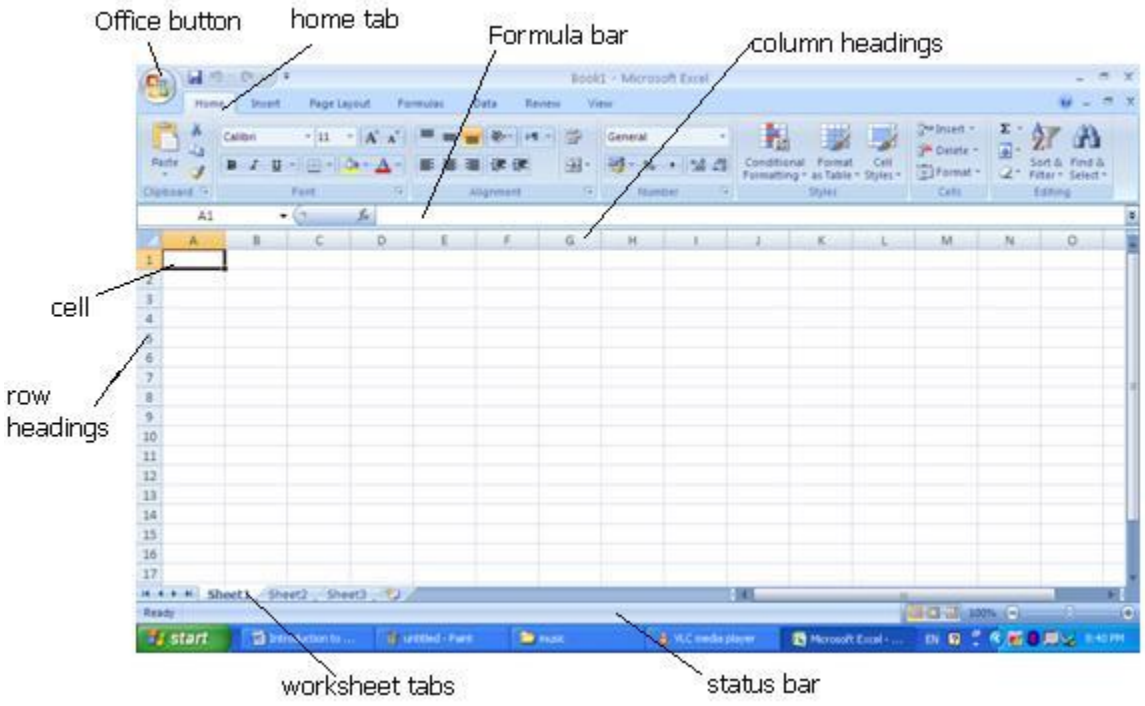
A cell is the intersection of a row and a column. Each cell has an address that consists of the column letter and row number (A1, B3, C5 and so on)

Each cell is capable of containing different types of information e.g. text, number, times, formulas. Excel data basically comes in two varieties: labels and values.

A ***label*** is a text entry consisting of alphanumeric characters. It is called a label because it typically provides descriptive information such as the name of a place, person, e.t.c. A label has no numerical significance in Excel.

A ***value*** is data that has numerical significance. These include numbers, dates and times that you enter on your worksheet. Values can be acted on by formulas and functions.

The figure below shows the elements of an Excel window.



Element	***Description***
Formular bar	When you enter information into a cell, it appears in the Formula bar.You can use the formula bar to edit the data later. The cell"s location also appears.
Column Headings	The letters across the top of the worksheet, which identify the columns in the worksheet.
Row Headings	The numbers down the side of the worksheet, which Identify the rows in the worksheet.
Cell Selector	The dark outline that indicates the active cell. It Highlights the cell you are currently working in.
Worksheet tabs	These tabs help you move from worksheet to Worksheet within the workbook. The active Worksheet is displayed in bold.

Active cell	It indicates the cell in which the typed data will be entered. It is also known as the current cell.

Create a new workbook

Option 1

1. On the office menu, click New
2. To create a new blank workbook, click the General tab and then double click the workbook icon.

Saving a workbook

1. In the office menu click save as.
2. In the save in text box click and specify the location to save in.
3. In the file name text box type the name of the file.
4. Click save.

NB

The first time you click „save as" from the file menu, the Documents folder is displayed by default as the folder to save in.

Close a workbook

On the file menu click close.

6.3 WORKING WITH WORKBOOKS AND WORKSHEETS

Moving around in a worksheet

To move between cells on a worksheet, click any cell or use the arrow keys. When you move to a cell, it becomes the active cell (the selected cell in which data is entered when you begin typing. Only one cell is active at a time .A heavy border bound the active cell)

To see the different area of the sheet, use the scroll bars.

Switch to another sheet in a workbook

Click the sheet tab

(A tab near the button of a workbook window that displays the name of a sheet To display a shortcut menu, click a tab with the right mouse button .To scroll through the sheet tabs, use the tab scrolling buttons to the left of the tabs)

Insert a new worksheet

On the home tab, click insert and then chose worksheet

Delete sheets from a workbook

1. Select the sheets you want to delete.
2. On the home tab select delete sheet.

Rename a sheet

1. Double click the sheet tab.
2. Type a new name over the current name.

6.4 ENTERING DATA

Enter numbers, text, date, or time

1. Click the cell where you want to enter data.
2. Type the data and press ENTER or TAB.

Use a slash or a hyphen to separate the parts of a date, for example, type 8/6/99 or jun-99

To enter a time based on the 12-hour clock, type a space and then a or p after the time for example, 9.00 p. Otherwise, Microsoft Excel enters the time as AM.

Enter a formula

1. Click the cell in which you want to enter the formula.
2. Type =(an equal sign)
3. Enter the formula.
4. Press ENTER.

Enter the same data into several cells at once

1. Highlight the cells where you want to enter data.

The cells can be adjacent or nonadjacent

2. Type the data and press CTRL+ENTER

Fill in a series of numbers, dates or other items

1. Select the first cell in the range you want to fill and enter the starting value for the series.

To increment the series by a specified amount, select the next cell in the range and enter the next item in the series. The difference between the two starting items determines the amount by which the series is incremented.

2. Select the cell or cells that contain the starting values.
3. Drag the fill handle over the range you want to fill.
   - To fill in increasing order, drag down or to the right.
   - To fill in decreasing order, drag up or to the left.

Cancel or undo an entry

To cancel an entry before you press ENTER, press ESC.

To undo a complete entry, click Undo button on the standard tool bar.

Tips on entering numbers

To avoid entering a fraction as a date, precede fractions with a 0 (zero); for example, type0 ½ (there is a space between zero and ½)

Precede negative numbers with a minus sign (-), or enclose the numbers in parentheses ().

Select cells, ranges, rows and columns

To select	**Do this**
A single cell	Click the cell, or press the arrow keys to move to the cell.
A range of cells	Click the first cell of the range and then drag to the last cell.
All cells on a worksheet	Click the select All button.
Nonadjacent cells or cell ranges	Select the first cell or range of cells, and

then	
	hold down CTRL and select the other cells or ranges.
A large range of cells	Click the first cell in the range, and then hold down SHIFT key and click the last cell in the range.
An entire row	Click the row heading.
An entire column	Click the column heading.
Adjacent rows or columns	Drag across the row or column headings.
Non-adjacent rows or columns hold	Select the first row or column, and then
	down CTRL and select the other rows or columns.

Select sheets in a workbook

If you select more than one sheet, Microsoft Excel repeats the changes you make to the active sheet on all other selected sheets. These changes may replace data on other sheets.

To select	***Do this***
A single sheet	Click the sheet tab.
Two or more adjacent sheets hold down	Click the tab for the first sheet and then
	SHIFT and click the tab for the last sheet.
Two or more nonadjacent sheets down	Click the tab for the first sheet and then hold
	CTRL and click the tabs for the other sheets.
All sheets in a workbook	Right click a sheet tab and then click Select All Sheets on the shortcut menu.

To cancel a selection of multiple sheets in a workbook, click any unselected sheet. If no unselected sheet is visible, right click the tab of a selected sheet then click Ungroup Sheets on the shortcut menu.

Clear or delete cells, rows or columns

When you delete cells, Microsoft Excel removes them from the worksheet and shifts the surrounding cells to fill the space. When you clear cells, you remove the cell contents (formulas and data), formats or comments but leave the blank cells on the worksheet.

To clear contents, format or comments from cells

1.Select the cells, rows or columns that you want to clear.

2. Press the delete key on your keyuboard.

Delete cells, rows or columns

1. Select the cells, rows or columns you want to delete.
2. Home tab, click Delete.

Undo mistakes

To undo recent actions one at a time, click Undo next to the save icon.

To undo several actions at once, click the arrow next to Undo button and select from the list. Microsoft Excel reverses the selected action and all actions above it.

To undo several actions at once, click the arrow next to Undo button on the standard toolbar and select from the list. Microsoft Excel reverses the selected action and all actions above it.

Insert cells, rows or columns

You can insert blank cells, rows and columns and fill them with data.

Insert blank cells

1. Select a range of existing cells where you want to insert the new blank cells.
2. Select the same number of cells as you want to insert.
3. On the insert icon under the home tab, click cells.
4. Click Shift cells right or shift cells down.

Insert rows

1. To insert a single row, click a cell in the row immediately below where you want the new row. For example, to insert a new row above Row 5,click a cell in Row 5.

To insert multiple rows, select rows immediately below where you want the new rows, select the same number of rows you want to insert.

2. On the Insert menu, click Rows.

Insert columns

1.To insert a single column, click a cell in the column immediately to the right of where you want to insert the new column. For example, to insert a new column to the left of column B, click a cell in column B

To insert multiple columns, select columns immediately to the right of where you want to insert the new columns. Select the same number of columns as you want to insert.

2. On the Insert icon on the home tab, click Columns.

6.5 FORMATTING A WORKSHEET

Change the size, font, colour, or other text format

You can specify a font, font size and font color by clicking buttons on the home tab.

Change the font or font size

1. Select whole cells or the specific text in a single cell that you want to format.
2. In the Font box, click the font you want.
3. In the Font size box, click the font size you want (on the home tab)

Make selected text or numbers bold, italic or underlined

1. Select whole cells or the specific text in a single cell that you want to format.
2. On the home tab, click a button for the format you want.

To make text	***Click***
Bold	**B**
Italic	***I***
Underlined	**U**

Change the text color

1. Select whole cells or the specific text in a single cell that you want to format.
2. To apply the recently most selected color, click Font Color **A**

To apply a different color, click the arrow next to Font Color **A** and then click a color on the palette. 

6.6 APPLYING BORDERS

To apply border styles

1. Click the Border tab in the home tab.
2. Click the line style you want and then click a button to indicate the border placement.

To apply borders to selected cells that contain rotated text

1. Click Cells on the Format icon under the home menu.
2. Click the Border tab and then use the Outline and Inside buttons under Presets.

The borders are applied to the edges of the cells which are rotated to the same degree as the rotated text.

To change the line style of an existing border

1. Select the cells on which the border is displayed.
2. On the Border tab (Cells dialog box, Format menu) click the new line style in the style box and then click the border you want to change in the cells diagram under border.

Change column width and row height

You can adjust the width of columns and the height of rows. You can also define the default width of columns for a worksheet. Defining the default column width adjusts all columns to the same width except columns that have previously been changed.

Change column width

Using different options

1. Drag the boundary on the right side of the column heading until the column is the width you want.

2. To change the column width for multiple columns, select the columns you

want to change. Then drag a boundary at the right of a selected column heading.

3. To change the column width for all columns on the worksheet, click the Select All button (at the left edge of the borders) and then drag the boundary of any column heading.

4. To make the column width fit the contents, double-click the boundary to the right of the column heading

Change row height

Using different options

1. Drag the boundary below the row heading until the row is the height you want.

2. To change the row height for multiple rows, select the rows you want to change then drag a boundary below a selected row heading.

3. To change the row height for all rows on the worksheet, click the Select All button (at the left edge of the borders) and then drag the boundary below any row heading.

4. To make the row height fit the contents, double-click the boundary below the row heading.

THE FILL HANDLE

The fill handle enables you to extend a series. It is also used for copying formulas.

Procedure

1. Position the mouse pointer right on the block like mark in the bottom right corner of the active cell.
2. Click and drag to extend a series.

6.7 OPERATORS

Operators are signs or symbols which specify the type of a calculation that you may perform in the elements of a formula.

There are four different types of calculation operators i.e.

1. Arithmetic
2. Comparison
3. Text and
4. Reference

ARITHMETIC OPERATIONS

They perform basic mathematical operations e.g. addition, subtraction, multiplication and division.

Operator	***Performs***	***Sample Formula***	***Result***
^	Exponentiation	=A1^3	Enters the result of raising the value in cell A1 to the third power.
+	Addition	=B1+B2	Enters the total of The values in cells B1 and B2.
-	Subtraction	=B1-B2	Subtracts the value In cell B2 from the value in cell B1.
*	Multiplication	=A1*B1	Multiplies the value cell A1 by cell B1.
/	Division	=A1/B1	Divides the value in cell A1 by the value in cell B1.

COMPARISION OPERATORS

They compare two values then produce a logical value i.e. TRUE or FALSE.

OPERATOR	***EXAMPLE***
= (Equal to)	A1=B1
> (Greater than)	A1>B1
< (Less than)	A1<B1
>=(Greater or equal to)	A1>=B1

<=(Less or equal to) A1<=B1
<>(Not equal to) A1<>B1

REFERENCE OPERATORS

OPERATOR ***EXAMPLES***

:(COLON) Range operators which produces one reference for all the cells **B5:B15** between two references.

,(COMMA) Union operator which combines multiple references into one. **Sum (B5:B15, D5:D1)**

FORMULAS

A formula is an equation that analyses data in a worksheet. Formulas perform operations e.g. addition, multiplication, comparison etc. They can refer to other cells on the same worksheet as well as other sheets in the same workbook or even in other workbooks .A formula must always begin with an equal sign or symbol e.g**.=10-5**. The result of the formula is then displayed in the cell.

You can use **parentheses** to change the **syntax** (structure or order of elements) e.g. in the formula =5+2*3 Excel carries multiplication first .If the parentheses are used, the syntax changes.
E.g. =(5+2)*3

FUNCTIONS

This is a special kind of predefined by Excel
The specific arguments required by a function depend on what the function does.

THE SUM FUNCTION

The sum function sums up a range total. This function saves time e.g. instead of creating a formula = A1+B1+C1+A2+B2+C3+A3+B3+C3 a sum function will make it easy i.e.
=SUM (A1:C3)
Please, note the reference operator **:(colon)**

RETURN VALUES OF FUNCTIONS

AVERAGE: If cell A1 contains value 12 and B1 value 8,the function =average (A1:B1) returns 10.

MODE: This is the most frequently occurring or repetitive value in an array of data
syntax e.g. =mode (10,3,4,3,5,3,7,3,4)
N/B If a data set has no duplicate values, mode returns the # N/A error value.

MEDIAN: This is the middle value or the number in the middle of a set of numbers
Syntax e.g. =median (2,4,6,8,10)
Numbers in the middle e.g.
=Median (1,2,3,4,5) equal 3
=Median (1,2,3,4,5,6,) equals to 3.5 and this is the average of 3+4

Excel Error Values
The various types of errors you may encounter as you use formulas are:

Error	***Description***
#DIV/0!	The formula is attempting to divide by zero. Check the cell references for blanks or zeros that may have resulted if you deleted a cell referenced by the formula.
#N/A	The formula refers to a cell with a #N/A entry or a cell that contains no value. This error warns you that not all the data referenced by a formula is available.
#NAME?	Excel doesn"t recognize a name you entered in a formula. Verify that all names in the formula exist and define any missing names. If applicable, verify that you used the correct function name.
#NULL!	The formula specifies two areas that don"t intersect. Check to see if you entered the cell or range reference incorrectly. Remember to use commas (not spaces) between function arguments.
#NUM!	There is a problem with a number used in the formula. Check for the correct use of function arguments.
#REF!	A cell reference in the formula is incorrect. Check for changes to cell reference caused by deleting cells, rows or

	columns referenced by the formula.
#VALUE!	The formula contains the wrong type of argument or operator. Check for the correct syntax of the formula.

Merge cells to span several columns or rows

Merging combines two or more selected adjacent cells to create a single cell. The resulting merged cell contains the upper left-most data in the selection which is centered within the cell. The cell reference for a merged cell is the upper-left cell in the original selected range.

1. Select the cells that you want to merge.
2. To merge cells in a row and center the cell contents, click Merge and Center.

To merge any selection of cells within a row or column, click merge cells on the home tab.

6.9 WORKING WITH CHARTS

You can display Microsoft Excel data graphically in a chart. Charts are linked to the worksheet data they are created from and are updated when you change the worksheet data. You can create charts from cells or ranges that are not next to one another.

1. Select the cells that contain the data that you want appear in the chart.
2. Under the insert tab select the kind of chart you want.
3. The chart is prepared for you.

Create a chart from non-adjacent selections

1. Select the first group that contains the data you want to include.
2. While holding down CTRL key, select any additional cell groups you want to include.
3. Under the insert tab select the kind of chart you want.
4. The chart is prepared for you.

Move and resize chart items by the use of the mouse

You can use the mouse to resize and move the chart area, the plot area and the legend. Microsoft Excel automatically sizes titles to accommodate their text. You can move titles with the mouse but not resize them.

1.Click the chart item.
2.To move a chart item, point to the item and then drag it to another location.

To resize a chart item, point to a sizing handle.

When the mouse pointer changes to a double-headed arrow, drag the sizing handle until the item is the size you want.

Rotate text in a chart title or along an axis

You can rotate or “angle” text in a chart or along an axis. However, you cannot rotate legend text.

1. Click the axis or the title you want to format.
2. If you clicked an axis, click Axis on the Format menu.
3. Click the Alignment tab.
4. To rotate text, under Orientation, click a degree point or drag the indicator to the position you want.

About using a list as a database

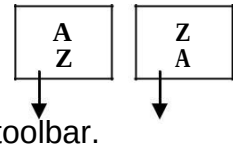
In Microsoft Excel, you can easily use a list as a database. When you perform database tasks such as finding, sorting or subtotaling data, Microsoft Excel automatically recognizes the list as a database and uses the following list elements to organize the data.

- The columns in the list are the fields in the database.
- The columns labels in the list are the fields names in the database.
- Each row in the list is a record in the database.

Sorting a list

You can rearrange the rows or columns of a list based on the values in the list by sorting. When you sort, Microsoft Excel rearranges rows, columns or individual cells by using the sort order that you specify. You can sort lists in ascending (1 to 9,A to Z) or descending (9 to 1,Z to A) order and sort based on the contents of one or more columns.

Sort in ascending or descending order



1.Click a cell in the column you would like data sort.
2.Click Sort ascending or descending button on the standard toolbar.

Sort columns based on the contents of rows

1.Click a cell in the list you want to sort.
2.On the Data tab, click sort.
3.Click Options.
4.Under Orientation, click sort left to right and then click Ok.
5.In the Sort by and Then by boxes, click the rows you want to sort. 6.Click Ok.

Using apply filter

Autofilter

Displays only those rows that match the value in the active cell and inserts Autofilter arrows to the right of each column label.

Show all

Displays all of the rows in a filtered list.

6.10 Chapter Review Exercise

Intermediate Spreadsheet Concepts Exercise

Create a spreadsheet using the following information. You have been asked to prepare a spreadsheet to show the profit and loss figure for the last financial year. The profit and loss should be shown as a dollars and as a percentage.

1) Enter the raw data below, applying as many presentation Features (Font, Font Size, Font Colour, Number Formats and Colour, Cell Shading, Text Rotation, etc) to it as you wish.
2) Apply appropriate number formats to your numbers.
3) Give your spreadsheet an appropriate title and center it across your spreadsheet.
4) Select the best page orientation for your spreadsheet.
5) Adjust the column width and row height to suit the layout you have selected.
6) Create formula's to calculate the profit / loss as a currency for each month.
7) Create formula's to calculate the profit / loss as a percentage for each month.
8) Create formula's to calculate the Annual Totals for the Income, expenditure, and profit / loss.
9) Create a formula to calculate the profit / loss for the whole year.
10) Setup an appropriate header for this spreadsheet.
11) Setup a page number for this spreadsheet and place it in the footer.

Month	Income	Expenditure
March	1259.9	1410.45
April	1163.98	1499.10
May	1533	1370.25
June	1774	1440.8
July	1631	1530.25
August	1658	1490.55
September	1781	1369
October	1821.54	1420

November	2233.82	1611.81
December	2537.22	1577.63
January	1650	1423.98
February	1623	1598.12

CHAPTER SEVEN

DATABASE MANAGEMENT SYSTEMS

At the end of the chapter the learner shall be able to;

- Explain the different database terms
- Open and use an existing database
- Design and create a simple database
- Save database objects with appropriate names
- Create simple queries
- Design input forms
- Design output reports

These are software that allow records to be entered in the system and to be retrieved in a specified format. Examples are Ms Access, Paradox, Dbase, FoxPro, Sybase.
From the above examples, we shall look at Ms Access.

7.1 MS ACCESS

MS Access is a database tool used to store, maintain and use a collection of information that is organized to serve a specific purpose.

A database is a collection of related information organized to serve a specific purpose.

Benefits of using database to store information

1. Fast retrieval of information i.e. data is easier to find.
2. Easy to maintain accurate and up to date data.
3. Easy to analyze and make summary reports on the stored data.
4. Easy to protect your data from unauthorized access.
5. Information can be accessed in many ways.

Database objects

Tables, Queries, Forms, Reports, Macros, Modules.

Tables

Collection of data about a specific subject e.g. customers, employees e.t.c. In a table, data is organized in fields (columns) and records (rows)
A table consists of:

(a) Field names
(b) Data types
(c) Description

(a) ***Field name***: - these are column headings for the table being created.
(b) ***Data types:*** - the attribute of a field that determines the type of data it can hold e.g. text, Numeric, Currency etc.
(c) ***Description:*** - This column is optional but can be used to give a detailed of the field name.

Primary key: - This is a field that is used to uniquely identify each record stored in a table.

Queries

A query is a type of database search. It enables you to retrieve data that has met conditions you specify, indicating data from tables.

The word „query" literally means „to ask". Access queries provide a way of asking about your data. When you design a query, you identify the fields to be included and the records to be retrieved from one or more tables.

You can as well update or delete multiple records at the same time, perform built in or custom calculations on your data.

Forms

They are used for adding new data, editing or displaying existing data. This data can be in a table or a query. Information entered directly in a form will appear in Tables automatically.

Reports

The desired result of any database is to provide information in the form of reports. You can print reports from tables or queries in any desired format. Reports are used to summarize and display data from your database. It displays the most up-to-date information.

Modules

They are collection of codes using Access Basic programming language. If programming is necessary, you can write modules.

Database definitions

1. ***Field:*** This is any piece of information in a database e.g. Names, Age, Birth date.
2. ***Record:*** It is a collection of several related fields.
3. ***Database File:*** This is a collection of several records.

Applications of databases

1. ***Educational applications:*** Preparing students" reports, class schedules.
2. ***Retail applications:*** This may include sales projections and Quotas, Market analysis e.t.c.
3. ***Legal applications:*** This may include client information and case schedules.
4. ***Financial applications:*** This may include stock market forecasting and end of year financial reports.

PLANNING REQUIREMENTS

In order to plan an efficient database you need to ask yourself some questions, these include.

1. What information do I need to keep track on?
2. What is my hardware and software capability?
3. Who will be using the database?
4. What are the projected future database needs?

Using the example of student records database, let us design, implement and use Access as a database manager.

The subject/object here is a student and the suggested field names could be;

i) Student"s name
ii) Student"s registration number
iii) Student"s address
iv) Parent"s name
v) Age
vi) Sex
vii) Course taken
viii) Subjects
ix) Hours a subject takes
x) The lecturer
xi) Lecture"s rate per hour
xii) Tuition fee
xiii) Course duration
xiv) Date of admission

xv) Amount paid

All the above listed is information about one object – student. There is need however to limit the list to the subject area only.

Therefore the next stage you ask question (s) like:

- Do I want to store information about lecture"s records or student"s?
- If I want the student"s records, should I include fee payments records, timetable or examination records?

Let us assume we wish to store student fee payment records only. This will reduce above list to the following.

i) Student"s name
ii) Student"s registration number
iii) Student"s address
iv) Course taken
v) Age
vi) Sex
vii) Date of admission
viii) Amount paid

7.2 WORKING WITH ACCESS 2000

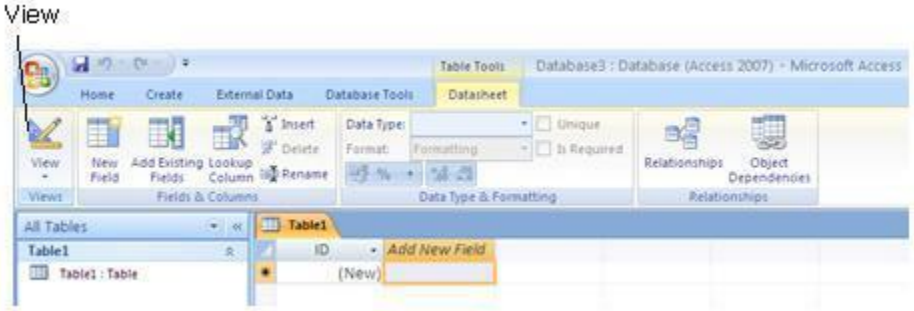
Starting Access

1. Click start button and move to programs.
2. Move to Ms access and click.
3. The resulting dialog box prompts you to create a new database using either blank database, database wizard or existing database.
4. Click „blank database, option since you are creating a new one. To open an existing one, click the appropriate option.
5. The „file new database" window appears. Enter the name of the database you want to create i.e. ***(Macarl student record system)*** and click Create.
6. A database window appears. It is blank since there are no tables, queries, forms, and reports.

NB: The database name ***(Macarl student record system)*** is displayed on the title bar of the database window.

7.3 WORKING WITH TABLES

When you create a database in Ms Access a new table is created for the user. In order to customize the table follow the following steps.



1. Select view under the datasheet tab.
2. Select design view
3. The „table window" appears with field name, data type and description columns (as discussed in tables earlier)
4. In the Field name, type the first field i.e. assuming we are creating a table on students, one suggested field could be Student name. Therefore, type Student name.
5. Click data type column and select the data type, (in this case text)
6. Click the description column and describe the field you have just made. However it is optional and could be skipped.
7. Define all other student"s detail fields by repeating steps 5-7.
8. Close the table and respond affirmatively to „save changes" dialog box. Save the table as „students"

NB: your database now has one table object.

DATA TYPE	USE	EXAMPLE
Text	(Default) text or combination of text & numbers as well as numbers that don"t require calculations such as phone numbers. The default size is 50 characters but up to 225 characters can be stored.	Stephen, Mary, KAZ 078w KQ2534
Memo	Lengthy text or combination of text and numbers. Can store up to 64,000 characters	Notes and descriptions
Number	Numerical data used in mathematical calculations, except that involving money.	6634,76731,890987,33,978
Date and time	Dates and times values for the years 100 through 9999	2-jan, 17/8/90, 09:55AM 4-march-1789
Currency	Monetary values	$5689,ksh9873, £5637
Auto number	A unique sequential (incremented by 1) number or random number assigned by Ms Access whenever a record is added. AutoNumber cannot be updated	
Yes/No	Yes or No values or fields contains only one or two values (true/false, yes /no, on off)	
OLE object	Graphics and objects such that Ms Excel spreadsheets, sounds can be embedded to Access	

A unique field is required in every table. This is an identification key like the national ID card that identifies each person individually. The unique key is referred to as **primary key** in Access. It is useful when you want to avoid entering duplicated records.

If what you design does not have a unique field, Access lets you include a special field called **AutoNumber** which contains sequential or random numbers that Access automatically generates as you add new records.

Setting a primary key

1.In the table design view, click inside the key you want to define as the primary key.
2.Click on the primary key in the design tab.

N/B: If Access has already taken AutoNumber as the primary key, delete the record by choosing it from the border and pressing delete key from the keyboard.

Using the data sheet view and the design view

1.Double click on the table to open it
2.The table is open displaying all the field without any record
3.At this juncture, you can add records in your table
4.In case you want to change the a field name, click view from the menu bar
5.Click design view, highlight the field you want to rename and type the new name.

N/B:

- Datasheet view allows you to add records while you modify the table in design view.
- You can rename a field in data sheet view by double clicking the field and typing a new name

Sorting records in the table

- Sorting helps to quickly locate the highest or the lowest value in a list E.g. you can sort to know who has paid the highest amount.
- It also helps arranging data in order of priority.

Procedure

1) Position the cursor in the field you want to sort.
2) To sort in ascending or descending, click the sort ascending/descending from the home tab.

Insert, Delete or Rename a column

- To insert a new column to the left of the current column, click on add new column on table datasheet view.

- To rename a column, double click its heading and then type the name desired.
- To delete a column, click the column heading to select it and then click Delete on the home tab.

7.4 RELATIONSHIPS

After setting up different tables for each subject in a database, there is need to let access know how to bring the information back together. The first step in this process is to define relationships between the tables. After that, queries, forms, reports can be used to display the information from all the tables at once.

A relationship is an association established between common fields in two tables. It can be one-to-one, one-to-many or many-to-many relationship. A relationship works by matching data in key fields usually a field with the same name in both tables.

A one-to-one relationship

In a one-to-one relationship, each record in Table A can only have one matching record in Table B and each record in Table B can have only one matching record in Table B.

A one-to-many relationship

A one-to-many relationship is the most common type of relationship. In a one-to-many relationship, a record in Table A can have many matching records in Table B, but a record in Table B has only one matching record in Table A.

A many-to-many relationship

In a many-to-many relationship, a record in Table A can have many matching records in Table B, and a record in Table B can have many matching records in Table A. This type of relationship is only possible by defining a third table (called a ***junction table***) whose primary key consists of two fields, the foreign keys from both Tables A and B. A many to many relationship is really two one-to-many relationships with a third table.

7.5 WORKING WITH QUERIES

Creating a query

Query is a database search. It enables you retrieve data that meets certain criteria. You can use a query to create a table, a report or a form. When you have a frequently asked query, you can save it so that each time you need the information, you just run the query instead of opening the table.

Creating a select query

1. In the create tab select query design.
2. The show table dialog box appears. In this dialog box, you select the table(s) that you want to base your query on.
3. Select the table and click Add.
4. Click close to close the dialog box and get to the query window.
5. Place the cursor in the row for „field" and click to chose the field(s) you want in your query.
6. To view the output, click on the „RUN" button on the query design toolbar.

.

Saving a query

1. Close the query box by clicking „X" button
2. Click yes when prompted to save the query.
3. Type the name of the query in the „save as" dialog box. In our case „students balance s"
4. Click Ok

A query that meets a given criteria

1. Open the table you want to query.
2. In the database window, click the query tab.
3. Choose the table(s) that you want to query, in the show table dialog box, click add and then close.
4. In the field area, select the field(s) to be included in your query E.g. you can select „student"s name" and „amount paid" fields.

5. In the criteria row, type the criteria you want to base your query on e.g. if you are querying for all the students who have paid over Ksh2000, type >Ksh2000 under the „amount paid" field.
6. Click the run button „**!**" on the toolbar.
7. Save the changes you have made.

Searching for words that begin with a specified letter.

1 .In the database window, click the query tab.
2. Click the „New" button and then select design view.
3. Click OK.
4. The show table dialog box appears. In this dialog box, you select the table(s) that you want to base your query on.
5. Select the table and click Add.
6. Click close to close the dialog box and get to the query window.
7. Place the cursor in the row for „field" and click to chose the field(s) you want in your query.
8. In the field's **Criteria** cell, type

LIKE [Enter the first character to search by:] & "*"

9. Click the run button „**!**" on the toolbar.
10. Save the changes you have made.

Searching for words that contain a specified character.

1 .In the database window, click the query tab.
2. Click the „New" button and then select design view.
3. Click OK.
4. The show table dialog box appears. In this dialog box, you select the table(s) that you want to base your query on.
5. Select the table and click Add.
6. Click close to close the dialog box and get to the query window.
7. Place the cursor in the row for „field" and click to chose the field(s) you want in your query.
8. In the field's **Criteria** cell, type

LIKE "*" & [Enter any character to search by:] & "*"

9. Click the run button „**!**" on the toolbar.
10. Save the changes you have made.

7.6 FORMS

Working with forms

A form is basically a way of displaying data, record by record. It is the most convenient object in which a non-experienced user of Access can enter records. Any record entered using a form is automatically entered into the table. In forms, you can edit, sort, filter, add/delete records etc.

To create a form using wizard

In the create tab select form. A new form will be created for the user. Click on close to save the form. Double click on the saved form in order to open it. You can now enter new records using the form.

(Object linking and Embedding)

O.L.E: its an object such as the Ms- word document, MS –Excel spreadsheet, graphics, sound or other binary data linked to or embedded in a MS-Access table.

Access allows you to accompany your database with graphical objects e.g. you can have a customers photo as one of the items in his records. You can have the picture of the products you have on sale etc.

Procedure

1) In the database window, click the tables tab then click new or use an existing table.
2) Click design view then Ok
3) Designate one of the field for the O.L.E. The field name could be photo, picture etc. For its data type, select O.L.E. objects.
4) Close the table and save the changes.
5) Open the table.
6) Right click the O.L.E fields(s) then insert object.
7) From the object type list, select a category i.e. Microsoft clip gallery then click Ok.
8) Select a clip then click insert.

NB/ The object will always be seen whenever you open a form based on the table or query that has the O.L.E field.

7.7 REPORTS

Reports are used to analyze data or present it in a certain way in print. A report could be that which groups data and calculates totals and another different data formatted for printing mailing tables.

To create A Report using Wizard

You can create a report on your own or you can have Ms-Access create one for you .The wizard speeds up the process since it does all the basic work for you. A wizard promotes you for information and creates a report based on your answers. You can also customize a table in design vie\w.

Procedures

1) In the design tab click on report design.
2) Click the table or the query that contains the data you want to base your report on.
3) Click Ok.
4) Follow the directions in the wizard dialog boxes.

7.8 Chapter Review Exercise

Prepare a database table and assign appropriate data types to hold the following data and define a primary key

Name	Course	DATE OF BITH	SEX	FEES(Kshs.)
Kilonzo David Muthami	B. Ed	31/01/92	Male	54,000
Mumbi Irene Wangui	M. Ed	06/10/87	Female	60,000
Mwangi Muriithi	M. Ed	21/06/93	Male	54,000
Simon Kinyanjui	BBIT	16/09/97	Male	62,000
Muuki Agneta Kalekye	B. Ed	19/04/93	Female	60,000
Wang'ombe Grace	BBIT	17/01/88	Female	54,000
Kiramana Paul	M. Ed	25/04/90	Male	19,000
Gatwiri Everlyn	B. Ed	11/11/92	Female	60,000
Ruth Wangeci	BBIT	31/01/92	Female	16,000
Harrison Mundia	B. Ed	2/01/89	Male	22,000
Musyoka Ruth	B. Ed	31/01/92	Female	36,000
Mwenda Sylivia	BBIT	19/08/94	Female	41,000
Reuben Gichana	M. Ed	11/05/92	Male	56,000
Mutio Mary Mwikali	B. Ed	31/12/91	Female	60,000
Karanja Kelvin	BBM	26/11/92	Male	60,000

Required

1. Create a data entry form in design view and apply your own design in the form
2. Enter the above records using the form above
3. The semesters fees is 60,000 Kshs. Produce a list of students who have cleared the fees
4. Produce a list of Female students taking a course in education
5. Produce a list of students who were born before the year 1990
6. Product a report that will show the current students grouping them by their respective courses
7. Prepare a report showing a list of students who have cleared their fees
8. Prepare a macro that will open no 3 above and open the report on 7 above.

CHAPTER EIGHT

PRESENTATION GRAPHICS

At the end of the chapter the learner shall be able to;

- Prepare a presentation in Microsoft PowerPoint
- Use pictures and objects
- Use animation in Microsoft PowerPoint
- Create organization charts using the Microsoft PowerPoint tools
- Create graphs using the Microsoft PowerPoint tools

MS POWERPOINT

INTRODUCTION

What is PowerPoint?

This is a complete presentation graphics package. It gives you everything you need to produce a professionally looking presentation. It enables you to express your ideas in graphics, text and objects all in one.

What is presentation?

It is a collection of slides, handouts, speaker‟s note, and outline all in one file. As create a slide you are creating a presentation, giving it a format that will carry through from beginning to the end.

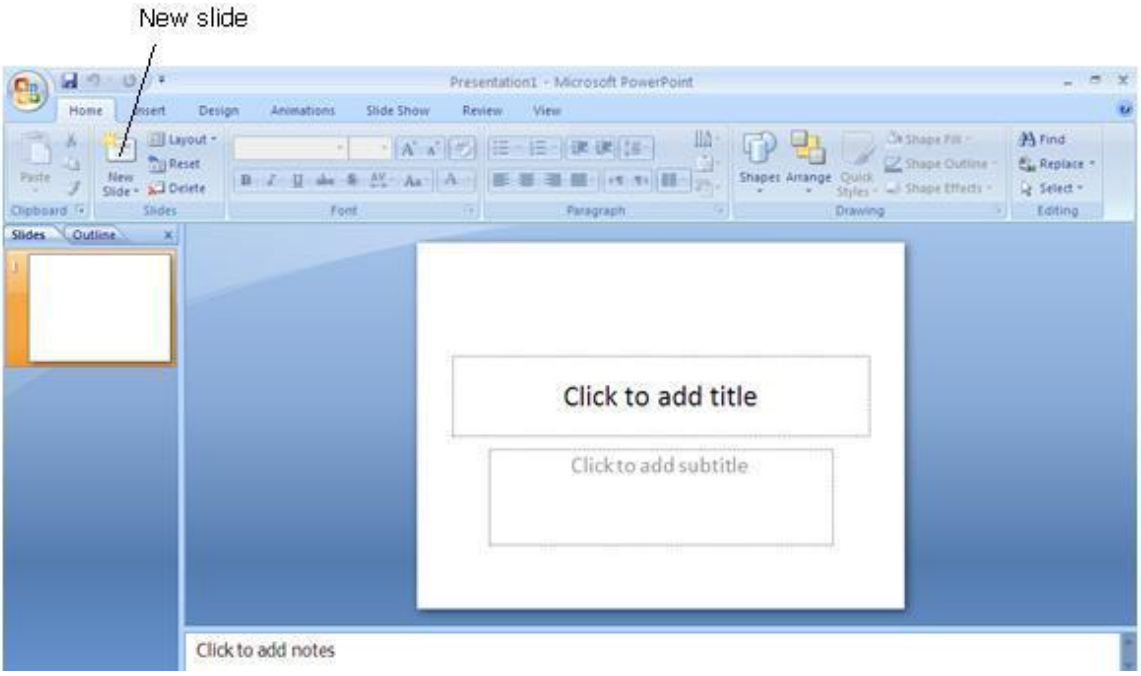
What is a slide?

Slides are individual pages of your presentation. Slides have titles, text, drawn objects, shapes, clip arts, and visuals created with other application.

Starting PowerPoint

From the start menu select programs and the move to PowerPoint and click.

By default it creates a new presentation 1 for you with a window shown below.



8.1 **Starting a presentation**

1. Type the title and anything else on the layout on the first slide
2. On the “Home tab”, click “New Slide” and select a new layout for the next slide.
3. Repeat steps 2 for each new slide.

N.B: You can put as many slides as desired.

8.2 ADDING AND FORMATTING TEXT

Add text.

Normally the easiest way to add text to a slide is to type directly into any placeholder that accommodates text. However when you want to add text outside a placeholder you use “Text Box tool on the format tab.

Changing the font and color of the text

1. Highlight the text to be formatted
2. From the home tab click font
3. Choose the desired font size color e.t.c

Add, change or remove a bullet

After you create a bulleted text, you can change the look of the bullets: their size, shape, color, e.t.c

To change a bullet, you need to highlight the test associated with the bullets. You cannot highlight a bullet.

1. Highlight the text
2. In the home tab, select bullets
3. Choose from the variety of bullets and click
4. Specify things like color and the size.

FORMATTING YOUR SLIDE

Colors and designs are added to slides in a presentation for enhancement. They also help in capturing the attention of the audience. You can either add a background color, apply design or both.

Applying background

1. Choose the slide you want to apply background (if you have several) by scrolling.
2. In the design tab, chose the background you desire.

Applying design

1. Choose the slide you want to design.
2. In the design tab chose, the desired design.

8.3 WORKING WITH DIFERENT VIEWS

A slide can be looked at in different angles. These views help a lot while working on your presentations.

To access the views, click the view tab. The most common views are:

1. **Slide:** Views individual slide.
2. **Outline:** Views all slides (outlined). NB.Graphics & Text effects cannot be viewed in outline.
3. **Slide sorter:** Miniatures all slides in your presentation. You can animate, transit, sort etc in this view.
4. **Slide show:** Complete presentation is run in this view.

Deleting a slide

1. Select the slide you want to delete
2. On the home tab, click Delete

8.4 WORKING WITH OBJECTS

Objects in PowerPoint could be any of the following

- Clip Arts
- Tables and graphs from other applications e.g. Excel
- Paint brush pictures
- Media clips and many more

PowerPoint comes with its own set of pictures in the clip art gallery. The clip art gallery includes a wide variety of clip arts that makes it easy for you to dress up your presentation with professionally designed images. You will find everything from maps to people and from buildings to scenic backgrounds.

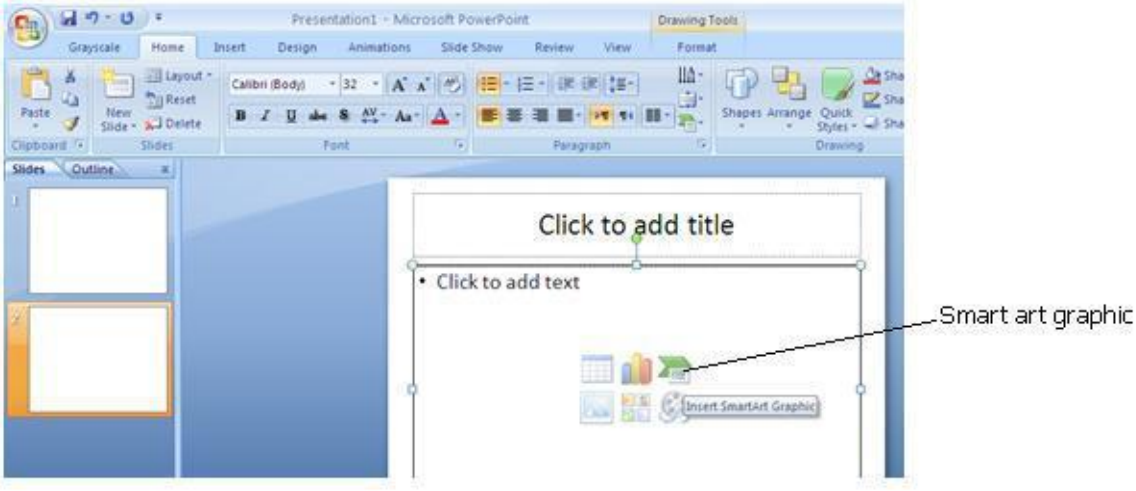
Inserting pictures in your presentation

1. From the insert tab point to clip art
2. You can choose from the
3. From the source you have chosen, chose the picture and click insert.

Inserting Shapes

1. From the insert tab click shapes
2. Move to desired category
3. Choose the shape and click
4. After the mouse pointer changes shape, click and drag at the insertion position.

Working with organization chart

1. Insert a slide and select the smart art option as shown below
2. 

3. Use the chart"s tools and menus to sign your chart

8.6 ANIMATION

You can animate text, graphics sounds, movies, and other objects on your slides so as to focus on important points, control the flow of information, and add interest to your presentation. You can have each main bullet point appear independently of others, or you can have objects appear progressively, one after another.

You can set up the way you want each bullet point or object to appear on your slide e.g. to fly in from the left and whether you want other bullets or objects to dim or change color when you add a new element. You also change the order of timing of your animation.

Animating objects & text on the slide.

1. In the animations, display the slide that has the text or objects you want to animate.
2. On the ribbon, click “custom animation”, and then click timing tab.
3. Under “slide objects without animation", select the text or object you want to animate and then click animate.
4. Choose „on mouse click" to activate the animation after a mouse click or „automatically", and then enter the umber of seconds you want to elapse between the previous animation and the current one.
5. Click the effect tab.
6. If you are animating a chart in Microsoft Graph, click the Chart Efforts tab.
7. Under „entry animation and sound", select the options you want.
8. Click the timing tab and repeat steps 3 through 6 for every object you want to animate. You can click the preview button to see how your animation works.

Changing the order of the animation on a slide

1. In the slide view, display the slide you want to change the order in.
2. On the slide show menu, click Custom Animation.
3. Under „animation order", select the object you want to change, and the click one of the arrows to move the objects up or down on the list.
4. Repeat the process for each objects whose order you want to change.

Add an effect on an animated object after it appears

1. In slide view, display the slide you want to add an effect to.
2. On the slide show menu, click Custom Animation, and then click the effects tab.
3. Under animation order, select the object you want to add an effect to, and then click an option under after animation.
4. Repeat the process for each object you want to add and effect to

Add Transitions To A Slide Show

For the slide show to flow well you need to transit your slide.

1. In the slide view, select the slide you want to transit
2. On the animation tab click „slide transition".
3. In the effect box, choose a transition.
4. To apply a transition to one slide, click apply. Click „apply to all" for all the slides.
5. To view the transition, click slide show.

8.7 SAVING A PRESENTATION

There are different options of saving a presentation. The common ones are:

Saving a new or existing presentation to always open as a slide show.

1. Open the presentation you want to open as a slide show.
2. On the office button click, save as.
3. In the „save as type" list box, click PowerPoint show.
4. Choose the drive in the „save in" box.
5. Click save.

8.8 PRINTING

You can print your entire presentation either in black and white or color.

1. Open the presentation you want to print.
2. Click print from the file menu.
3. In the resulting dialog box, choose and click as appropriate.
4. Click okay.

8.10 Chapter Review Questions

1. You are the marketing manager of UOE and you are required to make a presentation at the Inter-University conference about UOE. The presentation should not be less than 15 slides and should also have the following features;

- Slides with the different layouts i.e Organisation chart, Chart, Tables, clip art
- Custom animation for the slides with animated text and images
- The slides should run automatically without clicking
- The presentation should be 3 minutes long in total
- Apply a design

2. You are the marketing manager of UOE and you are required to make a presentation at the Inter-University conference about UOE. The presentation should not be less than 15 slides and should also have the following features;

- Slides with the different layouts i.e Organisation chart, Chart, Tables, clip art
- Custom animation for the slides with animated text and images
- The slides should run automatically without clicking
- The presentation should be 3 minutes long in total
- Apply a design

3. You are the marketing manager of UOE and you are required to make a presentation at the Inter-University conference about UOE. The presentation should not be less than 15 slides and should also have the following features;

- Slides with the different layouts i.e. Organization chart, Chart, Tables, clip art
- Custom animation for the slides with animated text and images
- The slides should run automatically without clicking
- The presentation should be 3 minutes long in total
- Apply a design

CHAPTER NINE

COMPUTERS AND COMMUNICATIONS

At the end of the chapter the learner shall be able to;

- Explain the hardware and Requirements for connecting to the Internet.
- Explain the features of common Internet services.
- Explain the e-mail terms
- Explain the advantages and disadvantages of the internet

9.1 Computer Networks

A computer network is an interconnection of two or more computers to form a network in order to share information and resources.

Local Area Network (LAN) & Wide Area Network (WAN)

Interconnection of computers which are within the same building or nearby locations forms a network of computers and this network is called a **Local Area Network (LAN)**. A LAN permits sharing of data files, computing resources and peripherals. Interconnection of computers located in far away locations using telecommunication system is known as **Wide Area Network (WAN).**

Advantages of Networks

- It allows the sharing of information held on disk drives to be accessed by all permitted users.
- It allows the sharing of resources such as printers, scanners and disk storage.
- Application programs can be stored on one computer and make them available to all users rather than having copies individually installed on each computer.
- Allows electronic messages to be sent between the users.
- It allows the connection of different types of computer which can communicate with each other.

9.2 Introduction to the Internet

The Internet is a world wide computer network, which interconnects computer networks across countries. It started with an initial 4 computers in 1969 and grew over the next ten years to connect 200 computers in military and research establishments in the US. Today there are more than 4 million host computers, any of which could be holding the information you are looking for, and as many as 50 million people connected.

The World Wide Web

This is a special part of the internet that allows people to view information stored on participating computers. It is an easy-to-use, graphical source of information which has opened the internet to millions of people interested in finding out information.

Requirements for connecting to the internet

- **Internet service provider –** an internet service provider provides you with a connection to the internet and the software you will need to navigate.
- **telecommunication line** – a telephone line is required to connect you to the internet service provider.
- **Modem** – a modem converts a digital signal received from a computer into an analogue signal that can be sent along ordinary telephone lines, and back to digital at the other end.
- **Web browser –** a web browser is software used to view and download Web pages and various types of files such as text, graphics and video. Examples are Microsoft Internet Explorer or Netscape Navigator.

9.3 Common Internet services

E-mail

Electronic mail can be sent to another internet user anywhere in the world within seconds. E-mail facilitates; sending of messages, file attachments, address book, sending E-mail to a group, forwarding messages and many others.

Internet Relay Chat

This is a live chat facility that where the text you type is instantly broadcast to everyone on the same channel. Some channels are dedicated to particular topics, for example politics, science, games etc.

Videoconferencing

In this facility you can see the person at the other end of the line and you can be able to talk to them using a microphone.

Advantages of the internet

- It offers different ways of communicating and innovations are going on to make it faster, more reliable.
- The Internet is a virtual treasure trove of information. Any kind of information on any topic under the sun is available on the Internet.
- It is a source of entertainment where users can play computer games, visiting chat rooms or just surfing the Web.
- Many services are now provided on the internet such as online banking, job seeking, purchasing tickets for your favorite movies etc.
- Business (E-commerce) can be transacted over the internet.

Disadvantages of the internet

- Personal information such as name, address, credit card number etc. can be stolen by other culprits and misused.
- Unwanted e-mails in bulk (Spam), which provide no purpose and needlessly obstruct the entire system, can be sent on the internet.
- Computers attached to internet are more prone to virus attacks and they can end up into crashing your whole hard disk.
- Pornographic sites on the Internet that can be easily found by children which can corrupt their morals.
- Anyone can publish incorrect information online because there"s no quality control

Effects of computerization

- The introduction of computers has lead into **unemployment**, in some companies thousands of workers have been made redundant.
- Computer technology has created **new opportunities for crime** such as hacking, theft of data and the introduction of viruses.
- Computers have caused **stress at places of work** as humans try to keep up with the output of their computers.
- People who work with computers a lot without interacting with other people are likely to develop **psychological problems due to isolation**.

- Computers have affected relationships of people working together such as employee-supervisor relationships and thus becoming a **dehumanizing factor**.
- Computerisation has caused **job content reduction** and role ambiguity.
- Cause of **power redistribution** in organizations due to change in organizational structure.
- Computers have been **blocking factor for career paths**.

9.4 Chapter Review Questions

1. Which of the following resources cannot be shared on a network
   (a) Data (b) Monitor (c) Printer (d) Application programs

2. In which year was the internet started
   (a) 1833 (b) 1990 (c) 1946 (d) 1969

3. What is the difference between the internet and the worldwide web?

4. Which of the following is not needed while connecting to the internet
   (a) Speakers (b) Web browser (c) Telecommunication line (d) Modem

5. Which of the following is not a common internet service

   (a) E-Mail (b) Internet relay chat (c) Google (d) Video Conferencing

REVIEW QUESTIONS ANSWERS

Chapter 1.

1. C 2. D 3. A 4. D 5. True

Chapter 2

1. D 2. B 3. B 4. D 5. C

Chapter 3

1. A 2. D 3. B 4. A 5. D

Chapter 4

1. D 2. C 3. True 4. A

5. Locate the place to create your folder e.g. My Documents, Desktop, C Drive
Go to File – New – Folder. Or if creating on the desktop right click on the desktop and use the new option to create a folder.

The folder will appear at the bottom of your list. When it displays as a black rectangle with the words **New Folder** highlighted in blue, it is prompting you to give it a name. Type the name of your folder and hit **Enter**.

Chapter 9

1. B
2. D
3. This is a special part of the internet that allows people to view information stored on participating computers.
4. A
5. C

Time : 2Hours

Instructions

*Answer question **ONE** and any other **TWO** questions*

Q1 (a) Define the following computer terms

(i) BIT
(ii) BYTE
(iii) Output
(iv) Virus
(v) Software **(10 marks)**

(b) Computers have evolved through many generations over the years. State and explain the five generations the computers have evolved through **(5 marks)**

(c) State and explain any three classifications of computers based on their capacity and size **(6 marks)**

(d) Explain the main units of the Central processing unit (CPU) giving their functions **(6 Marks)**

(e) Differentiate between RAM and ROM **(3 marks)**

Q2 Word Processing

(a) (i) Explain what a font is. **(2 marks)**

(ii) Name **two** different fonts. **(2 marks)**

(b) State the **two** different page orientations a word processed document can be set to.

(2 marks)

(c) Describe how you would carry out the following word processor operations:

(i) Opening an existing document **(2 marks)**

(ii) Creating a new document **(2 marks)**

(d) (i) Explain why you might want to change the size of the margins of a word processed document such as a letter or report. **(2 marks)** (ii) Name **two** word processing tools which can help proofread a document.

(2 marks)

(e) Below are images of three button icons from a word processing program. For **each** image describe the purpose of the button.

(i)  **(2 marks)** (ii) **(2**  **marks)** (iii)  **(2 marks)**

(Total 20 marks)

Q2 Spreadsheets

(a) Explain what the following spreadsheet functions do, illustrating your answer with an example of how the function could be used:

(i) SUM

(ii) AVERAGE

(iii) COUNT **(9 marks)**

(b) The image below shows a partially completed spreadsheet that will be used for creating invoices.

An individual **Item Total** is calculated by multiplying **Price** and **Quantity**. The **Items Total** figure is calculated by adding up all the individual **Item Total** figures.

The **Tax (10%)** figure is calculated as **10%** of the **Items Total** figure.

The **Invoice Total** is calculated by adding the **Items Total** and the **Tax (10%)** figure together.

	A	B	C	D	E
1				Invoice	
2					
3					
4					
5					
6	**Product code**	**Item**	**Price**	**Quantity**	**Item Total**
7	1234	Spreadsheets - all you need to know	12.93	2	25.86
8	2345	Word Processing - the answers	13.1	3	39.3
9	3456	Databases - harness the power	20	5	100
10					
11					
12				**Items Total**	165.16
13				**Tax (10%)**	16.516
14				**Invoice Total**	**181.676**

(i) State a formula that correctly calculates the **Item Total** figure in **E7**. **(2 marks)**
(ii) State what the most efficient formula is to calculate the **Items Total** figure in **E12**.

(2 marks)

(iii) State a formula that correctly calculates the **Tax (10%)** figure in **E13**. **(2 marks)**
(iv) State a formula that correctly calculates the **Invoice Total** figure in **E14**.

(2 marks)

(c) Suggest a change to the formatting of the spreadsheet in order to improve the presentation of the spreadsheet. **(1 mark)**
(d) Suggest a suitable folder name and file name for saving the spreadsheet.

(2 marks)
(Total 20 marks)

Q4 Database

(a) Explain what the following database terms mean.
(i) Record (sometimes called row) **(2 marks)**
(ii) Field (sometimes called column) **(2 marks)**
(iii) Table **(2 marks)**
(b) Give an example of what a business might use a database for. **(2 marks)**
(c) State the most appropriate data type for storing **each** of the items of data listed below.
(i) +44 (0)20 8329 2930 **(1 mark)** (ii) 21 July 1969 **(1 mark)** (iii) 3.1415 **(1 mark)**
(d) Below is a screenshot of part of a database. Refer to it when answering the questions below the database.

tblStudent : Table

ID_Student	Forename	Surname	Age
1	Chris	Smith	42
2	Fazia	Bibi	31
3	Gemma	James	20
4	James	Brown	7
5	James	Nkonde	58
6	Kamran	Khan	64
7	Les	Jones	14
(AutoNumber)			

Record: 8 of 8

(i) Explain what the problem with this design is. **(2 marks)** (ii) Describe what changes you would make to improve the design of this database.

(2 marks)

(e) For queries on the data shown above:
(i) How many records would be displayed if a criterion of **>50** was set for the age field? **(1 mark)**

(ii) What criteria would you use to display records of people aged from **20** to **45** years inclusive? **(2 marks)** (iii) What criteria would you use to display records of people that are younger than**21** years **or** with the Forename **James**? **(2 marks)**

(Total 20 marks)

Q5 Electronic Mail

(a) Explain what the following e-mail terms mean.

(i) Junk mail (also known as spam) **(2 marks)**

(ii) Zip **(2 marks)**

(iii) Cc (also known as Carbon Copy) **(2 marks)**

(iv) Reply to All **(2 marks)**

(b) Describe two precautions you should take when using e-mail and explain why each precaution is necessary. **(4 marks)**

(c) Reply and Forward are two very useful e-mail commands.

(i) Explain one similarity between Reply and Forward. **(2 marks)**

(ii) Explain one difference between Reply and Forward. **(2 marks)**

(c) Name two internet software and internet browsers **(4 marks)**

(Total 20 marks)

Time : 2Hours

Instructions

*Answer question **ONE** and any other **TWO** questions*

Q1 (a) Define the following computer terms

(i) Computer
(ii) Input
(iii) Output
(iv) Processing
(v) Software **(10 marks)**

(b) Computers have evolved through many generations over the years. State and explain the five generations the computers have evolved through **(5 marks)**

(c) State and explain any three classifications of computers based on their capacity and size **(6 marks)**

(d) Explain the main units of the Central processing unit (CPU) giving their functions **(6 Marks)**

(e) Differentiate between RAM and ROM **(3 marks)**

Q2 Word Processing

(a) (i) Explain what a font is. **(2 marks)**

(ii) Name **two** different fonts. **(2 marks)**

(b) State the **two** different page orientations a word processed document can be set to. **(2 marks)**

(c) Text can be aligned in different ways to improve the appearance of a document.

State **two** different kinds of paragraph alignment, and for **each** give an example of its use. **(4 marks)**

(d) (i) Explain why it is important to proofread a word processed document. **(2 marks)**

(ii) Name **two** word processing tools which can help proofread a document. **(2 marks)**

(e) Below are images of three button icons from a word processing program. For **each** image describe the purpose of the button.

(i)  **(2 marks)** (ii)  **(2 marks)** (iii)  **(2 marks)**

(Total 20 marks)

Q3 Spreadsheets

(a) Explain what **each** of the spreadsheet terms listed below means.

(i) Cell (ii) Worksheet (iii) Formula **(6 marks)**

(b) Below is an image of an incomplete spreadsheet for recording results of a sports league. In each match a team may win, lose or draw.

A win scores 3 points, a draw scores 1 point and a loss scores 0 points.

	A	B	C	D	E	F	G
1	Sports League Table						
2							
3	Team	Won	Drawn	Lost	Played	Points	Average
4	A	5	3	1	9	18	2
5	B	4	4	2	10	16	1.6
6	C	3	6	0	9	15	1.666667
7	D	2	6	1	9	12	1.333333
8	E	1	7	2	10		0

(i) Write down a formula to input into cell **E8** that calculates the number of games played by the **Eccles** team. **(2 marks)** (ii) Write down a formula to input into cell **F8** that calculates the number of points scored by the **Eccles** team. **(4 marks)**

(iii) Write down a formula to input into cell **G8** that calculates the average number of points the **Eccles** team gets per game. **(2 marks)**

(c) State what formatting should be applied to the figures in column **G** to make them easier to read. **(2 marks)**

(d) (i) Explain what a macro is. **(2 marks)**

(ii) Outline how a macro could be used in a spreadsheet. **(2 marks)**

(Total 20 marks)

Q4 Database

(a) Explain what the following database terms mean.

(i) Record (sometimes called row) **(2 marks)**

(ii) Field (sometimes called column) **(2 marks)**

(iii) Table **(2 marks)**

(b) Give an example of what a business might use a database for. **(2 marks)**

(c) State the most appropriate data type for storing **each** of the items of data listed below.

(i) +44 (0)20 8329 2930 **(1 mark)** (ii) 21 July 1969 **(1 mark)** (iii) 3.1415 **(1 mark)**

(d) Below is a screenshot of part of a database. Refer to it when answering the questions below the database.

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Record: 8 of 8

(i) Explain what the problem with this design is. **(2 marks)** (ii) Describe what changes you would make to improve the design of this database.

(2 marks)

(e) For queries on the data shown above:

(i) How many records would be displayed if a criterion of **>50** was set for the age field? **(1 mark)**

(ii) What criteria would you use to display records of people aged from **20** to **45** years inclusive? **(2 marks)** (iii) What criteria would you use to display records of people that are younger than

21 years **or** with the Forename **James**?

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(b) Describe two precautions you should take when using e-mail and explain why each
precaution is necessary. **(4 marks)**

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(i) Explain one similarity between Reply and Forward.
(ii) Explain one difference between Reply and Forward.

(c) Name two internet software and internet browsers