UNIVERSITY OF MAIDUGURI

Maiduguri, Nigeria

CENTRE FOR DISTANCE LEARNING

GST 123: INTROUDCTION TO ICT: 2 UNITS

TABLE OF CONTENTS

INFORMATION COMMUNICATION TECHNOLOGY

STUDY GUIDE

TABLE OF CONTENT

LEARNING OUTCOMES

After completing this module, you will be able to:

- Define the concept of Information and Communication Technology
- Define and identify the role of computers, types of computer components, and the steps involved in working with a computer.
- Acquire knowledge on Computer Appreciation and Application.

- Efficiently make use Microsoft Word for document operations and Microsoft Excel for spreadsheet formulae operations.
- Explain the use of Internet connectivity and practically apply it into use.

STUDY GUIDE

GENERAL INFORMATION

Course Code & Title: GST123: Introduction to Information Communication Technology
Credit Unit: 2

Year: 2016
Total Hours - 28 hours @ two per Week of Study.
For any queries or Questions contact the Course Lecturer Using your email through the Centre for Distance Learning Portal.

You are welcome to this study Unit. Each Unit is arranged to simplify your study. In each topic of the Unit we have introduction, learning outcome, in-text information, in-text questions and answers, summary and self assessment exercises. In-text questions and answers serve as motivation for your reading and to encourage to paying attention to major points in the text. Tutors will be available at designated contact Centre for Tutorial. Meet them to resolve your questions and other guide. The Centre expects you to plan your work well. Should you wish to read further you could supplement the study with more information from the list of references and suggested reading available in each study Unit.

PRACTICE EXERCISES
SELF ASSESSMENT EXERCISES (SAES)
This is provided at the end of each topic or Study Session. The exercises can help you to assess whether or not you have actually studied and understood the topic/study session. Solutions to the exercises are provided at the end of the Study Unit for you to assess yourself.

HOW TO PREPARE FOR EXAMINATION
To prepare for the examination you should read and understand the Study Materials provided for you on C.D.ROM, prints or downloads from the Portal. Other things you need to prepare for examination include understanding all sample questions at the end of every Study Session/topic Reading the suggested/recommended reading texts.

ASSESSMENTS
- The continuous assessment for all courses consists of 30%.
- The Examination shall make up 70% of the total Marks.
- Feedback and advice is a component of the continuous assessment

The Examination shall be conducted at the Centre for Distance learning (Centre). Students are to come to the Centre on the Examination date with all the necessary requirements. The Examination is Computer based or e-testing one.

STUDY SESSION: 1
INTRODUCTION TO ICT

STUDY SESSION 1: Content	
	Introduction
	Learning Outcomes
	What is ICT
	Key Term Definitions
	Use of ICT

INTRODUCTION

Information Communication Technology is “powered by technology, fueled by information and driven by knowledge”. There must be promotion of learning to learn more because Information Communication Technology systems have now dominated our everyday lives. This lesson will focus on how ICT systems convey, store and manipulate data, and how they process data into meaningful information using the appropriate technology.

LEARNING OUTCOMES

After completing this lesson, you will be able to:

- Explain Information Communication Technology and the basic key term definitions
- Discuss data, information and how they can be sourced;
- Identify the qualities of good information;
- List the essential use of Information Communication Technology.

WHAT IS ICT

As the twenty-first century escorts in the Information Age, we experience new ways of living/working with ICT. The integration of telecommunications (telephone lines/wireless signals), computers, middleware as well as necessary software, storage - and audio-visual systems, which enable users to create, access, store, transmit, and manipulate information.

In other words, ICT consists of IT as well as telecommunication, broadcast media, all types of audio and video processing and transmission and network based control and monitoring functions. The world is changing because of the computer. The computer can do almost any routine or systematic procedure or operation involving information, so that people can have more time to do what they do best - think.

KEY TERM DEFINITIONS

- **Data:** may be defined as any collection of facts. By this definition, data may refer to both numerical and non-numerical information.
- **Information:** Data that has been verified to be accurate and timely; hence is specific and organized for a purpose or Is a data that has been processed and presented in a useful format that will enable an individual to gain knowledge in order to be able to make a decision.
- **Communication:** Is the activity of conveying meaningful information. Communication requires a sender, a message, and an intended recipient.
- **Technology:** Is the making, usage, and knowledge of tools, machines, techniques, crafts, systems or methods of organization in order to solve a problem.

Data is simply defined as unprocessed facts, anything in the form of symbol, image, pictures, icons etc which conveys meaning is said to be data.

SOURCE OF DATA AND INFORMATION

Various sources of data and information depend on whether the data is quantitative or qualitative in nature. Let’s have this in mind; I want you to understand that, sources of data are also source of Information, the reason is that, information comes from data, so both of them have the same sources, the only difference is that, data is unorganized, unprocessed, where as information is processed and organized.

QUALITIES OF GOOD INFORMATION

There are some qualities that information must processes before it can be considered as useful. The following are some of the qualities:

a. Accuracy b. Meaningfulness c. Relevance d. Timeliness e. Source f. Clarity

- **Accuracy**: Which means exert and correct information, it most be a representative of some aspect of reality, e.g. Ali is asked by his teacher to read chapter 8 of his computer book, while the teacher visits the other teacher in next door classroom. If Ali changed the book he is reading and the teacher delay his coming and asked Habu to check Ali if he is actually doing the reading of chapter 8 of his computer book, Habu may come back to say Yes, Ali is reading his book. The information given by Habu is actually true, but not computer book and not to talk of chapter 8, he is reading actual, but something else. The actual information should be Ali is reading his story book.
- **Meaningfulness**: This means that, it is possible to convert information without meaning, before information can be useful, it must be meaningful. Information is said to be meaningless if it conveys no useful message or meaning.
- **Relevance**: Users or reporter or document do not meant a heap of information that does not suit their short or long term purpose. E.g. felling your mother that there will be a test on DBA 015 by 10am, if not an account of an excuse is irrelevant because she don't need that information, because is not important to her, due to she is not part of the test.
- **Timeless**: It means you got information about a text on DBA 015 after the test has been done. That information is not only useless but painful. So information should timely or come at the right time
- **Source**: When source of information, for the information to be taken serious, the source most be trustworthy and reliable. E.g. if a crazy man should give you information about your father in the USA, you should not believe it, not because or the fact that he doesn't know your family and he is a crazy man.
- **Clarity:** Which means as a quality of information, information can be relevant, complete and all the rest, you only achieve clarity by using the right channel of communication reducing noise and having clear, legible or well formatted presentation. Ideally, good information possesses the entire aforementioned characteristic, although in certain contexts.

USE OF ICT

Information and communication Technology (ICT) can be used:

- ❖ To facilitate communication for student with special need;
- ❖ To support collaborative writing and sharing of resources between students;
- ❖ For video-conferencing to support the teaching of modern Courses;
- ❖ For internet based research to support the geographical enquiry;
- ❖ For integrated learning system (ILS) to teach basic courses;
- ❖ For communication technology to exchange administrative and assessment data.

ITQ: What does the acronym ICT stands for?
ITA: Information Communication Technology.

ITQ: What is Data?
ITA: Data is simply defined as unprocessed facts.

ITQ: What is Information?
ITA: A data that has been processed and presented in a useful format.

ITQ: List five *forms* in which Data can be?
ITA: Symbol, Image, Pictures, Icons, Text etc.

ITQ: What are the qualities of Good Information?
ITA: a. Accuracy b. Meaningfulness c. Relevance d. Timeliness e. Source f. Clarity.

ITQ: List five various key usage of ICT you know?
ITA: a. Facilitate Communication
b. Collaborative Writing and Resource Sharing
c. Teaching with Video Conferencing
d. Internet Based Research
e. Integrated Learning System

STUDY SESSION: 2
WHAT IS A COMPUTER?

Study Session 2: Content	
	Introduction
	Learning Outcomes
	What is a Computer?
	Role of Computers
	Characteristics of Computer
	Types of Computer

INTRODUCTION

Computers are used as tools in every part of our society as they have evolved over the years from bigger sized, slow speed, higher power consumption, single purpose operation and obsolete technology to much smaller sized (likewise embedded), high speed, lower power consumption, multipurpose operation and advance technology. In this lesson you will understand the term computer, the different types of computers and areas they can be applicable for effective usage.

LEARNING OUTCOMES

After completing this lesson, you will be able to:

- Explain what is a Computer;
- Identify the roles of Computer in our daily lives;
- Describe the characteristics of a Computer;
- Discuss the different types of Computers base on operation, purpose and size.

WHAT IS A COMPUTER?

What is a Computer? A computer is an electronic device that receives input, stores it for a period of time, processes it according to a set of instructions (Known as a PROGRAM) and gives the user with an output. **-OR-** Computer is an electronic device which converts data into information **-OR-** A Computer is an electronic device or machine which accepts data, process it and send the output to the screen or Computer is any machine or device which, under the control of a stored program, can accept data in a prescribed form, process the data, and supply the results as information in a specified form.

Figure 1: Computer System.

ROLE OF COMPUTERS

Computers play a major role in our daily lives. They are used in industries, schools, government offices, and shops. You can use computers to communicate with your family and friends, create a household budget, book travel and movie tickets, or manage your business.

- In the field of education, trainers can use computers to deliver training through audio-visual learning aids, maintain student records to track performance, search for information on different topics, and create or submit assignments. Scientists use computers for scientific research, and to gather and analyze information. For example, they use computers to view images from space and to publish information on their recent research.
- In business and industry, you use computers to maintain accounts, create personnel records, track inventory, prepare presentations and reports, manage projects, and communicate by e-mail.
- In government organizations, you use computers to organize information by storing and updating records. Computers are also used for providing services to citizens. For example, you can view information on current policies and government issues on a computer.
- In the field of medicine, doctors use computers to review medical records of patients. Doctors also use computers to find information about the latest drugs available to treat a disease. Doctors can also use computer technology to discuss and share information about various diseases.
- In the field of entertainment, you can use computers to listen to music, watch movies, store and print photographs, send greetings, and play games. You can use computers to design any type of publication ranging from simple newsletters to fashion magazines, marketing materials, books, or newspapers. You can also use computers to create drawings and paintings. Photographers use computers to edit and enhance pictures. Writers use computers to write content for their books and to also create illustrations. By using computers, writers can make changes in the content easily and save a lot of time.

CHARACTERISTICS OF COMPUTER

1. Speed: - As you know computer can work very fast. It takes only few seconds for calculations that we take hours to complete. You will be surprised to know that computer can perform millions (1,000,000) of instructions and even more per second. It unit of measurement is ***hertz*** e.g. A computer with *2.5GHz* processor speed.

2. Accuracy: - The degree of accuracy of computer is very high and every calculation is performed with the same accuracy. The accuracy level is determined on the basis of design of computer. The errors in computer are due to human and inaccurate data.

3. Diligence: - A computer is free from tiredness, lack of concentration, fatigue, etc. It can work for hours without creating any error. If millions of calculations are to be performed, a computer will perform every calculation with the same accuracy. Due to this capability it overpowers human being in routine type of work.

4. Versatility: - It means the capacity to perform completely different type of work. You may use your computer to prepare payroll slips. Next moment you may use it for inventory management or to prepare electric bills.

5. Power of Remembering: - Computer has the power of storing any amount of information or data. Any information can be stored and recalled as long as you require it, for any numbers of years. It depends entirely upon you how much data you want to store in a computer and when to lose or retrieve these data.

According to functionality, computers are classified based on type, purpose and size.

ITQ: What is a Computer?
Hint: Terms: *input*, *storage, processing and output* will be used in the definition.
ITA: A computer is an electronic device that receives ***input***, ***stores*** it for a period of time, ***processing*** it according to a set of instructions (Known as a PROGRAM) and gives the user with an ***output***.

ITQ: List 5 applicable roles of a Computer?
ITA: (i) In Education, it is used to deliver visual training, analyze information etc.
(ii) In Business, it plays the role of creating inventory, maintaining account etc
(ii) In Government, it is used to organize, store and update large records etc
(iv) In Medicine, used for patient record, research and disease awareness etc
(v) In Entertainment, used for music, video and image editing, graphics etc

ITQ: What are the Characteristics of a Computer?
ITA: Speed, Accuracy, Diligence, Versatility, Power of Remembering etc.

TYPES OF COMPUTER

1. Analog Computer: Analog computers are used to process analog data. Analog data is of continuous nature and which is not discrete or separate. Such type of data includes temperature, pressure, speed weight, voltage, depth etc. These quantities are continuous and having an infinite variety of values. It measures continuous changes in some physical quantity e.g. The Speedometer of a car measures speed, the change of temperature is measured by a Thermometer, the weight is measured by Weights machine. These computers are ideal in situations where data can be accepted directly from measuring instrument without having to convert it into numbers or codes.

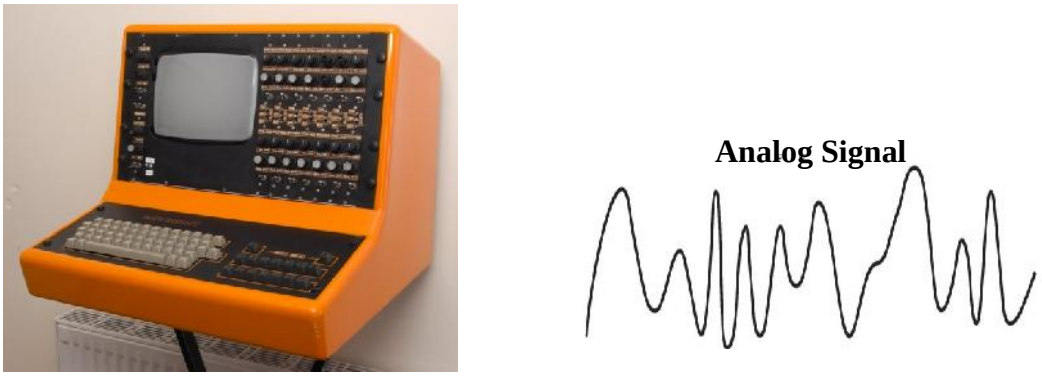


Figure 2: Analog Computer and Signal.

Analog computers are the first computers being developed and provided the basis for the development of the modern digital computers. Analog computers are widely used for certain specialized engineering and scientific applications, for calculation and measurement of analog quantities. They are frequently used to control process such as those found in oil refinery where flow and temperature measurements are important. Analog computers do not require any storage capability because they measure and compare quantities in a single operation. Output from an analog computer is generally in the form of readings on a series of dial (Speedometer of a car) or a graph on strip chart.

2. Digital Computer: As its name implies, works with digits to represent numerals, letters or other special symbols. Digital Computers operate on inputs which are ON-OFF type and its output is also in the form of ON-OFF signal. Normally, an ON is represented by a 1 and an OFF is represented by a 0. So we can say that digital computers process information which is based on the presence or the absence of an electrical charge or we prefer to say a binary 1 or 0. A digital computer can be used to

process numeric as well as non-numeric data. It can perform arithmetic operations like addition, subtraction, multiplication and division and also logical operations. Most of the computers available today are digital computers. The most common examples of digital computers are accounting machines and calculators. The results of digital computers are more accurate than the results of analog computers. Analog computers are faster than digital. Analog computers lack memory whereas digital computers store information. We can say that digital computers count and analog computers measures.

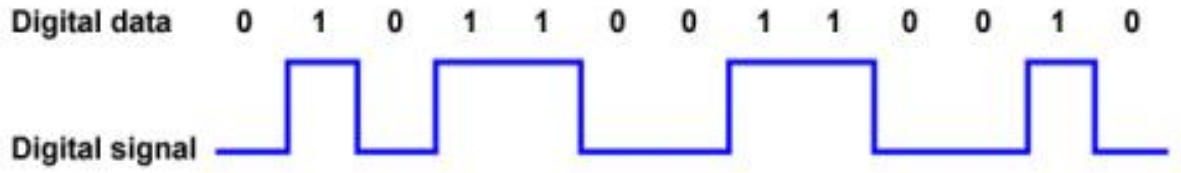


Figure 3: Digital Data and Signal.

3. Hybrid Computer (Analog + Digital): A hybrid is a combination of digital and analog computers. It combines the best features of both types of computers, i-e. It has the speed of analog computer and the memory and accuracy of digital computer. Hybrid computers are used mainly in specialized applications where both kinds of data need to be processed. Therefore, they help the user, to process both continuous and discrete data. For example a petrol pump contains a processor that converts fuel flow measurements into quantity and price values. In hospital Intensive Care Unit (ICU), an analog device is used which measures patient's blood pressure and temperature etc. Which are then converted and displayed in the form of digits. Hybrid computers for example are used for scientific calculations, in defense and radar systems.

Figure 4: Hybrid Computer and Signals.

❖ ***BASE ON PURPOSE:***

1. General purpose: They are computers designed to perform a wide variety of functions and operations. You will probably use this type of computer reading this article and I am using a general purpose computer typing this article in some software (MS Word). A general purpose computer is able to perform a wide variety of operations because it can store and execute different programs in its internal storage. Unfortunately, having this ability is often achieved at the expense of speed and efficiency. In most situations, however, you will find that having this flexibility makes this compromise a most acceptable one.

2. Special Purpose: They are Computer designed to be task specific and most of the times their job is to solve one particular problem. They are also known as dedicated computers, because they are dedicated to perform a single task over and over again. Such a computer system would be useful in playing graphic intensive Video Games, traffic lights control system, navigational system in an aircraft, weather forecasting, satellite launch / tracking, oil exploration, and in automotive industries, keeping time in a digital watch, or Robot helicopter. While a special purpose computer may have many of the same features found in a general purpose computer, its applicability to a particular problem is a function of its design rather than to a stored program. The instructions that control it are built directly into the computer, which makes for a more efficient and effective operation.

❖ ***BASIS ON SIZE:***

1. Super Computer: The fastest and most powerful type of computer Supercomputers are very expensive and are employed for specialized applications that require immense amounts of mathematical calculations. For example, weather forecasting requires a supercomputer. By definition, super computer means a computer having a main memory of 256 megabytes working on architecture with 64-bit words and performance peak time in the range of 500M flops. Flops stands for million floating point operations per second. As refer to educational computer with only 32 kilobyte memory, but the super computer has 800 times more memory. The early computer like ENIAC have a speed 100 flops compared to super computer that have 500 M flops, the super computer execute 400,000,000 to 600,000,000 operations per second. The Cray-2 for example, operate at a speeds of 1.2 billion flops, which means, it perform a calculation in one minute which a personal computer could perform in three weeks.

Other uses of supercomputers include animated graphics, fluid dynamic calculations, nuclear energy research, and petroleum exploration. The chief difference between a supercomputer and a mainframe is that a supercomputer channels all its power into executing a few programs as fast as possible, whereas a mainframe uses its power to execute many programs concurrently.

2. Mainframe Computer: A very large and expensive computer capable of supporting hundreds, or even thousands, of users simultaneously. In the hierarchy that starts with a simple microprocessor (in watches, for example) at the bottom and moves to supercomputers at the top, mainframes are just below supercomputers. In some ways, mainframes are more powerful than supercomputers because they support more simultaneous programs. But supercomputers can execute a single program faster than a mainframe. The mainframe it a large size computer which occupy a large air-conditioned roomful space and main memory size up to 128 megabyte, this computer can be used by 128 users simultaneously in terms of sharing mode and employing minicomputer as front end processors. All the first to third generation computers which work with the speed of 5 to 100 million instructions per second fall under this group.

3. Mini Computer: A midsized computer. In size and power, minicomputers lie between *workstations* and *mainframes*. In the past decade, the distinction between large minicomputers and small mainframes has blurred, however, as has the distinction between small minicomputers and workstations. But in general, a minicomputer is a multiprocessing system capable of supporting from 4 to about 200 users simultaneously.

4. Micro Computer or Personal Computer: A personal or micro-mini computer sufficient to fit on a desk, e.g. Desktop Computer, a portable computer complete with an integrated screen and keyboard. It is generally smaller in size than a desktop computer and larger than a notebook computer, e.g. Laptop Palmtop Computer, Digital Diary, Notebook and PDAs: They are hand-sized computer. Palmtops have no keyboard but the screen serves both as an input and output device.

5. Workstations: A terminal or desktop computer in a network. In this context, workstation is just a generic term for a user's machine (client machine) in contrast to a "server" or "mainframe."

STUDY SESSION: 3
COMPONENTS OF COMPUTER

Study Session 3: Content	
	Introduction
	Learning Outcomes
	Components of Computer
	Hardware Components
	Software Components

INTRODUCTION

This lesson broadens on the components that make up the computer System. In this lesson the computer will broken down into smaller parts and each part will be fully explained for proper understanding. You will get to know all the devices that are applicable to a computer and how they can be inter-connected. In this lesson you will get to know that there are a lot of different components inside a computer, and they all serve different purposes. They all need to work together for the computer to work; knowing how a computer works makes it easier to use a computer by being able to understand how a computer will respond to your operations.

LEARNING OUTCOMES

After completing this lesson, you will be able to:

- Explain Computer Components and the differences between Hardware and Software
- Identify the Hardware Components (Input, Processing, Output, Storage, Memory, Port and Connection, Expansion Cards) devices;
- Identify the Software Components (System, Application and Utility).
- Explain the terms Hardcopy and Softcopy clearly from Hardware and Software.

COMPONENTS OF COMPUTER

The major components of a computer system are: **HARDWARE** and **SOFTWARE.** ***What is Hardware?*** It is defined as the physical component of a computer system. It is anything that is tangible, what you touch is considered hardware, in other word Hardware is that aspect of the computer system that you can see, touch and feel. The document on the computer is called the ***softcopy*** while the printed copy is called the ***hardcopy***.

What is software? Software is a collection of programmable instructions that can be 'run' on a computer. These instructions tell the computer what to do. Software is not a physical thing (but it can of course be stored on a physical medium such as a CD-ROM), it is just a bunch of codes, it is intangible. You are unable to physically touch software. A user can only experience software. Software is the set of instruction that are given to the computer to execute.

❖ ***DIFFERENCES BETWEEN HARDWARE AND SOFTWARE***

Computer hardware is any physical device used in or with your machine, whereas software is a collection of code installed onto your computer's hard drive; it is intangible. For example, the computer monitor you are using to read this text and the mouse you are using to navigate this web page is computer hardware. The Internet browser that allowed you to visit this page and the operating system that the browser is running on is considered software; all Software utilizes hardware to operate properly. A video game, which is software, uses the computer processor (CPU), memory (RAM), and video card, all of which is hardware, to run. Word processing software uses the computer processor, memory, and hard drive to create and save documents. In a computer, hardware is what makes a computer work. A CPU processes information and that information can be stored in RAM or on a hard drive. A sound card can provide sound to speakers and a video card can provide an image to a monitor, they are all hardware. On that same computer, software can be installed and allow a person to interact with the hardware. An operating system, like Windows or Mac OS, is software. It provides a graphical interface for people to use the computer and other software on the computer. A person can create documents and pictures using software.

ITQ: What are the two components of a Computer?
ITA: Hardware and Software.

HARDWARE COMPONENTS

(A) INPUT DEVICE:

An input device accepts data from the outside and convert it to electronic form that computer understands. Examples are:

1. Keyboard: The keyboard is used to type information into the computer or input information. There are many different keyboard layouts and sizes with the most common for Latin based languages being the QWERTY layout (named for the first 6 keys). The standard keyboard has 101 keys. Notebooks have embedded keys accessible by special keys or by pressing key combinations (CTRL or Command and P for example). Ergonomically designed keyboards are designed to make typing easier. Hand held devices have various and different keyboard configurations and touch screens.

2. Mouse: A mouse is a handheld operating device which is used to Point and Click items or command objects. A mouse is used with special programs which translates the mouse movements to corresponding actions on the screen. The mouse is useful in two ways. The first is to move the cursor on the screen and second one is to select what you want the computer to do next.

3. Touch screen: When it is touched, it senses where is touched, then the user can touch the exact task on the screen and the computer carries out the process.

4. Scanners: Scanners allow you to transfer pictures and photographs to your computer. A scanner 'scans' the image from the top to the bottom, one line at a time and transfers it to the computer as a series of bits or a bitmap. You can then take that image and use it in a paint program, send it out as a fax or print it. With optional Optical Character Recognition (OCR) software you can convert printed documents such as newspaper articles to text that can be used in your word processor.

5. Microphone: A device that you can use to talk to people in different parts of the world. You can record sound into the computer by using a microphone. You can also use a microphone to record your speech and let the computer convert it into text.

6. Webcam: A device that is similar to a video camera. It allows you to capture and send the live pictures to the other user. For example, a webcam allows your friends and family to see you when communicating with them.

ITQ: What is Input Device? List any 7 Input Devices you know.
ITA: Input device are devices used to communicate/provide information to computer. Keyboard, Mouse, Scanner, Joystick, Microphone, Webcam, Touch Screen etc

ITQ: What do the acronym OCR stands for?
ITA: Optical Character Recognition.

(B) OUTPUT DEVICE

An output device does the opposite of the input device; it converts data from an electronic form inside the computer to a form that can be accepted outside the computer. Example includes:

1. Monitors (VDU, VDS): The monitor shows information on the screen when you type. This is called outputting information. When the computer needs more information it will display a message on the screen, usually through a dialog box**.** Monitors come in many types and sizes. The resolution of the monitor determines the sharpness of the screen. The resolution can be adjusted to control the screen's display. Most desktop computers use a monitor with a cathode tube or liquid crystal display. Most notebooks use a Liquid Crystal Display (LCD) monitor. To get the full benefit of today's software with full color graphics and animation, computers need a color monitor with a display or graphics card. The output of a monitor is called ***Softcopy***.

2. Printers: The printer takes the information on your screen and transfers it to paper or a hard copy. There are many different types of printers with various levels of quality. The three basic types of printer are; dot matrix, inkjet, and laser. The output of a printer is called ***Hardcopy***.

3. Speakers: It's an output device that allows listening to sounds from the computer system.

ITQ: What is Output Device? List any 4 Output Devices you know.
ITA: *Output device*: are devices that provide feedback of computer performed task. Monitor (VDU or VDS), Printer, Speaker, Projector etc

ITQ: Define the following terms: Softcopy and Hardcopy?
ITA: *Softcopy:* is the output on a monitor that can be saved as file in storage devices
Hardcopy: is the output of printer; it is a physical printed paper document.

ITQ: What does the acronym LCD stands for?
ITA: Liquid Crystal Display.

(C) STORAGE DEVICES

It store information in the computer permanently, and it can be recalled any time it is needed. We have two types, the ***Internal Storage*** device example includes HARD DISK and ***External Storage*** device example includes DISKETTE, FLASH DRIVE.

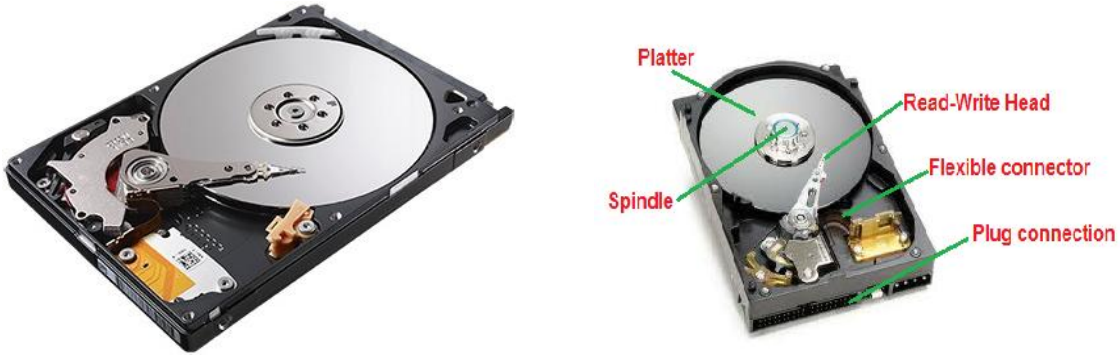


Figure 5: Internal Storage Device: Hard disk

- **Floppy Disk:** A portable storage device that allows you to store a small amount of data. A disadvantage of this disk is that it can be easily damaged by heat, dust, or magnetic fields.
- **Compact Disk (CD-ROM):** A portable storage medium that allows you to store 400 times more data than floppy disk. It is less prone to damage than a floppy disk.
- **Digital Versatile Disc (DVD-ROM):** A portable storage medium that is similar to a CD-ROM; however, it can store larger amounts of data than a floppy disk or a CD-ROM. A DVD-ROM is commonly used to store movies and videos.

Figure 6: External Storage Devices

ITQ: What are the two types of Computer storage devices?
ITA: *Internal* and *External* Storage Devices

ITQ: List any 5 types of External Storage Devices?
ITA: External Hard Disk, USB Flash Drive, Floppy Diskette, CD-ROM, DVD-ROM

(D) MEMORY

There are two kinds of computer memory: **Primary** and **Secondary**. Primary memory is accessible directly by the processing unit. RAM is an example of primary memory. As soon as the computer is switched off, the contents of the primary memory is lost. You can store and retrieve data much faster with primary memory compared to secondary memory. Secondary memory such as floppy disk, magnetic disk, etc., is located outside the computer. Primary memory is more expensive than secondary memory.

Computer memory is used to store two things:

1. Instructions (to execute a program) and
2. Data.

When the computer is doing any job, the data that have to be processed are stored in the primary memory. This data may come from an input device like keyboard or from a secondary storage device like a floppy disk.

The following terms related to memory of computer are discussed below:

Random Access Memory (RAM): The primary storage is referred to as Random Access Memory (RAM) because it is possible to randomly select and use any location of the memory directly to store and retrieve data. It takes same time to any address of the memory as the first address. It is also called read/write memory. The storage of data and instructions inside the primary storage is temporary. It disappears from RAM as soon as the power to the computer is switched off. The memories, which lose their content on failure of power supply, are known as volatile memories. So now we can say that RAM is volatile memory.

Figure 7: RAM (Random Access Memory)

Read Only Memory (ROM): There is another memory in computer, which is called ROM. Again it is the ICs inside the PC that form the ROM. The storage of program and data in the ROM is permanent. The ROM stores some standard processing programs supplied by the manufacturers to operate the personal computer. The ROM can only be read by the CPU but it cannot be changed.

The basic input/output program is stored in the ROM that examines and initializes various equipments attached to the PC when the switch is turned ON. The memories, which do not lose their content on failure of power supply, are known as non-volatile memories. ROM is non-volatile memory

PROM: There is another type of primary memory in computer, which is called **Programmable Read Only Memory (PROM)**. You know that it is not possible to modify or erase programs stored in ROM, but it is possible for you to store your program in PROM chip. Once the programs are written it cannot be changed and remain intact even if power is switched off. Therefore, programs or instructions written in PROM or ROM cannot be erased or changed.

EPROM: This stands for **Erasable Programmable Read Only Memory**, which overcome the problem of PROM and ROM. EPROM chip can be programmed time and again by erasing the information stored earlier in it. Information stored in EPROM can be erased by exposing it to ultraviolet light. This memory can be reprogrammed using a special programming facility. When the EPROM is in use, information can only be read.

EAPROM: This stands for **Electrically Alterable Programmable Read Only Memory**. This concept is same as that of EPROM. The only difference is that the memory can be altered using electrical signals. The whole of the memory need not be erased.

Figure 8: ROM

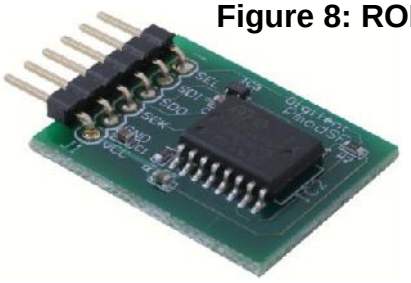


Figure 9: EPROM

ITQ: What are the two types of Computer Memory?
ITA: Primary and Secondary Memory.

ITQ: What do the following acronyms stand for? RAM, ROM, PROM, EPROM.
ITA: **RAM:** Random Access Memory **ROM:** Read Only Memory
PROM: Programmable Read Only Memory
EPROM: Erasable Programmable Read Only Memory

(E) CENTRAL PROCESSING UNIT (CPU)

This part of the computer that executes program instructions is known as the processor or Central Processing Unit (CPU). In a microcomputer, the CPU is based on a single electronic component, the microprocessor chip, within the system unit or system cabinet. The system unit also includes circuit boards, memory chips, ports and other components. A microcomputer's system cabinet will also house disk drives, hard disks, etc., but these are considered separate from the CPU. The CPU has two parts —The Control Unit (CU) and the Arithmetic Logic Unit (ALU). In a microcomputer, both are on a single microprocessor chip.

- **Control Unit (CU):** The control unit tells the rest of the computer system how to carry out a program's instructions. It directs the movement of electronic signals between memory which temporarily holds data, instructions and processes information - and the ALU. It also directs these control signals between the CPU and input/output devices.
- **Arithmetic - Logic Unit (ALU):** Arithmetic Logic Unit, usually called the ALU, performs two types of operations arithmetical and logical. Arithmetical operations are the fundamental mathematical operations consisting of addition, subtraction, multiplication and division. Logical operations consist of comparisons. That is two pieces of data are compared to see whether one is equal to, less than, or greater than the other.

The Processor or Central Processing Unit is the "heart" of the computer. It has the capability to carry out logical and arithmetic instructions, interprets and executes program instructions. Or It is the device does all of the processing within the computer. The popular CPU manufactures are AMD, Intel, Cyrix and Motorola. CPUs are calculated in terms of megahertz, this is known as clock speed.

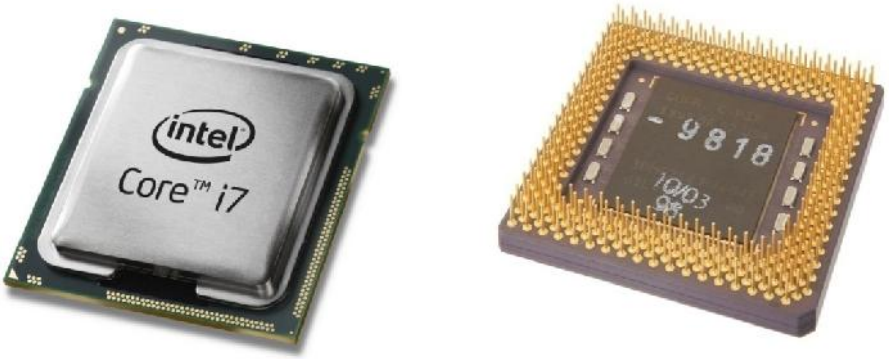


Figure 10: Central Processing Unit (CPU) Top and

A Hertz: Can be defined as a unit of measurement base on one second. It is what is known as a frequency measurement. A frequency is something that cycle from one point to another point, e.g. let's look at AC (Alternating Current). This frequency is 60Hertz, which means the charging change from negative to positive sixty times within one second. Megahertz can be considered approximately 1million. So a megahertz will be approximately 1 million cycles within one second. The term megahertz is to identify CPU clock speed, it determine how fast that computer can process data. For example a computer, which has a clock speed of 500MHZ, can process 500 million bits of data within a second.

ITQ: What is Central Processing Unit? What is the Unit of measuring a Processor?
ITA: It is the part of a Computer that executes program instructions, refer to as brain. Hertz is the unit of measuring a Processor.

(F) PORTS AND CONNECTIONS

A port is a channel through which data is transferred between input/output devices and the processor. There are several types of ports that you can use to connect the computer to external devices and networks. Some types of ports are described in the following list.

1. Display Adapter: You connect a monitor to the display adapter on your computer. The display adapter generates the video signal received from the computer, and sends it to a monitor through a cable. The display adapter may be on the motherboard, or on an expansion card.

2. FireWire: You use this to connect devices such as a digital camera. It is faster than the USB.

3. Network Port: You use this to connect a computer to other computers to exchange information between the computers.

4. Parallel Port and Serial Port: You use these ports to connect printers and other devices to a personal computer. However, the USB is now the preferred method for connecting peripheral devices because it is faster and easier to use.

5. Power: The motherboard and other components inside a computer use direct current (DC). A power supply takes the alternating current (AC) from the wall outlet and converts it into DC power.

6. Universal Serial Bus (USB) Port: You use this to connect peripheral devices such as a mouse, a modem, a keyboard, or a printer to a computer.

ITQ: List any 7 types of Computer Ports and Connections you know?
ITA: (1) Display Adapter (2) FireWire (3) Power Port (4) Network Port (5) Parallel Port (6) Serial Port (7) Universal Serial Bus (USB) Port

(G) EXPANSION CARDS

Cards are components added to computers to increase their capability. When adding a peripheral device makes sure that your computer has a slot of the type needed by the device.

1. Sound Card: It allows computers to produce sound like music and voice. The older sound cards were 8 bit then 16 bit then 32 bit. Though the human ear can't distinguish the fine difference between sounds produced by the more powerful sound card they allow for more complex music and music production. It converts audio signals from a microphone, audio tape, or some other source to digital signals, which can be stored as a computer audio file.

2. Video/Graphic Cards: Allow computers to display video and animation. A video card with a digital video camera allows computers users to produce live video. A high speed connection is required for effective video transmission. Allow computers to produce color (with a color monitor of course). The first color cards were 2 bit which produced 4 colors [CGA]. It was amazing what could be done with those 4 colors. Next came 4 bit allowing for 16 [EGA and VGA] colors. Then came 16 bit allowing for 1064 colors and then 24 bit which allows for almost 17 million colors and now 32 bit and higher allow monitors to display almost a billion separate colors.

3. Network Interface Card (NIC): Allow computers to connect together to communicate with each other. Network cards have connections for cable, thin wire or wireless networks. For more information see the section on Networks.

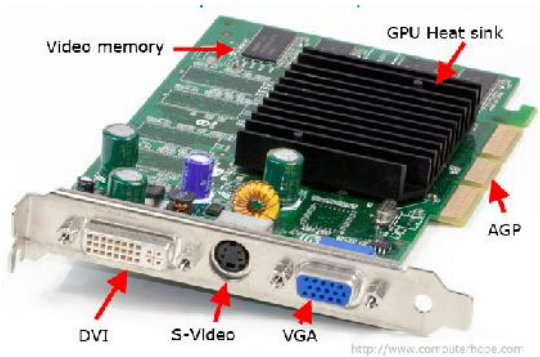


Figure 11: Graphic Card

ITQ: What do the following acronyms stand for? CPU, ALU, CU, USB, NIC, VGA
ITA: **CPU:** Central Processing Unit **ALU:** Arithmetic Logic Unit
CU: Control Unit **USB:** Universal Serial Bus
NIC: Network Interface Card **VGA:** Video Graphics Adapter.

SOFTWARE COMPONENTS

Types of Software includes: System Software, Application Software and Utility Software.

1. System Software: A system software package is a collection of programs designed to operate, control, and extend processing capabilities of computers. E.g. Operating System is one of the system software.

- **An Operating System:** Is the most important program that runs on a computer. Every general-purpose computer must have an operating system to run other programs. Operating systems 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, or it deals (OS) with the transfer of programs in and out of memory organizes the use of memory between programs organizes, processing time between programs and users, also maintains security and access rights of users, deals with errors and user instructions allows the user to save files to a backing store. E.g. Windows, UNIX, Linux, Mac OS X and Solaris.

2. Application Software: Application software is a set of programs that allow computer to perform a specific data-processing job for the user. Special Purpose Software and General Purpose Software Application Software: These are programs designed for specific computer application. They are produced by computer manufacturers or supplied by software firms. Examples are given below: Word processing Microsoft Word, Notepad for editing, formatting and printing text. Spreadsheet and Analysis: Lotus 123, Microsoft Excel and SPSS for performing mathematical and statistical calculation. Publishing PageMaker, Creating and Design of Graphics. Drawing and design CorelDraw, AutoCAD for 2D and 3D (wireframe and modeling) design of image and structures.

3. Utility Software: Utility software is special purpose software that improves the operations of system software by providing additional and specialized functionality to it. It helps to analyze, configure, optimize and keep your system in shape by eliminating and correcting errors. Utility is a program that performs a very specific task, to manage system resources e.g. Driver Tools, System Diagnostic, Antivirus, Total Uninstaller, Cleaner, Synchronizer, Disk Defragmenter, Disk Partitioning etc.

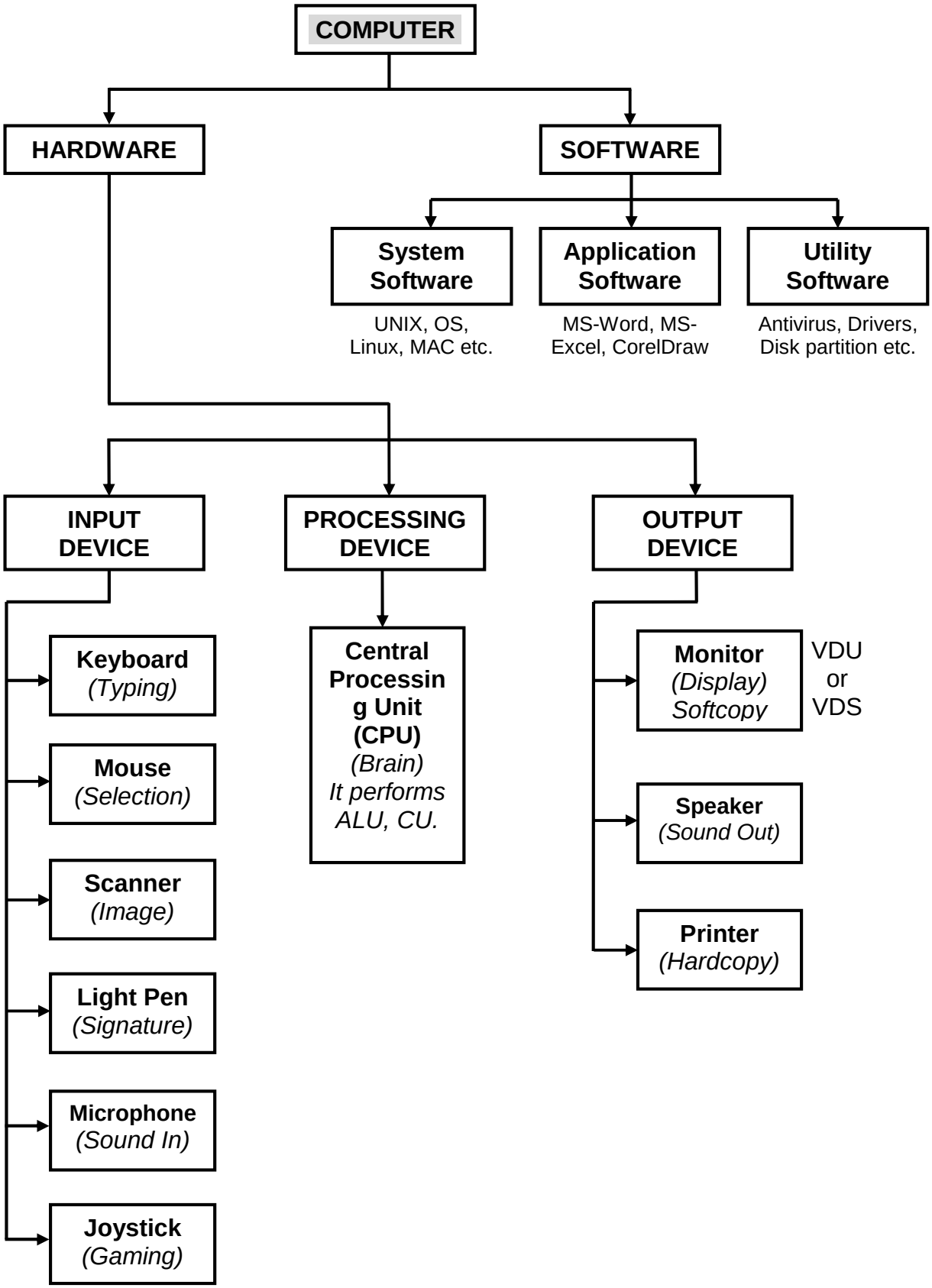


Figure 12: Computer Components Tree Diagram.

STUDY SESSION: 4
INTRODUCTION TO COMPUTER APPLICATION/ APPRECIATION

Study Session 4: Content	
	Introduction
	Learning Outcomes
	Using a Computer
	Using a Keyboard
	Using a Mouse
	Bits and Byte
	Windows User Interface

INTRODUCTION

The use of a computer system and it applications to perform tasks, that are relevant to the user. You will understand how to turn on your computer, work with the keyboard and mouse on the windows interface. It will be noted that the visual way we view data as presented by the computer is not same way data are understood by the computer system. In other words, we cannot open the computer system casing and find Alphabets or Images inside we will rather find various electronic components. In this lesson, we shall discuss about the terms bits and byte.

LEARNING OUTCOMES

After completing this lesson, you will be able to:

- Acquire knowledge on Computer Application/Appreciation;
- Perform Computer System operations;
- Identify the parts of a Computer keyboard and their various use;
- Effectively use the mouse to perform operations;
- Define Bit and Byte;
- Explain Windows User Interface and Folder Operations.

USING A COMPUTER

Booting is defined as the process of turning on a computer system, there are two types of booting: **Cold Booting** from initial rest and **Warm Booting** due to hanging.

❖ ***COLD BOOTING*:** To turn on a computer, press the power button on the system unit. When you turn on the computer, lights on the keyboard may blink briefly and you may also hear a beep. This is an indication that the **Power-On Self Test (POST)** has started. The computer performs a sequence of quick tests to check whether the motherboard, memory, hard drive, and other components are working.

If you hear a series of beeps, the monitor may display a message indicating that a component is not functioning. For example, if the keyboard cable is not attached, an error message may report that there is no keyboard detected. After POST, the computer starts the operating system, and then displays the logon screen. You now log on to the Computer Operating System. The operating system allows you to instruct the computer what to do after you have turned it on.

The operating system controls the computer's hardware and also manages the computer's operations and tasks, such **as logging on, logging off, and shutting down**. After you log on, you can perform various tasks, such as creating a new file or modifying an existing file. After performing the required tasks, you need to save the changes you made to the file. You can then log off from computer.

To log off, you need to **click Start,** and then **click Log Off**.

To securely turn off your computer, you must **shut down**. To do this, you need to **click Start,** and then, at the bottom of the **Start menu**, **click Shut Down**. You can end the session by **clicking** the **Shut Down Windows** dialog box.

❖ ***WARM BOOTING*:** If you encounter problems (hanging, slowness etc) while using the computer, you can choose the **Restart option** to restart the computer. To do this, **click Restart** in the **Shut Down Windows** dialog box. Or use of **Ctrl + Alt + Del on the Keyboard. NOTE:** On most computers, you should never use the actual power button on the front of the system unit to turn off the computer unless it stops responding.

ITQ: What is Booting and List the Types of Booting?
ITA: It is the process of turning on a computer system. *Warm* and *Cold Booting*

ITQ: What do the acronym POST stands for?
ITA: Power-On Self Test.

USING A KEYBOARD

The keyboard is an input device you use for typing commands or text into a computer. The different types of keys on a standard keyboard are listed below:

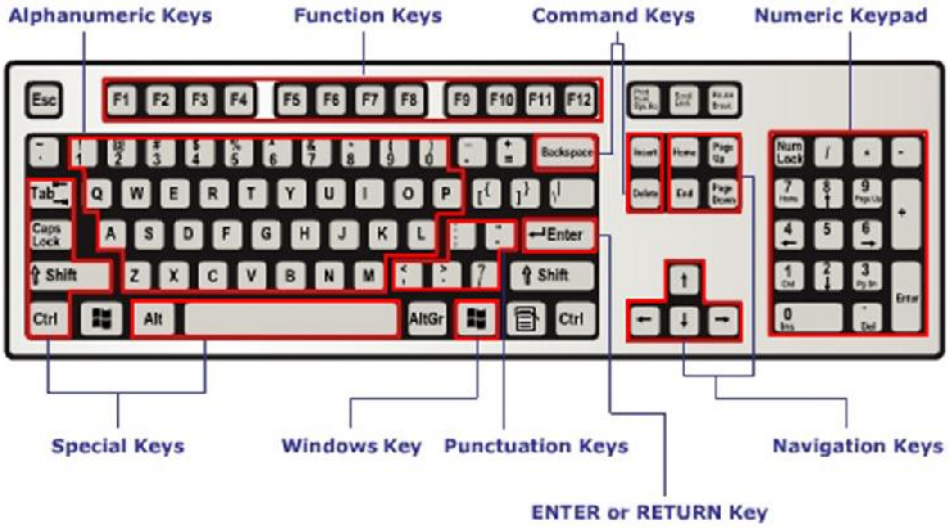


Figure 13: Keyboard Layout

- **Escape Key (Esc):** This key is used to terminate/cancel a command. It can only work on command that is yet to be accomplished.
- **Function Keys:** Keys labeled from F1 to F12 are function keys. You use them to perform specific functions. They are keys that perform predetermined functions, meaning their functions differ from program to program. The function of the F1 key in most programs is to access the Help File it may vary in others.
- **Alphanumeric Keys:** These keys are used for entering letters and numbers.
- **Special Keys:** Keys such as Control (CTRL), SHIFT, SPACEBAR, ALT, CAPS LOCK, and TAB are special keys. These special keys perform special functions depending on when and where they are used.
- **Punctuation Keys:** Punctuation keys include keys for punctuation marks, such as colon (:), semicolon (;), question mark (?), single quotation marks (‘ ’), and double quotation marks (“ ”).
- **Command Keys:** Keys such as INSERT (INS), DELETE (DEL), and BACKSPACE are command keys. You use these keys to insert and delete text and objects. You can turn the INSERT key either ON or OFF. When turned ON, the INSERT key helps you overwrite characters to the right of the insertion point. When turned OFF, the INSERT key helps you enter text or characters to

the right of the insertion point, without overwriting this text or characters. An insertion point is the blinking vertical line that indicates the location at which the inserted text appears. The DELETE key is used to remove typed text, characters, and other objects on the right side of the insertion point. The BACKSPACE key is used to remove typed text, characters, and other objects on the left side of the insertion point.

- **ENTER or RETURN Key:** The label on this key can be either ENTER or RETURN, depending on the brand of computer that you are using. You use the ENTER or the RETURN key to move the insertion point to the beginning of a new line. In some programs, it is used to send commands and to confirm a task on a computer.
- **Navigation Keys:** Keys such as the arrow keys, HOME, END, PAGE UP, and PAGE DOWN, are navigation keys. You use the arrow keys to move the insertion point up, down, right, and left. The HOME key is used to move the cursor to the left end of a line of text or the top of a document. The END key, in contrast, moves the cursor to the end of a line or a file, depending on the program. The PAGE UP key is used to move one page up and the PAGE DOWN key is used to move one page down while viewing a document. The functions of PAGE UP and PAGE DOWN keys differ from program to program.
- **Numeric Keypad:** Not all keyboards have a numeric keyboard. If available, this is a separate set of keys with numbers from 0 to 9, the decimal point, special characters, and navigation symbols. The NUM LOCK key on this keypad allows you to switch between the numeric and the navigation keys.
- **Windows Key:** The key between the CTRL key and the ALT key is the Windows key. It has the Microsoft Logo or the Windows flag. This key is used to open the Start menu, or is used in combination with a second key to perform common Windows tasks. The exact use of the Windows key may vary from program to program.

ITQ: What are Function Keys on a Computer Keyboard?
ITA: They are F1 to F12 on the Computer keyboard that has predetermined functions (specific in different environment).

ITQ: What key on the keyboard allows switching ON/OFF the Numeric Keypad?
ITA: The NUM LOCK key.

USING A MOUSE

As defined a mouse is one of the input devices. There are different types of mouse devices available in the market. A regular mouse has a rubber or a metal ball on the underside. The mechanical movement of the mouse device moves the ball. This movement further moves the pointer on the screen. The mouse is mainly comprised of two buttons, the **Left** and **Right** mouse buttons. A ***trackball*** is like a regular mouse, but upside down, with the ball on the top. It allows you to have the same control as a mouse in a confined space. An ***optical*** mouse can be used in the same way as a regular mouse. However, it does not have a ball. It uses a laser to detect movement. It also comes with a scroll.

Figure 14: Trackball Mouse

Figure 15: Optical Mouse

The mouse especially requires some skills in using it. Some of its functions include:

- **Clicking:** It simply means placing or pointing the cursor on an item such as text word paragraph, file etc. and then pressing the left button and releasing it.
- **Right Clicking:** This is using the third finger to press the right button once, and list of events that can be done comes out and then select it by clicking.
- **Double Clicking:** This is the pressing of the left button twice at a very fast speed. It is used to open folders etc.
- **Triple Clicking:** This is the pressing of the left button trice at a very fast speed. It is used to select an entire paragraph etc.
- **Dragging:** It is a way of selecting an item and moving it away from its original position. It is done by holding the mouse down and holding the left button of the mouse.
- **Highlighting:** It is also done the same way as dragging is done but it is used for text. It is used to select text that wants to be edited.

BITS AND BYTE

BIT: A bit (short for **"binary digit"**) is the smallest unit of measurement used to quantify computer data. It contains a single binary value of **0 (OFF/LOW)** or **1 (ON/HIGH)**. Or the Computer understands two things, which is **1** and **0**, this is based on the **Binary Number System**, those digits are known as bit. The term **BIT** can be refer as a contraction of the words binary digit, in order for the computer to save information, it saves it in terms of **Bytes**, therefore **8 BITS = 1 BYTE.**

BYTE: A byte is a combination of eight bits arranged in a particular sequence. Each sequence represents a single character, symbol, digit, or letter. A byte forms the basic unit that is used to measure the storage capacity of a storage device.

- **KILOBYTE:** One kilobyte (KB) is equal to 1,024 bytes. Most of the user data stored in a computer, such as simple e-mail messages or a text file, occupies storage space of a few kilobytes.
- **MEGABYTE:** One megabyte (MB) is equal to 1,024 KB. The amount of information contained in 1 MB is approximately equal to a complete textbook.
- **GIGABYTE:** One gigabyte (GB) is equal to 1,024 MB, which is approximately a billion bytes. Most computers today have hard disks with large capacities that are measured in gigabytes. A GB denotes a huge storage capacity. For example, a video film stored on a computer can occupy more than 1 GB of space.
- **TERABYTE:** One terabyte is equal to 1,024 GB, approximately a trillion bytes. Storage devices having capacities in terabytes are generally used by organizations that need to store large volumes of data. A terabyte is so large that a few terabytes of memory space can contain the complete text of a large number of books.

ITQ: Bits 1 and 0 also stands for? Hence they are based on which number system?
ITA: 1 is ON/HIGH and 0 is OFF/LOW. They are Binary Number System.

ITQ: How many Bits make 1 Byte?
ITA: 8 Bits make 1 Byte.

ITQ: Arrange the following in Descending Order of Size: MB, KB, GB, PB, TB
ITA: PG > TB > GB > MB > KB.

ITQ: What is the actual side of 1KB in Bytes?
ITA: 1,024 Bytes.

WINDOWS USER INTERFACE

Windows provides a GUI that has a number of components to help you interact with a computer. The following are the components of a Windows user interface:

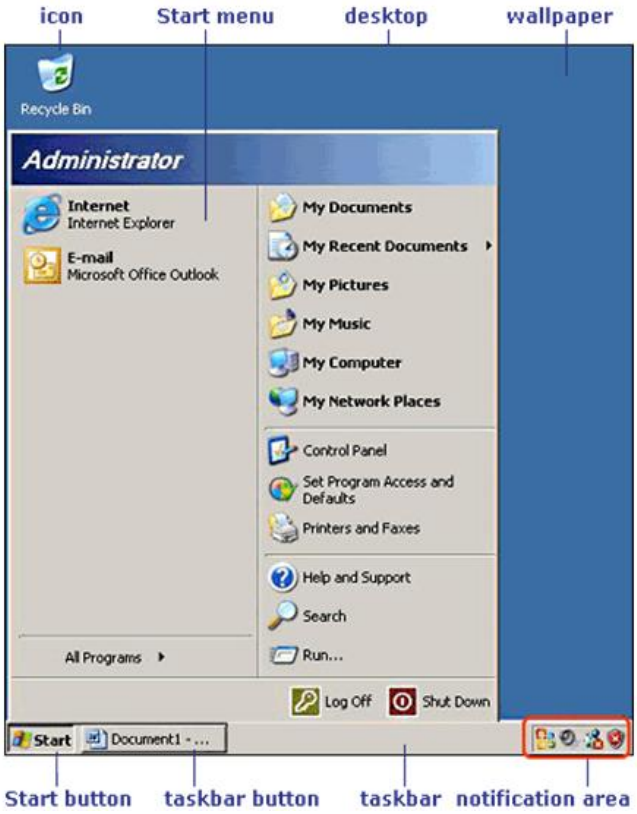


Figure 16: Desktop Screen

Desktop: The desktop is an on-screen work area that uses a combination of menus and icons. The desktop includes the following components:

1. ***Wallpaper*** is a pattern or picture on the screen background that you can choose. You can consider it as a tablecloth placed on a table.

2. An ***icon*** is a small image displayed on the screen to represent an object. Icons help you perform certain computer actions without having to remember commands or type them. For example, you can click a file icon to open the file with the appropriate program.

3. ***Folder*** is a yellow container which is referred to as directory which files are stored. They can be found on the desktop screen.

4. **Taskbar:** The taskbar is a rectangular bar that is usually located at the bottom of the screen. You can use the taskbar to select a program running on your computer. The taskbar displays the programs in the form of taskbar buttons. The program displayed on the taskbar in the graphic is Word.

- **Notification Area:** When the taskbar is located at the bottom of a screen, the notification area is located on the right side of the taskbar. The notification area displays the time, a volume icon, and icons of some programs running on a computer. For example, the printer shortcut icon appears after a document has been sent to the printer and disappears when the printing is complete.
- **Start:** In Windows, the Start button opens the Start menu. You can use the commands on the Start menu to start a program, or to restart or shutdown the computer. The Start menu typically displays the following commands:
  - **My Documents:** When you click **My Documents** on the **Start** menu, the contents in the My Documents folder appear in a rectangular area, called the window. The window displays two specialized folders, My Pictures and My Music. You can use the My Documents folder to share your documents and also keep private the documents you do not want to share.
  - **My Computer:** When you click **My Computer** on the **Start** menu, the contents of your floppy disk, hard disk, CD-ROM drive, and network drives appear in a window. You can use the icons and menus in My Computer window to search for or open files and folders.
  - **My Network Places:** When you click **My Network Places** on the **Start** menu, the My Network Places window appears. It provides a view of all the shared computers and other resources on the network to which your computer is connected.
  - **Control Panel:** When you click **Control Panel** on the **Start** menu, the Control Panel window appears. It allows you to control the various aspects of the operating system or hardware, such as setting the system time and date, adding and removing programs, troubleshooting hardware and software, and setting keyboard characteristics.
  - **Printers and Faxes:** When you click **Printers and Faxes** on the **Start** menu, the Printers and Faxes window appears. It allows you to install and share printing resources. After you install a printer, you can print documents from your computer.
  - **Help and Support:** When you click **Help and Support** on the **Start** menu, the Help and Support Center window appears. You can use the Microsoft Help and Support Center whenever you have a question about the

operating system. It is a comprehensive resource that helps you learn about Windows XP. You can use the Search or the Index feature to view all Windows Help resources, including those available on the Internet.

- **Search:** When you click **Search** on the **Start** menu, the Search window appears. It allows you to search for a file or a folder on your computer. In addition, if you are authorized to access other computers on your network, you can search files on those computers.
- **Run:** This allows you to start a program.

ITQ: What is the stable screen after booting on your computer system?
ITA: Desktop Screen

ITQ: What are the items that can be found on the Desktop Screen?
ITA: Wallpaper, Icon, Folder, Taskbar,

ITQ: What is a folder?
ITA: It is a yellowish container termed directory where files are stored. It can be found on the desktop screen.

FOLDER OPERATIONS

Creating a Folder:

- Right Click on a blank space on the Desktop Screen
- Click on New, Click on Folder
- A yellow Folder will appear with a cursor prompting Folder Name
- Type in your desired Folder Name and Click on Enter Key on the Keyboard

To Open the Folder:

- Double click on the folder **OR**
- Right Click on the Folder and Click on Open

To Rename the Folder:

- Right click on the folder, Then left click on rename;
- Type the name of the folder you want and press the (Enter Key on keyboard **OR** Click outside the folder).

Copying Files into a Folder:

- Copy the files, Open the Folder and Paste with **Ctrl + V** or Right Click inside the Folder and Click on Paste **OR** Use Drag and Drop by Click-Holding on the File you wish to move into the Folder

NOTE: Use of Right Click-Hold and drag gives you option to Move or Copy the file.

To Delete the Folder:

- Click on the folder and press Delete Key on the keyboard **OR**
- Right Click on the Folder, Click on Delete,
- A dialog box will appear click on Ok button.

ITQ ASSESSMENT SUMMARY: STUDY SESSION 1, 2, 3 AND 4.

Question 1: What does the acronym ICT stands for?
Question 2: What is Data?
Question 3: What is Information?
Question 4: List five forms in which Data can be?
Hint: Symbols etc.
Question 5: What are the qualities of Good Information?
Hint: Accuracy etc.
Question 6: List five various key usage of ICT you know?
Hint: Teaching with Video Conferencing etc.
Question 7: What is a Computer?
Hint: Terms: *input*, *processing, output* and *storage* will be used in the definition.
Question 8: List 5 applicable roles of a Computer?
Hint: In Education, it is used to deliver visual training, analyze information etc.
Question 9: What are the Characteristics of a Computer?
Hint: Speed etc.
Question 10: What are the two components of a Computer?
Question 11: What is Input Device? List any 7 Input Devices you know.
Question 12: What do the acronym OCR stands for?
Question 13: What is Output Device? List any 4 Output Devices you know.
Question 14: Define the following terms: Softcopy and Hardcopy?
Question 15: What does the acronym LCD stands for?
Question 16: What are the two types of Computer storage devices?
Question 17: List any 5 types of External Storage Devices?
Question 18: What are the two types of Computer Memory?
Question 19: What is Central Processing Unit?
Question 20: What is the unit of measurement of a Computer Processor?
Hint: Unit for measuring frequency.
Question 21: List any 7 types of Computer Ports and Connections you know?
Question 22: What is Booting and List the Types of Booting?
Question 23: What do the acronym POST stands for?
Question 24: What are Function Keys on a Computer Keyboard?
Question 25: Key on the keyboard that allows switching ON/OFF Numeric Keypad?
Question 26: Bits 1 and 0 also stands for?
Question 27: Bits are based on which number system?
Question 28: How many Bits make 1 Byte?
Question 29: Arrange the following in Ascending Order of Size: MB, KB, GB, PB, TB
Question 30: What is the actual side of 1KB in Bytes?
Question 31: What is the stable screen after booting on your computer system?
Question 32: What are the items that can be found on the Desktop Screen?
Question 33: What is a folder?
Question 34: List Computers Base on Generations and there specific technology?
Hint: The Second Generation: the specific technology used is - Transistors.
Question 35: Briefly explain how to use the Keyboard and Mouse?
Question 36: Briefly differentiate between the following terms:
(i) Hardware and Software (iii) Hardcopy and Hardware
(ii) Softcopy and Software (iv) Hardcopy and Softcopy.
Hint: Hardcopy is the output of a printer i.e. printed document on paper.

Question 37: What do the following acronyms stand for?

(1) ICT	(5) CD-ROM	(9) EPROM	(13) ICT	(17) UNIVAC	(21) NIC
(2) CPU	(6) ALU	(10) ROM	(14) CU	(18) OS	(22) RAM
(3) VGA	(7) AI	(11) USB	(15) ESC	(19) DOS	(23) OCR
(4) POST	(8) VDU	(12) PC	(16) IBM	(20) GUI	(24) LCD

Question 38: Sort the following types of Computer Devices into their suitable categories in the table below:

1. Mouse	4. Keyboard	7. Scanner	10. Hard Disk	13. CD-ROM
2. Printer	5. Headphone	8. Light Pen	11. Floppy	14. Speaker
3. Projector	6. Webcam	9. Monitor	12. Joystick	15. DVD-ROM

Input Device	Storage Device	Output Device
1, …	10, …	2, ….

Hint: 1. Mouse is one if the Input Device; 10. Hard Disk is one of the Storage Device; 2. Printer is one of the Output Device etc.

Question 39: What are the two types of Computer Storage Devices?
Question 40: What is a joystick used for?
Question 41: List 6 different mouse actions you know?
Question 42: What items can be found on the Taskbar?
Question 43: What is the stable screen after booting on your computer system?
Question 44: What are the items that can be found on the Desktop Screen?
Question 45: What items can be found on the Taskbar?
Question 46: What is a folder?
Question 47: At default, the mouse has how many buttons?
Question 48: A channel through which data is transferred between input/output devices and the processor is called?
Question 49: Components are added to computers to increase their capability via?
Question 50: What is the shortcut key for Warm Booting?

STUDY SESSION: 5
MICROSOFT WORD

Study Session 5: Content	
	Introduction
	Learning Outcomes
	Introduction to Microsoft Word Screen
	Using Microsoft Word
	ITQ Assessment Summary

INTRODUCTION

Microsoft Word is one of the most commonly used Application Software. It has been evolving in several versions, with additional features incorporated to simply the users' operation. It easy to use and consists of a Graphical User Interface, that is mainly use for creating documents. Microsoft Word files are with the extensions **.doc** or **.docx** depending on the version in use.

LEARNING OUTCOMES

After completing this lesson, you will be able to:

- Explain Microsoft Word Screen
- Acquire the knowledge and skills of effectively using Microsoft Word;
- Able to create document, save, open, format text, change case, create table etc

INTRODUCTION TO MICROSOFT WORD SCREEN

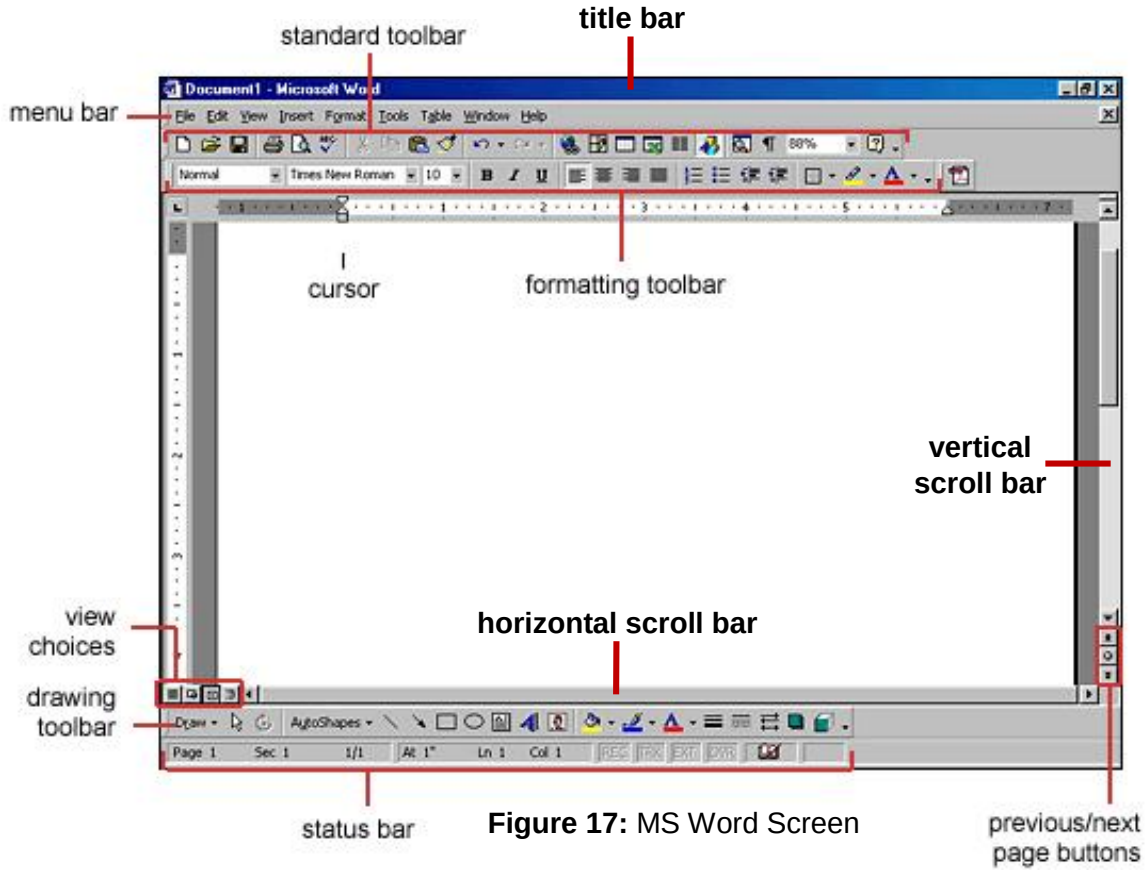


Figure 17: MS Word Screen

BASIC FEATURES OF MICROSOFT WORD

- **Title Bar:** This bar is referring to as the bar holding the package. It consists of the following:
  - (a) Package Logo (i.e.)
  - (b) Default Filename (i.e. Document1). When you save the file with a name the filename you use will replace the Document1.
  - (c) Package Name (i.e. Microsoft Word)
  - (d) Three buttons
    - (i) Minimize (i.e. Use to drop the package)
    - (ii) Maximize/Restore (To shrink the package and enlarge to normal size)
    - (iii) Close (i.e. Use for exiting the package)
- **Menu Bar:** This bar consists of menus that are essential for working with Microsoft Word i.e. File, Edit, View, Insert, Format, Tools, Table, Windows and Help.

- **Standard Toolbar:** This bar consists of shortcuts to the menu bar items i.e. it provides easy access to some items of the menu bar that are usually made use of frequently.
- **Formatting Toolbar**: This bar consists of shortcuts to the Format Menu i.e. it contains easy access to some of the frequently use items of the Format Menu.
- **Horizontal and Vertical Ruler:** These are rulers that are used for measurement while working with Microsoft Word. They enable accurate and proper positioning on the document.
- **Blank Page and Blinking Cursor:** The blank page is the white page that appears on the screen, this page increases as the previous is filled up. The blinking cursor is the small vertical line that is found blinking on the blank page; the blinking action of the cursor indicates readiness for typing.
- **Horizontal and Vertical Scroll Bar:** Is used for scroll the document up and down, left and right, is also give clear viewing of the document.
- **Drawing Tool Bar:** This bar is mainly use for creating shapes (i.e. line, box, rectangle, circle, arrow etc.). It can also be used for formatting the objects/shapes created.
- **Status Bar:** This bar gives the information of the current active document, i.e. number of pages, current page, line, column and section.
- **Task Bar:** This bar holds the minimized windows, it also have the following features, the Start button, Date and Time.

Microsoft word is a word processor capable of providing options such as typing, editing, and spell checking, formatting, setting, storing and printing documents where necessary.

USING MICROSOFT WORD

STARTING MICROSOFT WORD:

When Microsoft Word is started, a new document window opens, ready to begin typing the document.

- Click on Start Button, Click on All Programs,
- Click on Microsoft Office and Click on Microsoft Word **OR**
- Double Click on Microsoft Word Icon from the desktop screen

SAVING MS WORD DOCUMENT:

There are two ways in which we can save document in MS Word application they are the **"Save As"** and the **"Save".** Either can be used for the first time of saving a document, because they will perform same action without differences but on subsequent usage they differ completely.

The **"SAVE"** command: This will continuously work as saving changes made to the document. It enables saving of any added, modified or formatted text in the document to be updated.

- Click on File Menu, Click on **Save (Ctrl + S)**

The **"SAVE AS"** command: This is used to duplicate or make a copy of a document with same or different filename into different or same location respectively. It will always prompt a dialogue box for new location and/or new filename. **Note:** You cannot have two same types of files with same filename in same location.

- Click on File Menu, Click on **Save As (F12).**

NOTE: The Save As command also enables you to change the file format, where you can easily save a file in another format e.g. Saving a Microsoft Word File to a lower version, plain text or to PDF files etc.

OPENING OF MS WORD DOCUMENT:

The open command is used to open an existing file, folder or document.

- Click on File Open **OR** Press **Ctrl + O** on the keyboard
- A dialogue box will appear, select the file name
- Click on Open Button

CLOSING THE MS WORD DOCUMENT:

The Close command is used to close a file or document after use. Make sure you have saved the file if you need to use it in the future.

- Click File on the Menu bar to display a drop down list
- Select Exit from the drop down list **OR**
- Press **Ctrl + W** on the Keyboard, then the window automatically close.

PRINTING MS WORD DOCUMENT:

- To print a document, Open the file,
- Click on the File menu, Select Print option on the menu list **OR Ctrl + P**
- A dialog box will appear, Select the printer to be used

- ❖ Specify the range to which it should be printed (All or Current page, Even or Odd etc).
- ❖ Preview if need be and finally click on Print Button

NAVIGATING THROUGH MS WORD DOCUMENT:

There are some shortcut keys and mouse movement that helps us to quickly and freely move around in MS Word document. Some of the keys include, Cursor Movement Shortcut Keys:

- ❖ To move to the beginning of line **(HOME)**
- ❖ To move to the end of the line **(END)**
- ❖ To move to the top of the document **(Ctrl + Home)**
- ❖ Go to End of the document **(Ctrl + End)**
- ❖ To move a space forward **(Space bar)**
- ❖ Select from cursor to the end of the line **(Shift + End)**
- ❖ Select from cursor to the beginning of line **(Shift + Home)**

SELECTION OF TEXT:

This simply means highlighting of text. This action is necessary to enable you change the attributes of a text. There are four (4) methods of selecting a text, these includes:

(a) Shift and Arrow Keys:

- Position your cursor where you want to start selection;
- Hold down the shift key and press the left or right arrow key.

(b) Mouse Pointer:

- Position your mouse pointer where you want to start selection;
- Hold down the left mouse button and drag over the text.

(c) Menu Option:

- Click on Edit menu from the menu bar;
- Click on Select all.

(d) Shortcut Key:

- Press Ctrl + A on the keyboard.

NOTE: Method (a) and (b) above are applicable for selection of one, few or some text among other text. While method (c) and (d) are applicable to all the texts within the document. To cancel any of the selection; click on any blank space or press any of the arrow keys on the keyboard.

FORMATTING OF TEXT:

This is also termed as changing of text attribute, enabling you to apply different attributes to the properties of a text. This action can be achieved through the following steps:

- Select the text (using any method of selection from the previous lesson);
- Click on format menu from the menu bar;
- Click on font, a dialogue box will appear;

} **Ctrl + D**

- Make changes of font type, font style, font size and font colour;
- Click on Ok button.

SUPERSCRIPT AND SUBSCRIPT:

This action implies the method of shifting text up (i.e. A^b means 'b' has been superscripted) or down (i.e. H_2O means '2' has been subscripted). You can achieve both as follows:

- Select the text; Click on format menu from the menu bar;
- Click on font, a dialogue box will appear; Select either superscript or subscript;
- Finally, click on Ok button.

Shortcut Keys (*Both functions as on and off***)**

- Superscript: **Ctrl** + **Shift** + **=** Subscript: **Ctrl** + **=**

ALIGNMENT OF TEXT:

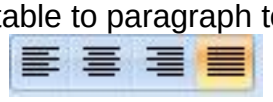
This will enable you to align your text to left, right, center or justify on the page of your document. It involves the following steps:

- Select the text; Click on format menu;
- Click on paragraph, a dialogue box will appear;
- At the alignment section, select either left, cantered, right or justified;
- Finally, click on ok button.

Shortcut Keys (*Make sure you have selected the text***)**

Left:	**Ctrl + L**	**Center:**	**Ctrl + E**
Right:	**Ctrl + R**	**Justify:**	**Ctrl + J**

Note: Justify alignment is suitable to paragraph text only

Standard Toolbar Shortcut 

Click on either of these buttons from the standard toolbar. They are left, center, right and justify alignment respectively.

LINE SPACING:

This action allows you to determine the spaces within the lines of your document. You can either increase or reduce the line spacing through the following steps:

- Select the text; Click on format menu;
- Click on paragraph, a dialogue box will appear;
- At the line spacing section select the option of your choice (i.e. Single, 1.5 lines, Double etc); Finally, click on ok button.

Shortcut Keys (*Make sure you have selected the text***)**

- Single Line Spacing: **Ctrl + 1**
- 1.5 Line Spacing: **Ctrl + 5**
- Double Line Spacing: **Ctrl + 2**

BULLET AND NUMBERING:

This will enable you to automatically bullet or number list of items or points as you type your text in a document. The bullet can be in form of dots or symbols, while the numbering can be numbers, alphabets or roman numerals. It involves the following steps:

- Select the text; Click on format menu;
- Click on bullet and numbering, a dialogue box will appear;
- Click on either Bulleted or Numbered, and then make your choice;
- Finally, click on ok button.

Standard Toolbar Shortcut 

Click on either of the buttons from the standard toolbar. They both represent Bullet and Number buttons respectively.

COPY, CUT AND PASTE COMMAND:

These commands are use for duplicating (copying) or moving (cutting) text from one location to another. Copy and Cut cannot be done at the same time, you either copy or cut then after copying or cutting any text you must paste. Take the following steps:

- Select the text you want to copy or cut;
- Click on edit menu, click on copy or cut;
- Position your cursor where you need the text;
- Click on edit menu, click on paste.

Shortcut Keys (*Make sure you have selected the text*)

Copy = **Ctrl + C**

Cut = **Ctrl + X**

Paste = **Ctrl + V** OR **Shift key + Insert Key**

Formatting Toolbar Shortcut 

Click on either of the buttons from the formatting toolbar, for cut, copy and paste respectively.

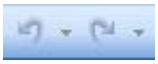
UNDO AND REDO COMMAND:

These commands enable the ability of taking back (undo) and bringing forward (redo/repeat) an action. Therefore, after performing an action you can undo or repeat such actions. Take the following steps:

- Click on edit menu;
- Click on undo or redo;

Shortcut key

- Undo = **Ctrl + Z**
- Redo = **Ctrl + Y**

Formatting Toolbar Shortcut 

Click on either of the buttons from the formatting toolbar, it represents undo and redo respectively.

NOTE: After performing an action, you can redo without undoing.

PAGE SETUP:

The page of your document is usually in A4 or Letter size. It is composed of margins (top, bottom, left and right); the margins are non-printable portion of the page that you can adjust to fit your desire.

- Click on file menu;
- Click on page setup, a dialogue box will appear;
- At the margin section, adjust the top, bottom, left and right margins
- At the orientation section, select either portrait or landscape;
- Click on the paper tab to select the type of paper size of your choice;
- Finally, click on ok button.

PAGE NUMBERING:

This topic allows you to automatically apply page numbers to your document. Take the following steps:

- Click on insert menu; Click on page numbers, a dialogue box will appear;
- At the position section, select top or bottom position;
- At the alignment section, select left, center, right, inside or outside;
- Click on format button to change to numbers, alphabets or roman numerals;
- Finally, click on ok button.

HEADER AND FOOTER:

This topic allows you to insert text in the top and bottom margins of a document. As we earlier discussed that the page margins are non-printable portion, it permits you to insert printable text that will automatically appear in all the pages of the document.

- Click on View menu;
- Click on header and footer, a dialogue box will appear;
- Type your text if any in the header of the page and click on switch between header and footer button on the dialogue box;
- Type in the text if any for the footer, you may switch back to the header;
- Finally, click on close button from the dialogue box.

COLUMN TEXT:

Column 1

Conventionally, text flow in one column from one line to the other lines on a page. Column text allows you to type in more than one column on a page.

Column 2

This column text is usually applicable in newspapers, magazines or some textbooks

- Select the text; Click on format menu;
- Click on columns, a dialogue box will appear;
- At the presets section, click on two, three, left or right
- Finally, click on ok buttons.

Formatting Toolbar Shortcut (*Make sure you have selected the text***)**

 Click on this button on the formatting toolbar, a pop out will appear, drag on it for two, three or four columns.

DROP CAP:

This is similar to the previous topic as it is applicable in newspapers, magazines or some textbooks. It usually makes the first character of a paragraph text to be bigger and stylish than the other text:

- Select the text; Click on format menu;
- Click on Drop Cap, a dialogue will appear;
- Click on Dropped or In Margin;
- Select the font type and size of your choice;
- Finally, click on ok button.

FINDING OF TEXT:

This command allows you to find a text within a document.

- Click on Edit menu,
- Click on Find, a dialogue box will appear; } **Ctrl + F**
- Type in the text and click on Find next button;
- Finally, click on cancel.

REPLACING OF TEXT

After performing the finding of text, you can replace the found text with another.

- Click on Edit menu;
- Click on Replace, a dialogue box will appear; } **Ctrl + H**
- Type in the text you wish to find in the Find What;
- Type in the text you wish to use for the replacement in the Replace with;
- Click on Find Next, then click on Replace or Replace all;
- Finally, click on cancel.

GO TO COMMAND:

This command enables you to navigate to a particular page in your document.

- Click on Edit menu;
- Click on Go To, a dialogue box will appear; } **Ctrl + G**
- Type in the page number you wish to navigate;
- Click on Go To button; finally, click on close.

NOTE: You should specify only the page numbers that are available in the document i.e. you cannot specify unavailable page number.

CREATING OF TABLES:

A table is that which is made up of columns, rows and cells. This command allows you to create a table for data entry.

- Position your cursor where you need the table; Click on Table menu;
- Click on Insert, Click on Table;
- A dialogue box will appear, specify the number of columns and rows;
- Finally, click on ok button.

Table below has 5 columns and 2 rows

MERGING OF CELLS

After creating a table, this action will enable you to merge two or more cells together.

- Select the cells you wish to merge; Click on Table menu;
- Click on Merge Cells.

SPLITTING OF CELLS

There may be need for you to split one or two cells into more divisible cells.

- Select the cells you wish to split; Click on Table menu;
- Click on Split Cells;
- A dialogue box will appear, specify divisible number of columns and rows;
- Finally, click on Ok button.

		Merged cell→	**GRADES**			
		Split cell →	**A**	**B**	**C**	**REMARKS**

FORMATTING OF TABLE

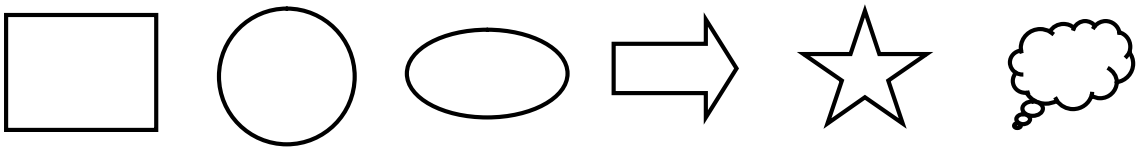
After creating a table, merging or splitting the cells in the table, you can apply formatting to the table, i.e. changing the line width, type, and colour.

- Select the table; Click on Format menu;
- Click on Borders and Shading, a dialogue box will appear;
- Choose the line style, colour, width;
- At the preview add and remove as you may wish;
- Finally, click on ok button.

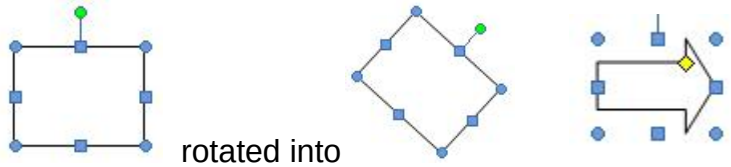
DRAWING OF SHAPES:

With the use of Drawing Tool bar, it enables you to draw shapes i.e. box, rectangle, circle, oval, line, arrow etc.

- Using the Drawing Toolbar, click on any of the objects you wish to draw;
- Move your mouse pointer to any position on the screen;
- Click hold and drag to any size your choice for oval, rectangle etc;
- Hold down shift key to enable you draw perfect objects like circle, box, etc.



When you click on any object it gets selected with nodes like you can now resize the object or rotate/shaping the object from the nodes. Edge nodes will be use for perfect resizing while the middle nodes are for imperfect resizing. Green node is for rotation.



MICROSOFT WORD SHORTCUT KEYS:

Ctrl + A	= Select All	Ctrl + B	= Bold
Ctrl + C	= Copy	Ctrl + D	= Font
Ctrl + E	= Center Align	Ctrl + F	= Find
Ctrl + G	= Go To Command	Ctrl + H	= Replace
Ctrl + I	= Italics	Ctrl + J	= Justify Align
Ctrl + K	= Hyperlink	Ctrl + L	= Left Align
Ctrl + M	= Indent	Ctrl + N	= New page
Ctrl + O	= Open	Ctrl + P	= Print
Ctrl + Q	= Remove	Ctrl + R	= Right Align
Ctrl + S	= Save	Ctrl + T	= Hanging Indent
Ctrl + U	= Underline	Ctrl + V	= Paste
Ctrl + W	= Close	Ctrl + X	= Cut
Ctrl + Y	= Redo	Ctrl + Z	= Undo

STUDY SESSION: 6
MICROSOFT EXCEL

Study Session 6: Content	
	Introduction
	Learning Outcomes
	Introduction to Microsoft Excel Screen
	Using Microsoft Excel
	ITQ Assessment Summary

INTRODUCTION

Microsoft Excel is also one of the most commonly used Application Software. It took over from the use of **Lotus123** and has maintained dominant software. It mainly uses formulae to perform calculations. In this lesson you will understand that Microsoft Excel formulae operate with **BODMAS** and must always begin with an equal sign **=**. The extension for Microsoft Excel file is .**xls** OR **.xlsx** for 2003 and 2007 versions respectively.

LEARNING OUTCOMES

After completing this lesson, you will be able to:

- Explain Microsoft Excel Application Software Screen
- Acquire the knowledge and skills of effectively using Microsoft Excel Formulae;
- Able to create spreadsheets, save and open existing spreadsheets and apply formulae to perform calculations etc.

INTRODUCTION TO MICROSOFT EXCEL SCREEN

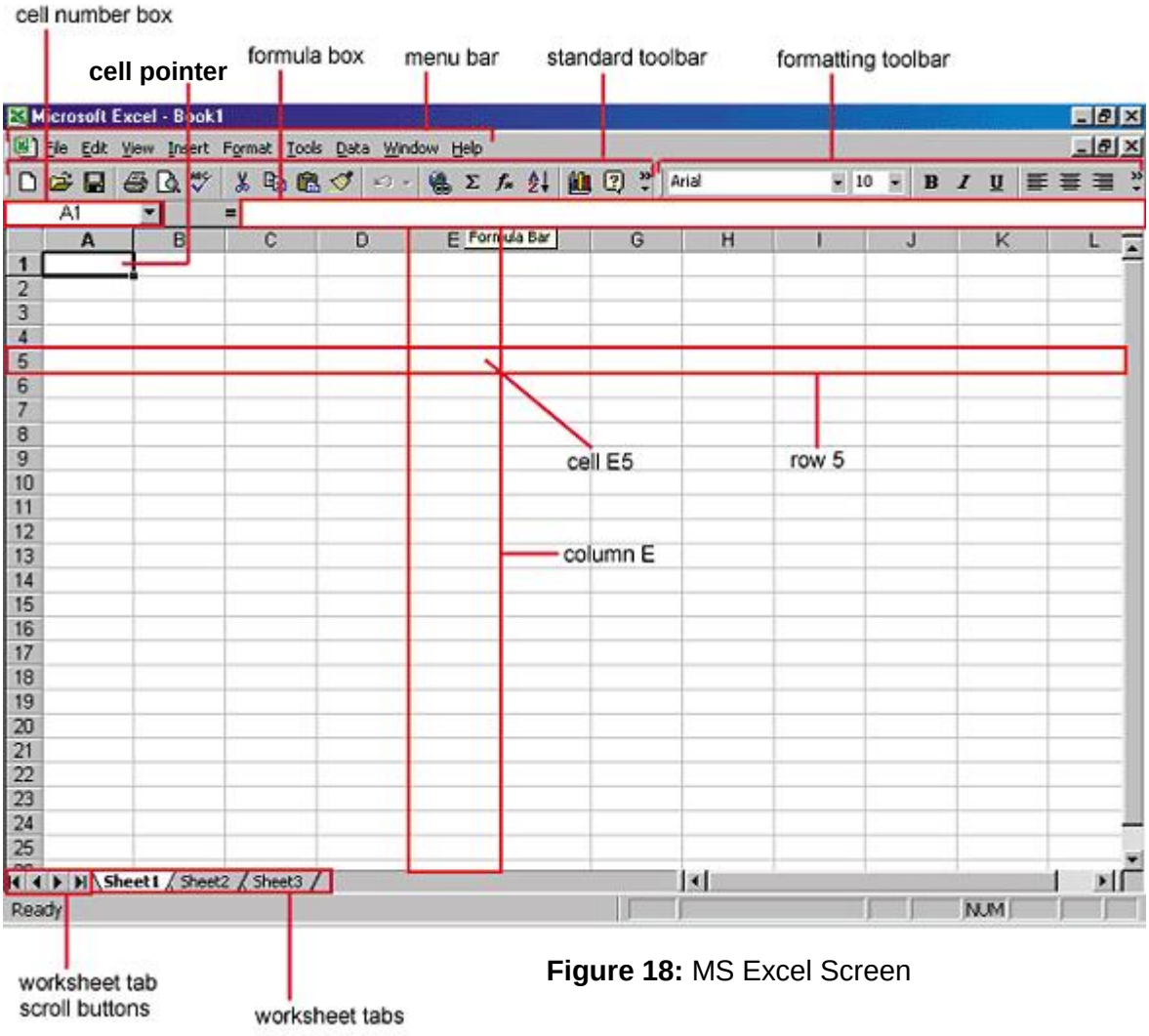


Figure 18: MS Excel Screen

BASIC FEATURES OF MICROSOFT WORD

- **Title Bar:** This bar is referring to as the bar holding the package. It consists of the following:
  - (e) Package Logo (i.e.)
  - (f) Default Filename (i.e. Book1). When you save the file with a name the filename you use will replace the Book1. i.e. Workbook
  - (g) Package Name (i.e. Microsoft Excel)
  - (h) Three buttons
    - (i) Minimize (i.e. Use to drop the package)
    - (ii) Maximize/Restore (To shrink the package and enlarge to normal size)
    - (iii) Close (i.e. Use for exiting the package)

- **Menu Bar:** This bar consists of menus that are essential for working with Microsoft Word i.e. File, Edit, View, Insert, Format, Tools, Data, Windows and Help. It differ Microsoft Word with the presence of Data menu.
- **Standard Toolbar:** This bar consists of shortcuts to the menu bar items i.e. it provides easy access to some items of the menu bar that are usually made use of frequently.
- **Formatting Toolbar**: This bar consists of shortcuts to the Format Menu i.e. it contains easy access to some of the frequently use items of the Format Menu.
- **Horizontal and Vertical Scroll Bar:** Is used for scroll the worksheet up and down, left and right, is also give clear viewing of the worksheet.
- **Cell Number Box:** This tells us the cell number address of the current location of the cell pointer on the worksheet. At default it is A1 i.e. home.
- **Formula Box:** This box shows is use for entering formula into a cell, and call also be use to check the formula within the active cell.
- **Column:** Is the vertical arrangement of cells within a worksheet, there are 256 (A to IV) Columns in MS Excel 2003 and 16,384 (A to XFD) Columns in MS Excel 2007.
- **Row:** These are the horizontal arrangement of cells in a worksheet, there are 65,536 Rows in MS Excel 2003 and 1,048,576 Rows in MS Excel 2007.
- **Cell:** Is the intersection of columns and rows, it is the smallest unit within a worksheet where data can be entered independently into each particular cell.
- **Cell Pointer:** Is a dark rectangle found on the worksheet that is use to enter data into a cell, it current location is known as the active cell. It can be navigated with the arrow keys or click on any cell to move the cell pointer there.
- **Worksheet Tab:** It shows the number of worksheets within the workbook, it has navigation buttons and it also indicates the active worksheet in use.
- **Worksheet Tab Scroll Buttons:** This buttons are use to navigate worksheets.
- **Status Bar:** This bar gives the information of the current active worksheet, i.e. number of pages, current page, line, column and section.
- **Task Bar:** This bar holds the minimized windows, it also have the following features, the Start button, Date and Time.

USING MICROSOFT EXCEL

Microsoft Excel is a general-purpose electronic spreadsheet used to organize, calculate, and analyze data. The task you can complete with Excel ranges from preparing a simple family budget, preparing a purchase order, create an elaborate 3D Chart, or managing a complex accounting ledger for a medium size business.

BASIC LAYOUT

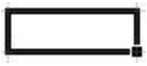
A spreadsheet consists of cells arranged in rows and columns. Each cell can hold text, number or a mathematical formula. A cell is referred to by column and row, e.g., the upper left cell is cell **A1**. The cell right below that is **A2**, etc. Column width and row height can be adjusted by dragging the separation line between columns (or rows) to the desired size.

TEXT, NUMBERS, AND FORMULAS:

When you type letters, Excel assumes that you are typing text unless you tell it otherwise. And when you type numbers, Excel gives them the arithmetic value. Excel also recognizes date formats. The Problem comes when you want to use letters to refer to addresses, formulas, or variables. Then you have to use the Formula operator which is the equal sign.

1. Cell and Cell Address: The cell is defined as intersection of row and columns (Cell E5 above). Cell address can be referred to as the location of each cell (E5 is cell address). A particular cell is addressed by combining the column letter and the row numbers. Excel will use the contents of the cell in the formula you will still see the address in the formula bar area of the spreadsheet, but the cell will contain the numeric results

2. Cell Pointer: When a mouse pointer is click inside a document, a blinking cursor gets displayed, when mouse pointer (+) is clicked at any place, a cell pointer appears. The currently active cell is the one on which the cell pointer is placed. Each cell of the spreadsheet has at least three and often four types of information attached to it. Even a simple spreadsheet is a complex set of information related by the cell addresses. To select cells with the white plus cursor, click and hold and drag to highlight/select the cells you want.

The cell pointer looks like this: 

3. The Address: The column letter and the row number that identify the current location of the information.

Example: *Click on Cell A2. That means Column A and Row 2*

4. The Cell Contents visible in the cell: The data that can be seen on the screen in the cell. E.g. *you should see part or all of* ***"ID Number"*** *(cell)* Column A has width that determines how much data can be seen in the cell.

5. The Formatting of the Cell Contents: The instructions for formatting the data in the cell."ID Number" has formatting that determines its font size, face and any special emphasis. *In the Example above the formatting Font size is = 10, Font Face = Ariel, Emphasis = Bold* Locate the information on the Formatting Toolbar that shows this formatting.

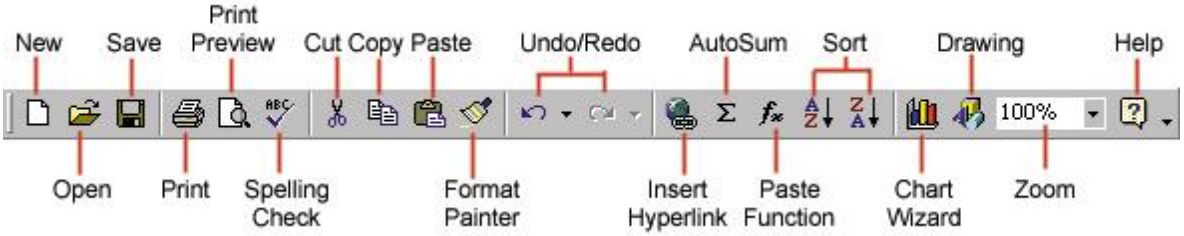
6. The Cell Contents in the Formula Bar: The data including formulas that is located by the cell address.

7. Labels and Values: Any data you entre an Excel sheet is a text, a number, a formula or any special character. Value is a number on which calculation can be done, using formulas, whenever an entry start with +, -, sign or digit, Microsoft Excel consider it to be a value.

Label is any text entry that contains alphabet or non numeric characters (like #, &). The Accountant, S4 and monthly expenses are all labels. Any entry containing alphabet or letter, even if it starts with a number, is considered as text entering.

THE STANDARD TOOLBAR

This toolbar is located just below the menu bar at the top of the screen and allows you to quickly access basic Excel commands.



New > Select File|New from the menu bar, press CTRL+N, or click the New button to create a new workbook.

Open > Click File|Open from the menu bar, press CTRL+O, or click the Open folder button to open an existing workbook.

Save > The first time you save a workbook, select File|Save As and name the file. After the file is named click File|Save, CTRL+S, or the Save button on the standard toolbar.

Print > Click the Print button to print the worksheet, A dialog box will appear, specify the page numbers and the number of copies you wish to print. Finally click on print button.

Print Preview > This feature will allow you to preview the worksheet before it prints.

Spell Check > Use the spell checker to correct spelling errors on the worksheet.

Cut, Copy, Paste, and Format Painter >

- Select any cell you wish to copy, by clicking on the cell
- Click on edit menu, click on copy or cut **Ctrl + C** or **Ctrl + X**
- Position your cell pointer on the new location
- Click on Edit menu, and click on paste **Ctrl + V** or **Shift + Insert**

Format Painter is use to copy the attribute of a formatted text unto other texts

- Click on the formatted text you wish to copy it attributes
- Click on format painter icon
- Drag it over the unformatted text you wish to change

Undo and Redo > Click the backward Undo arrow to cancel the last action you performed, whether it be entering data into a cell, formatting a cell, entering a function, etc. Click the forward Redo arrow to cancel the undo action.

Insert Hyperlink >To insert a hyperlink to a web site on the Internet, type the text into a cell you want to be the link that can be clicked with the mouse. Then, click the Insert Hyperlink button and enter the web address you want the text to link to and click OK.

Zoom ->To change the size that the worksheet appears on the screen, choose a different percentage from the Zoom menu.

Help: This menu provides help on getting using Microsoft Excel.

MICROSOFT EXCEL FORMULAE:

All Microsoft Excel Formulae must begin with an equal sign (=), it also makes use of BODMAS where the Bracket is operated first, followed by Division, Multiplication, Addition and finally Subtraction. The simplest formula is like adding two numbers. The table below describes how formula can be applied.

Description	Mathematics	Microsoft Excel
Parenthesis i.e. Bracket	( )	( )
Division	÷	/
Multiplication	x	*
Addition	+	+
Subtraction	-	-
Power	2^3	=2^3 **OR** =power(2,3)
Square Root	$\sqrt{9}$	=sqrt(9)
Logarithm	log100	=log(100)
Maximum	Max	=Max(1,2,3)
Minimum	Min	=Min(1,2,3)
Average	Avg	=Average(1,2,3)

A cell may have a formula to calculate the total of the numbers in other cells (e.g. D2+D3+D4) or a formula that multiplies the numbers in two other cells (e.g. B3*E2). Other formula could use divide (/) or subtract (-). A special function called SUM adds up all the number in the cell references after it e.g. SUM(D2:D7) will add all the values in cells D2,D3,B4,D5,D6 and D7 together.

USE OF PARENTHESIS IN EXCEL FORMULA:

Parenthesis in formula is very vital as it gives 1st order of operator precedence. Note that the formulas below the parenthesis made a big difference:

=200/100*2 equal **4** because 200 is divided by 100 which is 2 then 2*2 = 4

=200/(100*2) equal **1** because parenthesis (100*2) = 200 then 200/200 is 1

Also a formula like **=2+2*(2+2*3)/4**. When it starts with the parenthesis it also starts with the Division, Multiplication, Addition and finally Subtraction within the parenthesis.

Correct parenthesis calculation	Wrong parenthesis calculation
(2+2*3) it will start with multiplication in the parenthesis 2*3 = 6 then 2+6 = **8.**	It will not start with addition within the parenthesis 2+2 = 4 and 4*3 = **12.**

It will continue with the formula outside the parenthesis , it performs division= 2+2*8/4 → =2+2*2 then it performs multiplication → = 2+4 finally it performs addition→ 6. The final answer is **6.**

Example: Given the worksheet data as shown below:

	A	B	C
1	1	2	3
2	2	4	5
3	2	5	4

Position your cell pointer in Cell D1 and type in formula:
=A1+B2*(B1+C3)*A2/A3+C1–C2
The formula will translate into the following values using cell reference
Formula becomes **=1+4*(2+4)*2/2+3–5**
Microsoft Excel will begin with values in parenthesis (2+4) = 6
Formula becomes **=1+4*6*2/2+3–5**
Then it will solve the division 2/2 = 1
Formula becomes **=1+4*6*1+3–5**
Then it will do the multiplication 4*6*1 = 24
Formula becomes **=1+24+3-5**
Then it will perform the addition 1+24+3 = 28
Formula becomes **=28–5**
Finally it will perform the subtraction 28 – 5 = 23
Final Answer = 23.

NEGATIVE NUMBERS IN EXCEL FORMULA:

Microsoft Excel also makes use of negative numbers = 100 – 200 equals **-100**

Mind you the formula actually looks exactly like this **=+100–200** to the computer. It should be noted that the 100 is a positive number and the subtraction implies that 200 is a negative number, therefore the **–** sign belongs to 200.

Example: Given the worksheet data as shown below:

	A	B
1	7	7
2	6	4
3	5	2

Position your cell pointer in Cell D1 and type in formula:
=A1*B2-A2/B3+A3-B1
The formula will translate into the following values using cell reference
Formula becomes **=7*4-6/2+5–7**
Microsoft Excel will begin with BODMAS, no parenthesis so Division = -6/2 = -3
Formula becomes **=7*4–3+5–7**
Then it will do the multiplication 7*4 = 28
Formula becomes **=28–3+5–7**
Then it will do the addition -3+5 = +2 **NOTE:** It is **NEVER** 3+5 = 8
Formula becomes **=28+2–7**
Then it will do another addition 28+2 = 30
Formula becomes **=30–7**
Finally it will perform the subtraction 30-7 = 23
Final Answer = 23.

CHARTING:

Many spreadsheets have facilities for producing graphs. These can be in various forms such as pie, bar graphs. To create a chart rows or columns from the spreadsheet have to be selected and then processed using the spreadsheets graphing tools.

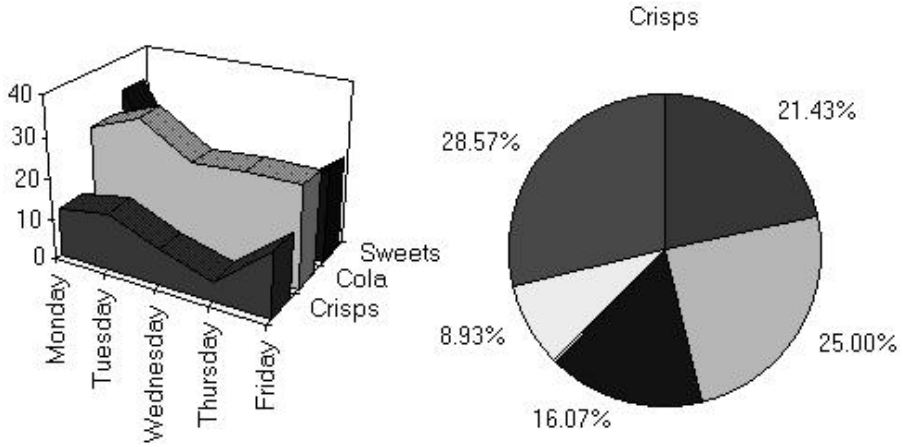


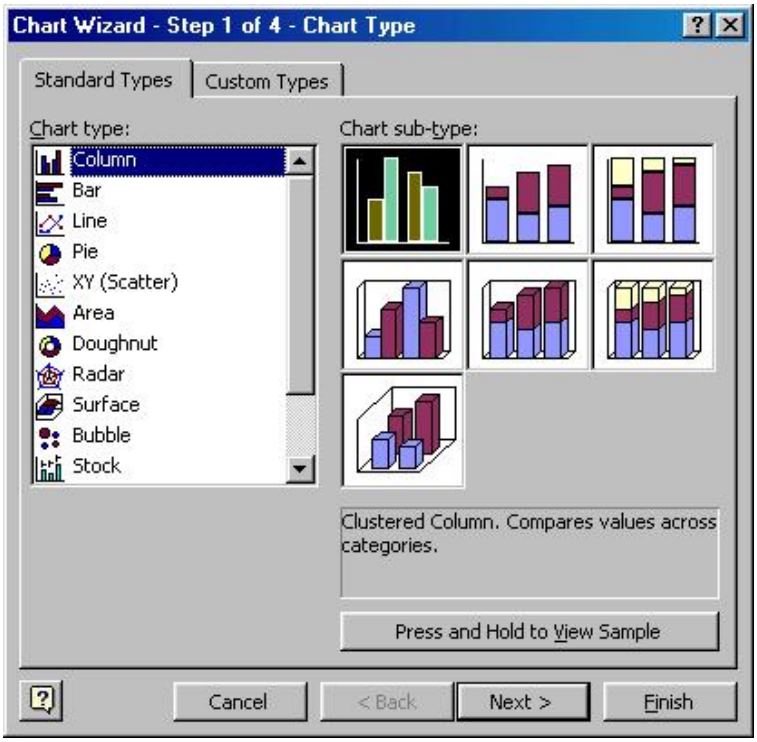
CHART WIZARD

The Chart Wizard brings you through the process of creating a chart by displaying a series of dialog boxes.

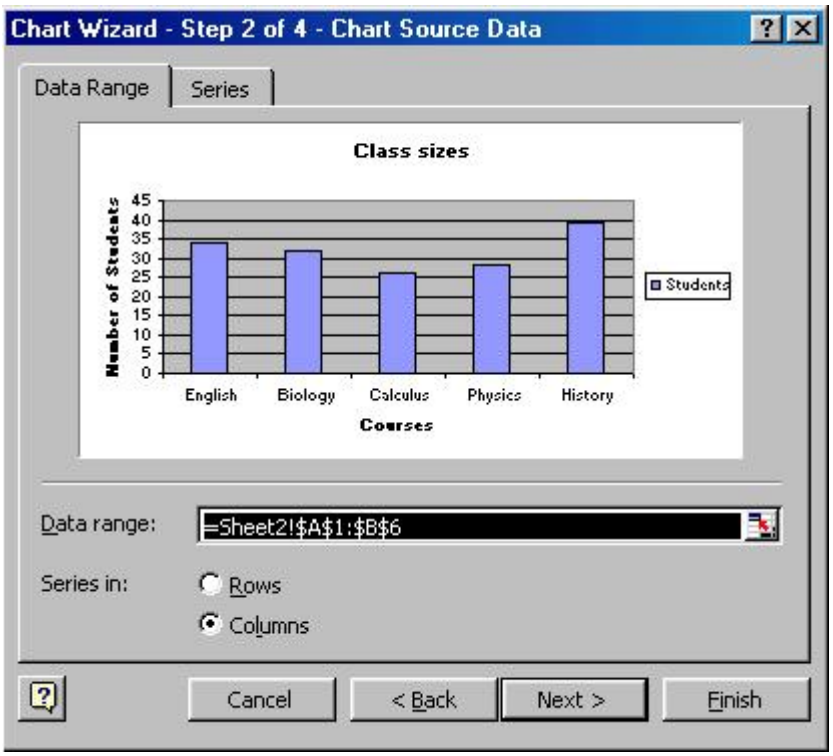
- Enter the data into the worksheet and highlight all the cells that will be included in the chart including headers.

	A	B	C
1		Students	
2	English	34	
3	Biology	32	
4	Calculus	26	
5	Physics	28	
6	History	39	

- Click the Chart Wizard button on the standard toolbar to view the first **Chart Wizard** dialog box.
- **Chart Type** - Choose the **Chart type** and the **Chart subtype** if necessary. Click **Next**.



❖ **Chart Source Data** - Select the data range (if different from the area highlighted in step 1) and click **Next**.



❖ **Chart Options** - Enter the name of the chart and titles for the X- and Y-axes. Other options for the axes, grid lines, legend, data labels, and data table can be changed by clicking on the tabs. Press **Next** to move to the next set of options.

INSERTING AND DELETING ROWS AND COLUMNS:

Extra columns or rows can be inserted into the spreadsheet where required by selecting the location of the rows/column and then executing the insert row or column command from the menus.

COMPLEX FORMULAE:

It is possible to perform fairly complex calculations using pre-defined formulae - e.g. **AVERAGE, MIN, MAX, LOG, POWER, and SQRT**. Also more complicated formulae can be creating that add, subtract and use functions (such as AVERAGE) all in one formula e.g. (B2/B3)+(B4*B5)+AVERAGE(D2:D5). MIN finds the smallest value in a chosen range whilst MAX finds the largest value i.e. MIN(B2:B10) and MAX(B2:B10).

REPLICATING:

Often in spreadsheets a similar formula is require in several cells. Instead of typing these in each cell individually, it is possible to 'intelligently' copy these formulae. This form of intelligent copying is known as replication. When a formula is replicated down one row, All the cell references in the formulae have one added to the row number in their cell reference (e.g. B6 becomes B7). Similarly, when replicating along a column, all the column letters in the cell references are increased by one letter of the alphabet (e.g. B2 becomes C2). So, for example, if the formula B2+B3 is replicated down by one row, from cell E4 to cell E5, then the formulae will change to B3+B4. If the formula C4*D5 is replicated along one column, from cell A2 to B2, then the formula will change to D4*E5.

	A	B	C	D	E	
1			Mining	Record		
2	Dwarf	Diamonds	Gold	Silver	Totals	
3	Dopey	10	1	1	12	B3+C3+D3
4	Sleepy	9	12	40	61	B4+C4+D4
5	Grumpy	7	3	17	27	B5+C5+D5
6	Happy	12	19	22	53	B6+C6+D6
7	Doc	13	3	12	28	B7+C7+D7
8	Sneezy	1	2	8	11	B8+C8+D8
9	Bashful	7	1	2	10	B9+C9+D9

Example of replication

Copying a formula to a number of cells in a row or column is called replication. In this example (figure 12), The formulae in E3, E4, E5 etc. are all similar. If we had 5000 dwarfs instead of just 7, it would take ages to enter the formulae if there was not a quick method. The quick method is known as replication. We enter the formula for F3

and replicate it into each of the other cells. The cell references in the formula are changed according to where the formula goes.

COMPARISON FORMULAE:

This type of formula is use to compare two or more numbers, OR cell reference containing values. At default it usually returns a statement TRUE or FALSE.

Description	Mathematics	Microsoft Excel
Equality	=	=
Greater than	>	>
Less than	<	<
Greater than equal to	≥	>=
Less than equal to	≤	<=
Not Equal to	≠	<>

Example: Given the worksheet data as shown below:

	A	B
1	7	7
2	6	4
3	5	2

Formulae	MS Excel Operation	Result
=A1=A2	It checks if the value in A1 is equal to A2 i.e. is 7 = 6? FALSE because 7 and 6 are not equal	**FALSE**
=A1=B1	It checks if the value in A1 is equal to B1 i.e. is 7 = 7? TRUE because 7 is equal to 7	**TRUE**
=A1>A2	It checks if the value in A1 is greater than A2 i.e. 7 > 6? TRUE because 7 is greater than 6	**TRUE**
=A3<B1	It checks if the value in A3 is less than B1 i.e. 5 < 7? TRUE because 5 is less than 7	**TRUE**
=A2<=B1	Here it checks two operations and once 1 is right it is TRUE. Is the value in A2 < B1 or A2 = B1 i.e. 6 < 7? Once it is less you don't have to check equality =	**TRUE**
=A1>=B1	It also checks for two operations here. Is value in A1 > B1 False than check the other operator is A1 = B1 True. Once you get a single TRUE the final result will be TRUE.	**TRUE**
=B1<>A3	It checks is B1 not equal to A3, it checks for two operations, i.e. 7<5 FALSE then it checks 7>5 it is TRUE so the final result is TRUE. If you say 7 not equal to 5 you are right.	**TRUE**
=A1<>B1	It checks for two operations here too is 7 less than 7 is FALSE, then it checks 7 > 7 it is also FALSE. Therefore if you say 7 not equal to 7 it is FALSE.	**FASLE**

FORMULAE FOR CREDIT GRADING:

1. Formulae involving conditions (IF (...))

A formula can contain a condition e.g. IF. To work out an IF formula the spreadsheet calculates the value of the expression. If the resulting value is true THEN the spreadsheet goes on to work out the value as expressed in the THEN statement. If the condition is false it works out the second expression.

e.g. IF <condition> THEN <first expression> ELSE <second expression>

This can be used to work out if a value is greater than another, for example:

I2 = =IF(H2>=3000,"Good","Poor")

	A	H	I	J	K
1		Sales per week	Performance		
2	Week 1	3060	Good		
3	Week 2	3040	Good		
4	Week 3	2750	Poor		
5	Week 4	2506	Poor		
6	Week 5	2670	Poor		
7					

Example of a spreadsheet using an IF formula

In this example the formula used is shown in the formula bar above the spreadsheet. The formula compares the value in cell H2 with 3000. If the value is greater than or equal to 3000 then **good** is shown in cell I2. Otherwise **Poor** is shown I4.

Example: Given the worksheet data as shown below:

F18 =IF(AND(E18>=70,E18<=100),"A"," ")

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1						GRADE								
2	S/NO	ID/NO	C/A	EXAM	TOTAL	A	B+	B	C+	C	D	E	F	REMARK
3	1	08/11/01/076	29	35	64			B						PASS
4	2	08/08/02/063	10	44	54					C				PASS
5	3	08/01/09/017	21	44	65		B+							PASS
6	4	08/01/05/045	22	50	72	A								PASS
7	5	07/08/02/012	10	37	47						D			PASS
8	6	08/01/05/072	20	42	62			B						PASS
9	7	08/02/01/342	23	48	71	A								PASS
10	8	05/05/02/041	13	24	37								F	FAIL
11	9	08/08/07/112	19	21	40							E		PASS
12	10	08/08/02/330	14	22	36								F	FAIL
13	11	08/08/01/047	17	28	45						D			PASS
14	12	08/08/04/057	26	46	72	A								PASS
15	13	08/08/06/015	10	18	28								F	FAIL
16	14	08/08/02/274	11	33	44							E		PASS
17	15	08/08/07/125	17	45	62			B						PASS
18	16	08/08/07/124	15	59	74	A								PASS
19	17	08/01/05/011	22	60	82	A								PASS
20	18	08/02/01/395	23	35	58				C+					PASS
21	19	08/05/06/073	18	28	46						D			PASS
22	20	05/05/05/064	35	50	85	A								PASS
23					SUMMARY	6	1	3	1	1	3	2	3	20
24														

(**1**) Spread out Formula To Find **Grade** as in the above Worksheet:

Total starting from Cell E3:
=SUM(C3:D3)

Grade A starting from cell F3:
=IF(AND(E3>=70,E3<=100),"A"," ")

Grade B+ starting from cell G3
=IF(AND(E3>=65,E3<=69),"B+"," ")

Grade B starting from cell H3
=IF(AND(E3>=60,E3<=64),"B"," ")

Grade C+ starting from cell I3
=IF(AND(E3>=55,E3<=59),"C+"," ")

Grade C starting from cell J3
=IF(AND(E3>=50,E3<=54),"C"," ")

Grade D starting from cell K3
=IF(AND(E3>=45,E3<=49),"D"," ")

Grade E starting from cell L3
=IF(AND(E3>=40,E3<=44),"E"," ")

Grade F starting from cell M3
=IF(AND(E3>=1,E3<40),"F"," ")

(**2**) Formula to get Remark (PASS OR FAIL):
Remark Starting from cell N3
=IF(AND(E3>=40,E3<=100),"PASS","FAIL")

(**3**) Formula to get Summary Counting Numbers of all Grades:
=COUNTIF(F3:F22,"A")
=COUNTIF(G3:G22,"B+")
=COUNTIF(H3:H22,"B")
=COUNTIF(I3:I22,"C+")
=COUNTIF(J3:J22,"C")
=COUNTIF(K3:K22,"D")
=COUNTIF(L3:L22,"E")
=COUNTIF(M3:M22,"F")

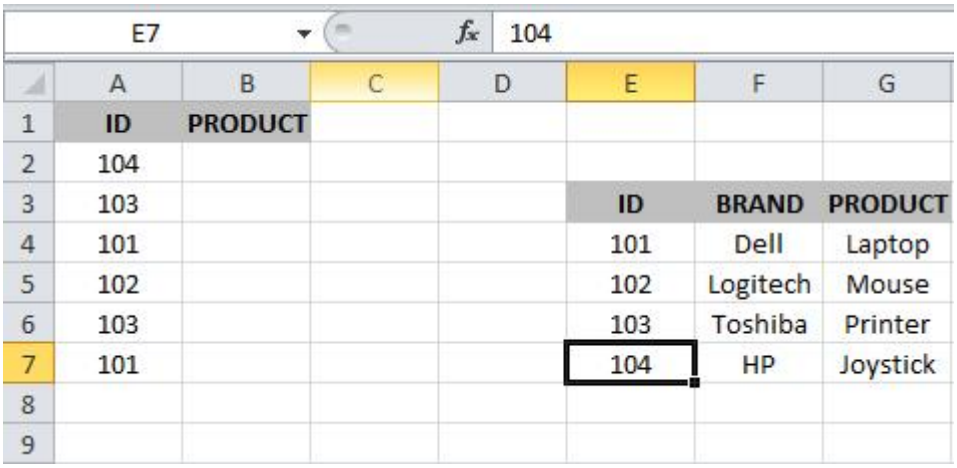
(**4**) Formula to get Total Sum (Cell Pointer at cell N23):
=SUM(F23:M23)

NOTE: Make sure you PRESS ENTER on the KEYBOARD after each formula entry for the RESULT to display.

VLOOKUP FORMULAE:

Vertical Lookup (VLOOKUP) function looks for a value in the leftmost column of a table and then returns a value in the same row from another column you specify.

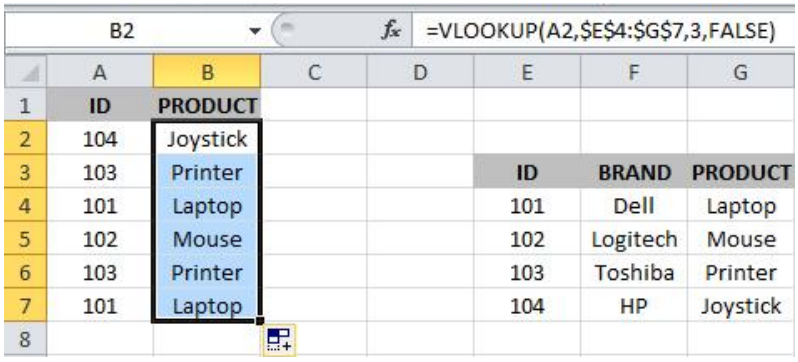
Create a worksheet as shown below:



	A	B	C	D	E	F	G
1	ID	PRODUCT					
2	104						
3	103				ID	BRAND	PRODUCT
4	101				101	Dell	Laptop
5	102				102	Logitech	Mouse
6	103				103	Toshiba	Printer
7	101				104	HP	Joystick
8							
9							

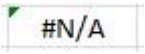
Type this formula in cell **B2** and drag =**VLOOKUP(A2,$E$4:$G$7,3,FALSE)**

After dragging you will the result as shown below:



	A	B	C	D	E	F	G
1	ID	PRODUCT					
2	104	Joystick					
3	103	Printer			ID	BRAND	PRODUCT
4	101	Laptop			101	Dell	Laptop
5	102	Mouse			102	Logitech	Mouse
6	103	Printer			103	Toshiba	Printer
7	101	Laptop			104	HP	Joystick
8							

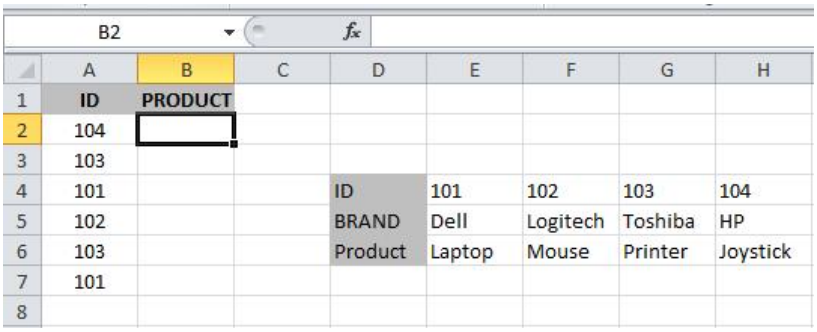
It looks for the ID Cell A2 in the leftmost column of the range $E$4:$G$7 and returns the value in same row from the 3 column (third argument set to 3). Fourth argument is set to FALSE to return an exact match or a #N/A error if not found.



NOTE: When you drag the VLOOKUP function down, the absolute reference ($E$4:$G$7) stays the same, while the relative reference (A2) changes to A3, A4, A5 etc.

HLOOKUP FORMULAE:

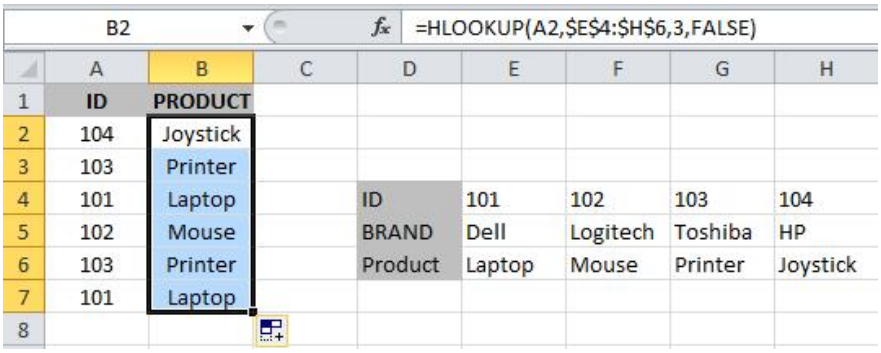
Horizontal Lookup (HLOOKUP function similar to the VLOOKUP but in another dimension



	A	B	C	D	E	F	G	H
1	ID	PRODUCT						
2	104							
3	103							
4	101			ID	101	102	103	104
5	102			BRAND	Dell	Logitech	Toshiba	HP
6	103			Product	Laptop	Mouse	Printer	Joystick
7	101							
8								

Type this formula in cell **B2** and drag =**HLOOKUP(A2,$E$4:$H$6,3,FALSE)**

You will get the result as shown below:



B2 =HLOOKUP(A2,$E$4:$H$6,3,FALSE)

	A	B	C	D	E	F	G	H
1	ID	PRODUCT						
2	104	Joystick						
3	103	Printer						
4	101	Laptop		ID	101	102	103	104
5	102	Mouse		BRAND	Dell	Logitech	Toshiba	HP
6	103	Printer		Product	Laptop	Mouse	Printer	Joystick
7	101	Laptop						
8								

STUDY SESSION: 7
INTRODUCTION TO INTERNET CONNECTIVITY

Study Session 7: Content	
	Introduction
	Learning Outcomes
	Computer Networks
	About the Internet
	ITQ Assessment Summary

INTRODUCTION

A computer network is interconnection of various computer systems located at different places. You can share your computer components with other computer users by connecting your computer to other computers. A group of computers and associated devices that are linked together to facilitate sharing information is called a network. The Internet is a collection of these networks that are linked together. We can be able to use email and chatting applications with the aid of internet.

LEARNING OUTCOMES

After completing this lesson, you will be able to:

- Define the term Computer Networks
- Discuss the types of Network, Topology and Protocol
- Define the term network and Internet
- Explain Network Architecture
- Use internet for various operations, Email, Chatting, Search Engine, E-Exam and Online Registration etc

COMPUTER NETWORK

A computer network is interconnection of various computer systems located at different places. In computer network two or more computers are linked together with a medium and data communication devices for the purpose of communication data and sharing resources. The computer that provides resources to other computers on a network is known as server. In the network the individual computers, which access shared network resources, are known as **nodes.**

Consider a scenario where an organization has 10 employees. These employees use computers to perform daily tasks. They also need print data frequently. Instead of giving each employee a printer, which would be expensive, all computers can be connected to a single printer. You can connect your computer to other computers to share information and hardware components.

A group of computers and associated devices that are linked together to facilitate sharing information is called a network. Networks can also be used to share data and devices such as printers. A network offers many advantages for the computer connected to it. In addition to sharing hardware and software, you can share files and communicate with other computer users on the network. A typical network has the following three components:

- **Server:** The main computer on a network that provides services to other computers on the network. A server decides which computers are allowed to access the hardware and software on the network.
- **Workstation:** A computer connected to a network. You use a workstation to access the hardware and software on a network.
- **Communication Channel:** A path or link that connects computers or peripheral devices, such as printers and disk drives, to transfer information. Cables are commonly used as communication channels in a network, but networks can also transfer information through wireless connections.

TYPES OF NETWORK

There are many different types of networks. However, from an end user's point of view there are two basic types:

(A). Local Area Network (LAN): LAN is a computer network that spans a relatively small area. Most LANs are confined to a single building or group of buildings. However, one LAN can be connected to other LANS over any distance via telephone lines and radio waves. A system of LANs connected in this way is called a wide-area network (WAN). Most LANs connect workstations and personal computers. Each node (individual computer) in a LAN has its own CPU with which it executes programs, but it is also able to access data and devices anywhere on the LAN. This means that many users can share expensive devices, such as laser printers, as well as data. Users can also use the LAN to communicate with each other, by sending e-mail or engaging in chart sessions.

Figure 19: Local Area Network (LAN)

(b). Wide Area Network (WAN): A WAN is a computer network that spans a relatively large geographical area. Typically, A WAN consists of two or more local-area networks (LANs). Computers connected to a wide-area network are often connected through public networks, such as the telephone system. They can also be connected through leased lines or satellites. The largest WAN in existence is the Internet.

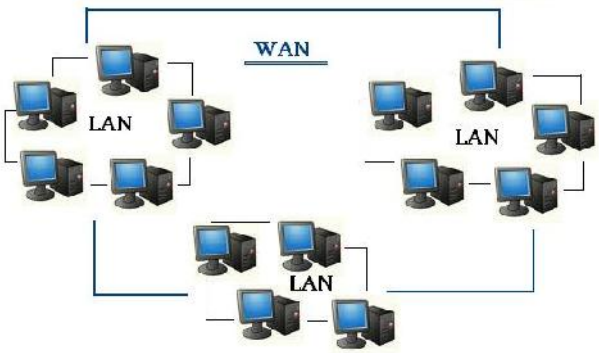


Figure 20: Wide Area Network (WAN)

NETWORK TOPOLOGY

It is the geometric arrangement of a computer system in a network. The Common topologies include bus, star, and ring.

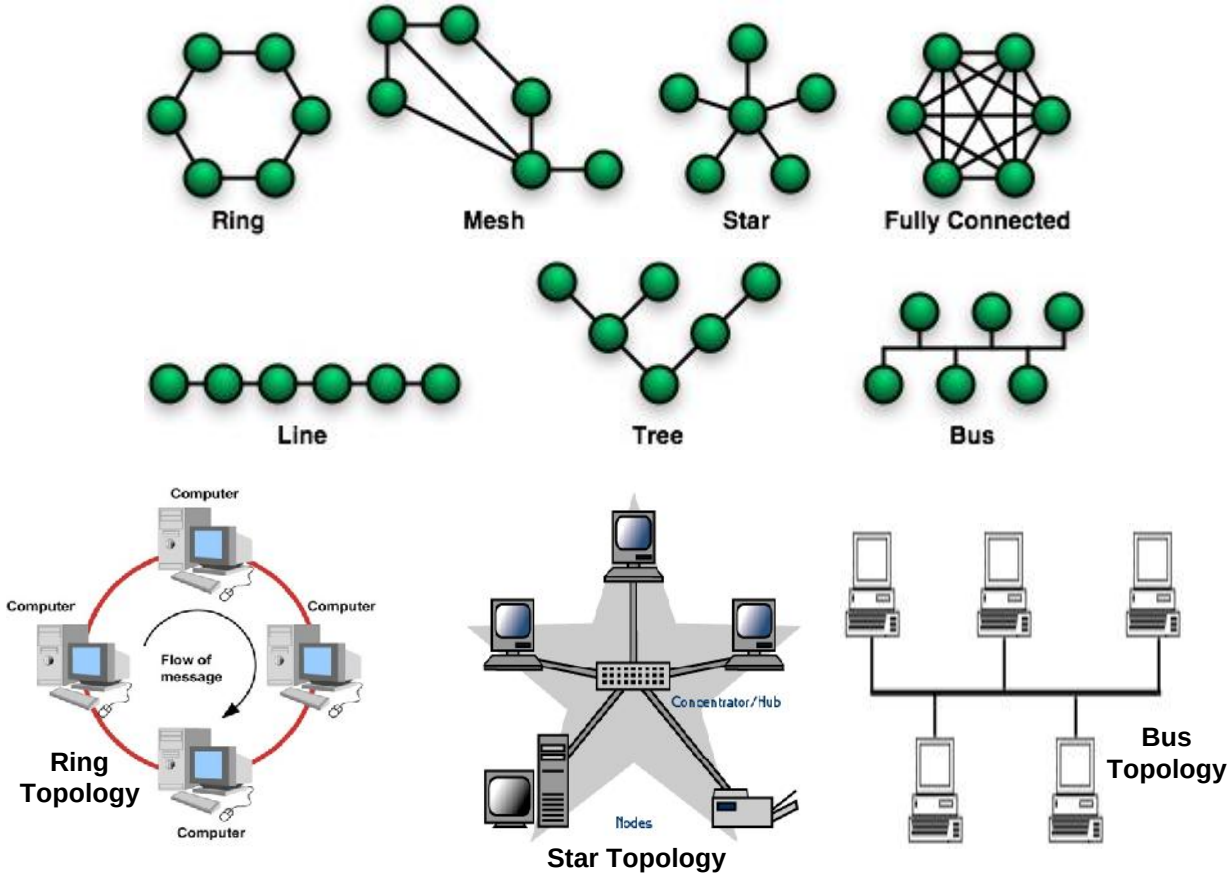


Figure 21: Network Topologies

ITQ: What is a Computer Network?
ITA: A computer network is interconnection of various computer systems located at different places.

ITQ: The individual computer, which access shared network resources, is known as?
ITA: *Nodes*.

ITQ: What do the following acronyms stands for? LAN, WAN and MAN
ITA: **LAN:** Local Area Network, **WAN:** Wide Area Network, **MAN:** Metropolitan Area Network.

ITQ: List 4 types of Network Topologies you know?
ITA: (1) Bus Topology (2) Star Topology (3) Ring Topology (4) Mesh Topology

NETWORK PROTOCOL

The protocol defines a common set of rules and signals that computers on the network use to communicate. One of the most popular protocols for LANs is called Ethernet. Another popular LAN protocol for PCs is the IBM token-ring network.

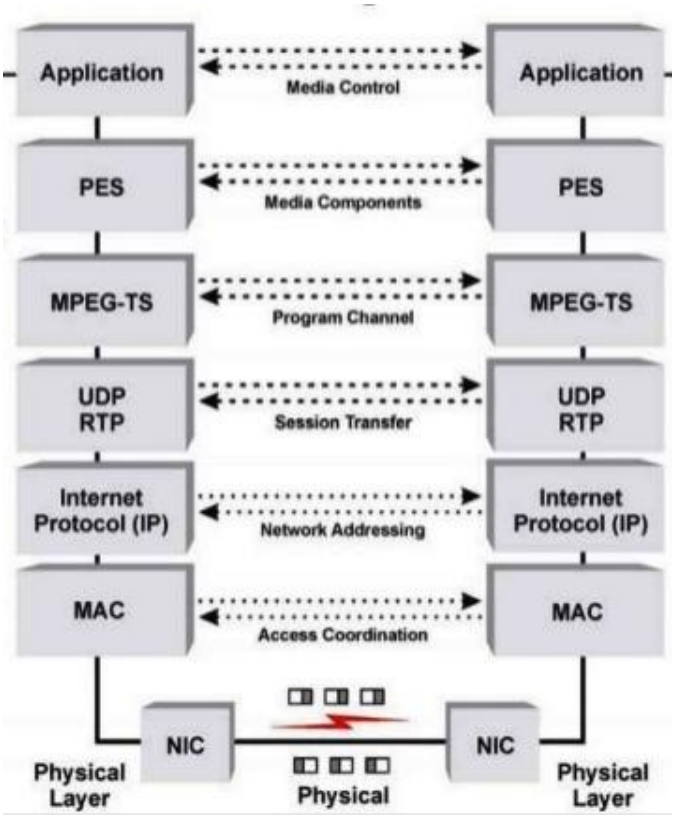


Figure 22: Network Protocol

ITQ: What is a Network Protocol?

ITA: *Network Protocol* is the common set of rules and signals that computers on the network use to communicate.

NETWORK ARCHITECTURE

Networks can be broadly classified as using either peer-to-peer or client/ server architecture. Computers on a network are sometimes called nodes. Computers and devices that allocate resources for a network are called **Servers**. The term architecture can refer to either hardware or software, or a combination of hardware and software. The architecture of a system always defines its broad outlines, and may define precise mechanisms as well. An open architecture allows the system to be connected easily to devices and programs made by other manufacturers. Open architectures use off-the-shelf components and conform to approved standards. A system with a closed architecture, on the other hand, is one whose design is

proprietary, making it difficult to connect the system to other systems. As we have seen before, network architectures can be broadly classified as using either peer-to-peer or client/server architecture.

Peer-to-peer Architecture: This is a type of network in which each workstation has equivalent capabilities and responsibilities. This differs from client/server architecture, in which some workstations are dedicated to serving the others. Peer-to-peer networks are generally simpler and less expensive, but they usually do not offer the same performance under heavy loads.

Client/Server Architecture: This is network architecture in which each computer or process on the network is either a client or a server. Servers are powerful computers or processors dedicated to managing disk drives (file servers), printers (print servers), or network traffic (network servers). Clients are less powerful PCs workstations on which users run applications. Clients rely on servers for resources, such as files, devices, and even processing power.

ABOUT THE INTERNET

The Internet is a worldwide collection of public networks that are linked to each other for information exchange. The Internet started as a network to facilitate communication between government and educational departments in the United States. When other networks were connected to this network, it became a vast medium for exchanging information and ideas.

Today, the Internet connects many commercial, government, and educational networks as well as individual computers, which share data.

The Internet offers a range of services to its users, such as file transfers between Internet users and electronic mail for sending messages. The World Wide Web (WWW), or the Web, is another service that the Internet provides. The Web includes specially formatted documents that are interlinked and stored on servers around the world. You can use the Internet and its services to send messages to other Internet users, search and apply for jobs, watch movies, and buy and sell products. Many organizations use a special type of network to communicate and share information within the organization. Such a network is called an **Intranet**. An intranet is similar to the Web but is accessible only to authorized users of the organization.

An **Intranet** is much smaller than the Internet and can provide services such as document distribution, software distribution, access to databases, and training.

EMAIL

Email is also known as Electronic Mail. Sending e-mail messages is the exchange of messages from one computer user to another computer user. This exchange can be within a local area or from one part of a country to another. You can send an e-mail message to or receive an e-mail message from one or several persons at any time of the day.

The process of sending an e-mail message is similar to making a phone call; you must have a phone connection and know the phone number of the person with whom you want to speak. To send an e-mail message you must have an Internet connection and an e-mail account. This Internet connection is provided by an **Internet Service Provider (ISP)**. If you have an e-mail account, it will be similar to **username@example.com**, where the username is your name. The @ sign and example.com is the domain name. A domain name identifies the name and type of organization with whom you have an e-mail account. After you have an e-mail account, you need to know the e-mail account of the person to whom you want to send an e-mail.

You can send both text and pictures through e-mail; however, this depends on various factors, such as the type of service you have or the kind of picture you are sending. Sending and receiving e-mail messages is an instant way of communicating with anyone. It only takes a few seconds to send and receive an e-mail. This also depends on the speed of your Internet connection.

CREATING A NEW EMAIL:

- Open any Web Browser software e.g. Chrome, Mozilla Firefox, Opera, Internet Explorer etc.
- At the address bar, type in the webpage of the email e.g. www.yahoo.com OR www.gmail.com etc and click on GO or press enter key on the keyboard
- The webpage will display, click on Sign Up or Create New Account
- An online form will appear, fill all the necessary details as required and submit e.g. Name, Surname, Date of Birth, Security Question, Username (can be your

nickname), Password (is a secret key to your email and should never be disclosed to anyone) preferably it should contain special characters.

- Click on Sign Up, it automatically opens a new mail for you.

OPENING AN EXISITING EMAIL:

After creating a new email you already have your email address and password e.g. username@yahoo.com and password *********

- Open the Web Browser, Type in the webpage into the address bar
- Click on Sign In or Log In
- Username and Password fields will be displayed
- Type in your Username and Password accurately and avoid onlookers
- Click on Sign In Button

SENDING AN EMAIL:

- After opening your email, Click on Compose
- A page will appear with To, CC, BCC and Subject
- Type in the email address of the recipient,
- Add Carbon Copy recipient OR Blind Carbon Copy recipient, they are both optional
- Add the subject of the email
- Click at the black space under the subject and type in your message, you can use whatever language you deem fit.
- Click on attach file, if you wish to attach a file NOTE: There is size limit of attachment
- Click on Send Button

EXITING/CLOSING AN EMAIL:

After using your email there is need to exit and close your email to avoid unauthorized user access your email. Such that there will be need for password to re-access it.

- Click on Sign Out
- It automatically exits and closes your email

CHATTING

Another type of communication is through chat programs, which allows you to send and receive messages immediately. You can use a chat program to communicate with several people at the same time. The commonly used communication programs are Yahoo, Skype or MSN Messenger. When you are chatting with someone, the person on the other end receives your messages immediately or instantly.

Through chat you can also talk to the person you are chatting with. This is called voice chat. Another form of chatting allows you to also see the person you are talking to. You use a device called a webcam to do this. You can also share pictures and other files through Yahoo, Skype or MSN Messenger.

ITQ: Computers and devices that allocate resources for a network are called?
ITA: Servers

ITQ: Network architectures can be broadly classified into?
ITA: (1) Peer-to-peer Architecture (2) Client/Server Architecture

ITQ: Define the term Internet?
ITA: Internet stands for *International Network,* defined as a worldwide collection of public networks that are linked to each other for information exchange

ITQ: What is Intranet?
ITA: Intranet is a special type of network to communicate and share information within the organization. It is similar to the Web but is accessible only to authorized users of the organization.

ITQ: What do the following acronyms stands for? EMAIL, ISP, WWW, HTML
ITA: **Email:** Electronic Mail **ISP:** Internet Service Provider
WWW: Worldwide Web **HTML:** Hypertext Markup Language

ITQ: In an email address there must be a particular sign known as?
ITA: @ Sign.

ITQ: Sending e-mail messages can be defined as: The exchange of messages from one computer user to another computer user TRUE or FALSE?
ITA: TRUE.

ITQ: What is Chatting in Computer Network?
ITA: Programs that allows you to send and receive messages immediately and to communicate with several people at the same time.

SEARCH ENGINE: A Search Engine is a web server that searches for information on the internet. Search engines create a list (called a database) of resources they find on the www. Example search engine: **www.ask.com**; **www google.com** and **www.uvrx.com**

SEARCH QUERY: A Search Query is what you want to find. It is the words or the feed in you tell the search engine to find.

WEB PAGE: A web page is a simple text document that contains information (text, images, sound, video and link). It has instruction on how to format information on the screen.

PROCEDURE FOR E-EXAMINATION:

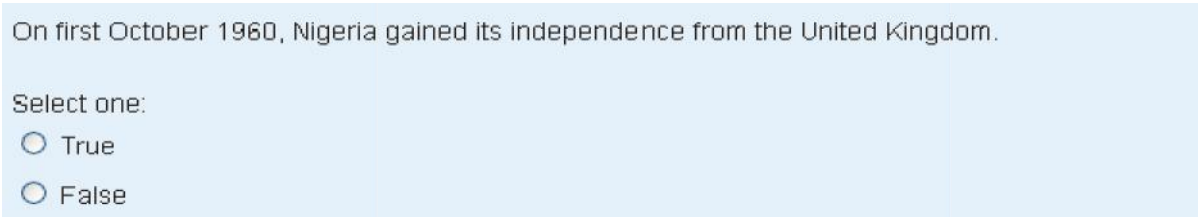
Rules and Regulations

a) No handset or mobile device allowed in the Examination hall.
b) Avoid piece of paper or wallet in to the Examination hall.
c) No bags is allowed in the Hall
d) No books or handout is allowed in to the Examination hall.
e) Identify the e-examination venue and be sure of the venue of your examination as on your timetable.
f) Be sure to be at the venue with your Id/card, at least 30minutes before the Examination.

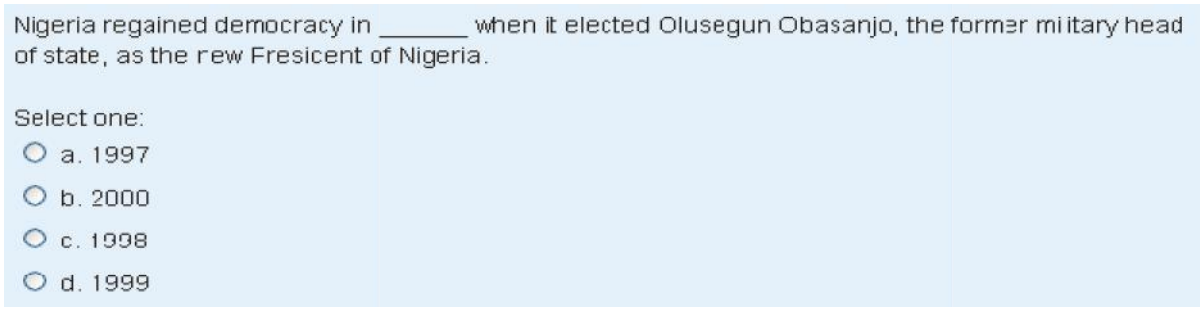
Types or format of e-examination Questions (Example)

a) True or False
b) Multiple choice single answers
c) Multiple choice multiple answers
d) Fill in the blank (single blank space and multiple blank space)
e) Graphics/images

Output of example a (True or False)

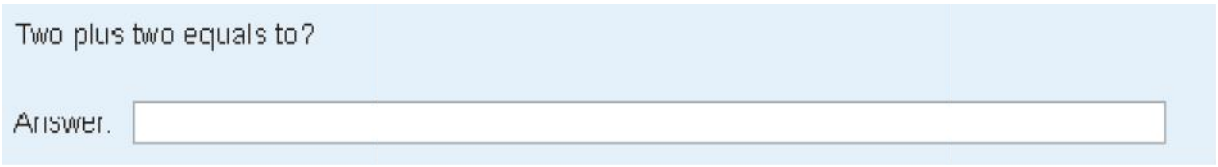


Output of example b (MCSA)



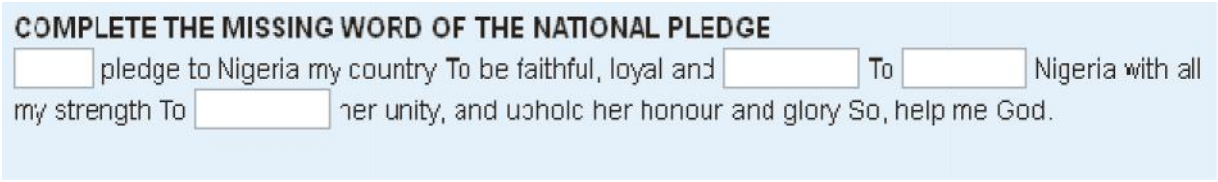
Output of example c (MCMA)

Output of example d (Fill in the blank)



NOTE: The above may have two answers → **4** or **four** (it depends on the examiner)

Output of example e



To do it (start the Examination)

a) Be at the venue on time with your Id/Card
b) Be very much sure that your pc(Computer) is in order or functioning (At least the mouse and keyboard are in good condition)
c) Make sure you enter your correct id /number in box provided (the home page of the e-exam)
d) Wait for the password in second box provided on the home page of the e-exam (which is going to be announced by chief examiner). Before you have an access to the Examination.
e) Do not waste time on difficult questions; you can come back to it if time permits.

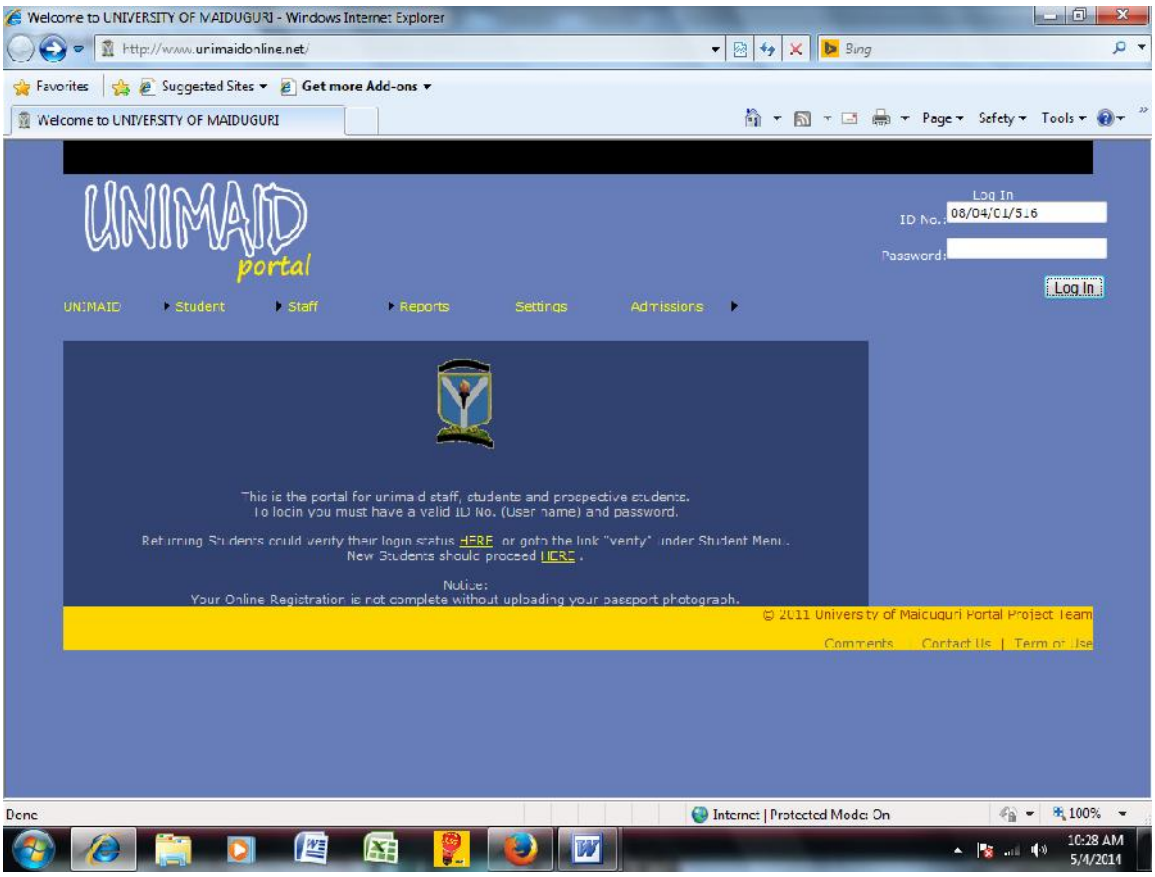
f) Be sure to go through your answers before submitting

g) Never live your sit before submitting your exams.

REGISTRATION GUIDELINES FOR NEW STUDENTS:

a) Steps in doing Online Registration

Ensure you complete the School fees payment at the designated bank for your faculty (Please Do not Allow anybody to do it for you). Proceed to complete your online registration (www.unimaidonline.net) in any of the Cyber cafes, you can contact UNIMAID computer centre or distance learning cyber cafe.



a. Type in your ID/number on the right hand space provided above

b. Scratched the pin card given to you and type in the pin number on the password space provided above.

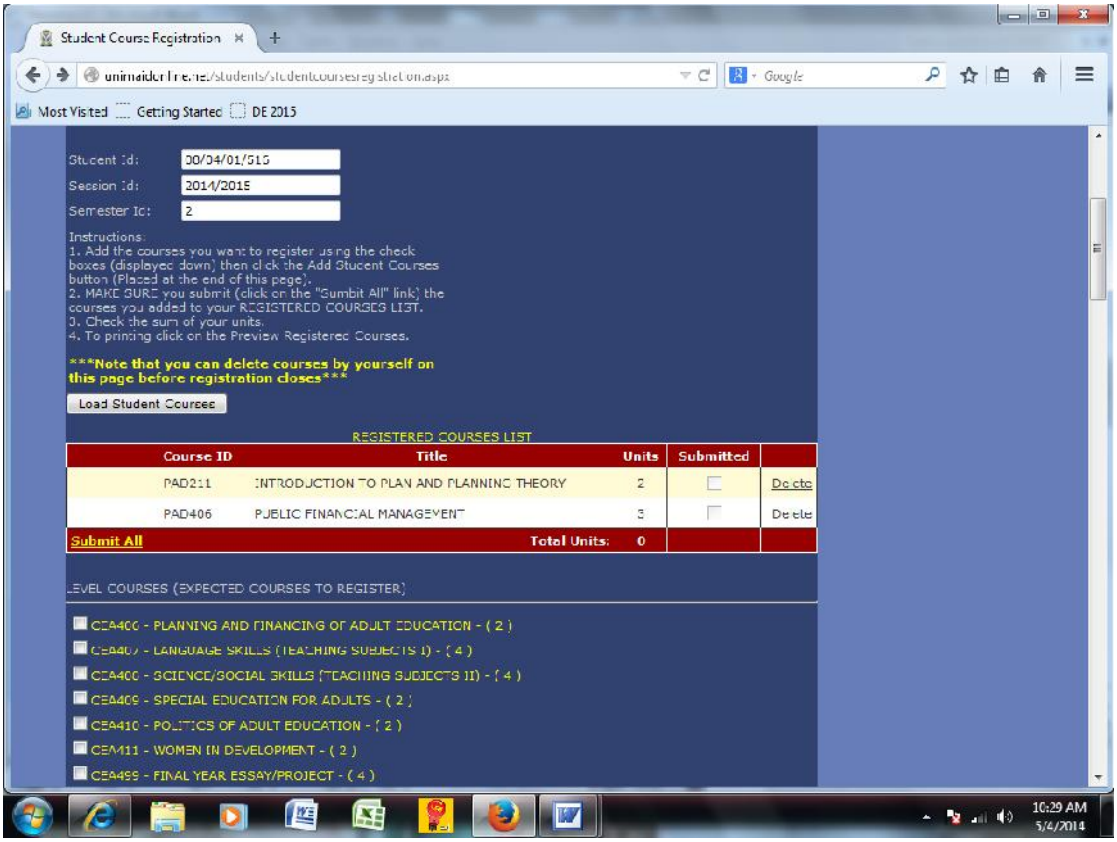
c. If you are done with the id/number and password, then you log in to move you to the next page.

d. The second page will give you an access to upload your picture.

e. Move to the third step and complete your personal data

* Example of personal data > 1.Registration Number, session, Name(sure and middle name), Date of birth, State and Local government, Nationality, Permanent home address, Next of Kin, Department, Course of studies, Sponsors name and address, Highest qualification and Health status.

f. The fourth step you are to complete your first and second semester course registration



g. After course registration shown above(1 & 2 semester), you know add it to student course

h. If you are done with everything, you preview course and make sure all is ok

i. Submit the course registration and print out the registration hard copy.

Students are advised to complete registration formalities within the time scheduled for registration.

ITQ ASSESSMENT SUMMARY: STUDY SESSIONS 5,6 AND 7

Question 1: What are the extensions for Microsoft Word files?
Question 2: List 7 items you can find on Microsoft Word Screen?
Question 3: Data Menu is found on Menu bar of Microsoft Word? TRUE or FALSE
Question 4: Table Menu is found on Menu bar of Microsoft Word? TRUE or FALSE
Question 5: Minimize, Maximize and Close can be found on which bar?
Question 6: Which bar gives the information of the current active document in MS Word?
Question 7: What is the shortcut key for Save-As?
Question 9: When doing Save-As, a dialog box will always appear TRUE or FALSE?
Question 10: To cancel a selection in MS Word what will you do?
Question 11: Superscript is use to shift a text down TRUE or FALSE
Question 12: Subscript is use to shift a text up TRUE or FALSE
Question 13: Justify Alignment is best suitable for?

Question 14: Write the Shortcut Keys for the following: Left, Center, Right and Justify
Question 15: For a 1.5 line spacing the shortcut is?
Question 16: What are the shortcuts for Cut, Copy and Paste?
Question 17: Undo is the command to take an action backward TRUE or FALSE?
Question 18: Redo can be used to repeat an action continuously TRUE or FALSE?
Question 19: Column text allows you to type in more than one column on a page TRUE or FALSE?
Question 20: Before you can replace a text you need to find the text TRUE or FALSE
Question 21: GOTO Command is used to navigate to a particular page in a document TRUE or FALSE?
Question 22: A table consists of?
Question 23: What toolbar is use in drawing shapes?
Question 24: To select a shape you have click on it TRUE or FALSE
Question 25: How many nodes will appear on a selected shape in Microsoft Word?
Question 26: To perform imperfect resizing of drawn shapes you make use of?
Question 27: To perform perfect resizing of drawn shapes you make use of?
Question 28: What are the extensions for Microsoft Excel files?
Question 29: List 7 items you can find on Microsoft Excel Screen?
Question 30: Data Menu is found on Menu bar of Microsoft Excel? TRUE or FALSE
Question 31: Table Menu is found on Menu bar of Microsoft Excel? TRUE or FALSE
Question 32: All Microsoft Excel Formula must begin with?
Question 33: Excel formula operates with BODMAS TRUE or FALSE?
Question 34: What option on the standard tool bar can be use to copy attribute of a data unto other data?
Question 35: The lowest precedence in Microsoft Excel formula is?
Question 36: How many worksheets have you at default after opening MS Excel?
Question 37: What is the Microsoft Excel formula for NOT EQUAL TO?
Question 38: What is a Computer Network?
Question 39: The individual computer, which access shared network resources, is known as?
Question 40: What do the following acronyms stands for? LAN, WAN and MAN
Question 41: List 4 types of Network Topologies you know?
Question 42: What is a Network Protocol?
Question 43: Computer devices that allocate resources for a network are called?
Question 44: Network architectures can be broadly classified into?
Question 45: Define the term Internet?
Question 46: What is Intranet?
Question 47: What do the following acronyms stands for? EMAIL, ISP, WWW, HTML
Question 48: In an email address there must be a particular sign known as?
Question 49: The Sending of e-mail messages can be defined as: The exchange of messages from one computer user to another computer user TRUE or FALSE?
Question 50: What is Chatting in Computer Network?

STUDY GUIDE SUMMARY

SUMMARY: INTRODUCTION TO ICT

Computers help you perform your tasks efficiently and quickly. They are used in almost every field, such as industry, government offices, shops, and educational institutions. Information Communication Technology (ICT) is the integration of telecommunications (telephone lines/wireless signals), computers, middleware as well as necessary software, storage - and audio-visual systems, which enable users to create, access, store, transmit, and manipulate information. Computers are now much smaller sized (likewise embedded), high speed, lower power consumption, with multipurpose operation and advance technology.

Computers are made of various parts that can be broadly categorized into input devices, output devices, processing devices, and storage devices. The essential components of a computer are hardware and software. Hardware refers to all the physical components connected to a computer and software refers to the instructions for the hardware to perform the necessary tasks. The most important software on the computer is the operating system, which controls and manages the hardware connected to your computer. Therefore, there are a lot of different components inside a computer, and they all serve different purposes. They all need to work together for the computer to work; knowing how a computer works makes it easier to use a computer by being able to understand how a computer will respond to your operations.

The different kinds of computers come in a wide selection based on shape, size, and performance. These include desktop computers, laptop computers, handheld computers, and tablet computers. All computers have memory, which is used to store information that is being used by the operating system and programs. Different computer programs perform different tasks. Productivity programs help you organize numbers, write letters or proposals, maintain records, and create images. Communications programs help you talk to other computer users. With entertainment programs, you can watch movies, listen to music, or play games.

Computers are extensively used everywhere, from households to large businesses. Computers are used to maintain records, exchange information, and analyze daily transactions to generate reports. Computers are also being used for online trading and checking stock prices. This widespread use of computers has created many career opportunities. With relevant computer knowledge, you can work as an information worker, IT professional, or a software developer.

An operating system is a program that controls how the hardware works and helps manage files and folders on the computer. Some operating systems, such as Windows 7, provide a GUI, which makes it easier for you to provide instructions to a computer. Information that the computer uses is represented in the form of 0s and 1s. Bit and Bytes are used for data. The word **"data"** is the plural of **datum**, which means fact, observation, assumption or occurrence while Information thus, can be defined as “data that has been transformed into a meaningful and useful form for specific purposes”. You know understand that Data processing is the act of handling or manipulating data in some fashion.

We cannot open the computer system casing and find Alphabets or Images inside we will rather find various electronic components, the computer understands Bit and Bytes unlike the visual way we view data as presented by the computer. Microsoft Word files are with the extensions **.doc** or **.docx** depending on the version in use. Microsoft Excel formulae operate with **BODMAS** and must always begin with an equal sign **=**. The extension for Microsoft Excel file is .**xls** OR **.xlsx** for 2003 and 2007 versions respectively.

A computer network is interconnection of various computer systems located at different places. You can share your computer components with other computer users by connecting your computer to other computers. A group of computers and associated devices that are linked together to facilitate sharing information is called a network. The Internet is a collection of these networks that are linked together. We can be able to use email and chatting applications with the aid of internet.

GLOSSARY

- **Applications:** Applications, also called programs, use to perform tasks.
- **Bit:** A bit is the smallest unit of information that a computer handles. A single bit can hold only one of two values, 0 or 1.
- **Blinking Cursor:** A line pointer that is mainly use to typing, its blinking action shows its readiness for typing.
- **Byte:** A byte is a combination of 8 bits arranged in sequence. e.g. 10101111
- **Cell Pointer:** A rectangular thick pointer that is use to navigate cells and enter value/data into a cells in MS Excel worksheet.
- **Central Processing Unit (CPU):** The central processing unit (CPU) is the primary hardware device that interprets and runs the commands you give to the computer.
- **Chat Program:** Chat programs allow you to send and receive messages instantly. You can use a chat program to communicate with several people at the same time.
- **Column:** Vertical arrangements of cells in a table, it is usually Alphabetical in MS Excel.
- **Commands:** A command is an instruction, which you give to a computer that causes an action to be carried out. Commands are either typed by using a keyboard or are chosen from a menu.
- **Communication Channel:** A communication channel is a path or a link that connects computers or peripheral devices, such as printers and disk drives, to transfer information.
- **CPU speed**: The CPU speed is the rate at which the CPU can perform a task, such as moving data to and from RAM, or performing a numerical calculation.
- **Data:** Data is the plural for the Latin word *datum,* meaning an item of information.
- **Desktop:** The desktop is an on-screen work area that uses a combination of menus and icons.
- **E-mail:** An electronic mail (e-mail) is the electronic form of the traditional postal mail. E-mail allows you to exchange messages and files over a network.
- **Folder:** A folder is a container for programs and files in GUI interfaces.

- **Gigabyte:** One gigabyte (GB) is equal to 1,024 MB, which is approximately equal to one billion bytes.
- **Graphical User Interface (GUI):** A graphical user interface (GUI) displays images and pictures that allow a computer user to interact with a computer easily.
- **Hardware**: Hardware refers to all the physical components of a computer.
- **Horizontal Lookup (HLOOKUP):** MS Excel formula for looking up values horizontally in a worksheet that meets up with the logical operation.
- **Icon:** An icon is a small image displayed on the screen to represent an object.
- **Information Communication Technology (ICT):** The integration of telecommunications (telephone lines/wireless signals), computers, middleware as well as necessary software, storage - and audio-visual systems, which enable users to create, access, store, transmit, and manipulate information.
- **Input Devices:** An input device is used to provide information to a computer. A keyboard is an example of an input device.
- **Internet:** The Internet is a worldwide collection of public networks that are linked to each other for information exchange.
- **Internet Service Provider (ISP)**: An ISP is a company that provides Internet connectivity to individuals, businesses, and organizations.
- **Intranet:** An intranet is a special type of network used to communicate and share information within an organization.
- **Kilobyte:** One kilobyte (KB) is equal to 1,024 bytes.
- **Laptop Computers:** Laptop computers are lightweight and portable personal computers. Laptop computers are also called notebook computers.
- **Local Area Network (LAN):** A LAN connects devices within a limited area, such as a home or a small group of offices.
- **Megabyte:** One megabyte (MB) is equal to 1,024 KB.
- **Menu Bar:** consists of menus that are essential for working with the software
- **Microsoft (MS)**: Microsoft Office use for MS Excel or MS Word Application Software
- **Network:** A network is a group of computers that are connected to share resources and exchange information.

- **Network Drives:** A network drive is a disk drive that is shared with other computers on a network.
- **Notification Area:** The notification area is located on the right side of the taskbar when the taskbar is located at the bottom of a screen. The notification area displays the time, a volume icon, and icons of some programs that are running on a computer.
- **Online:** When a computer is connected to the Internet, it is said to be online.
- **Operating System:** The operating system controls the computer's hardware and provides services and access to the hardware to programs. It also manages the computer's operations and tasks, such as logging on, logging off, and shutting down.
- **Processing Devices:** Processing devices are used by computer users to process the input data and generate the desired output.
- **Programs:** A program is a sequence of instructions that can be executed by a computer. A program is also known as software.
- **Row:** Horizontal arrangement of cells within a table, it is usually numbered in MS Excel spreadsheet.
- **Server:** The server is the main computer on a network that provides services to other computers on the network. A server decides which computers are allowed to access the hardware and software on the network.
- **Software:** Software is a sequence of instructions that a computer can execute. It is also referred to as programs.
- **Storage Devices:** Storage devices are used to store data. A hard disk is an example of a storage device.
- **System Unit:** A system unit refers to the box that holds the processor, motherboard, disk drives, power supply, and the expansion bus.
- **Taskbar:** The taskbar is a rectangular bar that is usually located at the bottom of the screen. You can use the taskbar to select a program running on your computer.
- **Terabyte:** One terabyte is equal to 1,024 GB, approximately equal to trillion bytes.

- **The Web:** The Web, also known as the World Wide Web (WWW), is a collection of information that is accessible on the Internet. This information is arranged logically and stored on computers known as Web servers.
- **Vertical Lookup (VLOOKUP):** MS Excel formula for looking up values vertically in a worksheet that meets up with the logical operation.
- **Wallpaper:** Wallpaper is a design or picture on the background to beautify the desktop screen.
- **Wide Area Network (WAN):** A WAN is a network that connects devices in geographically separated areas.
- **Window:** In Windows, a window is a rectangular area on the monitor that displays a program. Each program has its own window.
- **Word-processing Programs**: Word-processing programs are used to create and modify text-based documents.
- **Workstation:** A workstation refers to a computer connected to a network. You use a workstation to access the hardware and software on a network.

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