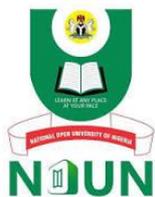


**COURSE
GUIDE**

**LIS 107
BASIC COMPUTER SKILLS & OPERATING SYSTEMS**

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Printed 2022

ISBN: 978-978-058-256-2

Introduction

LIS 107: Basic Computer Skills and Operating Systems is a semester course with 2 credit unit which will last for a minimum duration of one semester. It is a compulsory course for all undergraduates in the Department of Library and Information Science at the university. It is also suitable courseware for anyone who wishes to acquire basic skills on how to manipulate a computer. The course examined the definition of concepts, evolution and types of computer, basic components of computer system, computer operating systems and functions, the relevance and application of computer in information access, dissemination and transfer, the essential skills and competencies required for effective computer utilization especially in library and information service delivery, and challenges in the utilization of computer technology in library and information services in Nigeria.

Course Aims

This course aims to introduce you to the general knowledge on the concept of a computer, types, evolution, and the basic computer skills you need in order to access information, disseminate and transfer information in the library and within your environment. The course consists of six modules with eighteen units of study. In this course, you will learn the concept and evolution of computer, types/classification of computer, functions of computers, operating systems and functions. You will also be exposed to the use of some components of the computer system. The understanding of the concept and practice on the use of computer components and operating system will help you in acquiring the essential skills and competencies required for effective utilization of computer in the library, for information dissemination, sharing and service delivery. You will also learn the relevance and the application of computers in information access, dissemination and transfer. During this course, you will also learn about the benefits and challenges of the utilization of computer technologies in library and information services in Nigeria.

Course Objectives

In order to achieve the above aims, some course objectives must be considered. Each unit in this study material has its own specific objectives which will guide you in checking on your progress while you do your study.

By the end of this course you will be able to:

- Define the concept of computer
- Explain the evolution and types/classification of computers
- Identify and describe the components of computer hardware-input and Output devices
- Outline the computer software and its functions
- Explain the concept of computer storage, types and their functions,
- Define the concept of an operating system
- Discuss the types, features and functions of the operating system,
- Describe Desktop / Window Environment and its functions
- Explain how to create files and folders
- Describe how to save documents in folders and drives
- Explain how to delete files and folders
- Use Microsoft office packages such as Microsoft Word, Microsoft Excel and Microsoft Power Point.
- Define the concept of the internet
- Explain various internet terminologies
- Discuss the application of computers in information access, dissemination and transfer of information to desired users
- Explain the basic computer competency skills required by librarians for effective utilization of computer for information access, dissemination and transfer to library users
- Discuss the benefits and challenges in the utilization of computer technology in Library and information services in Nigeria

Working through this Course

To successfully complete this course, you have to go through the modules and carefully read the study units, do all practical exercises and assessments and also open and read through the links provided by double-clicking on them. Read the recommended books and other materials available to you. Where you do not have your own computers, computers have been provided at the E-library in your study centres for you to practice. Always participate in the facilitation going on in your study centre. Each unit of study has an introduction, objectives you should achieve at the end of the study, and there are conclusion and summary informing you in a nutshell what you studied in the unit. Above all, there is the Tutor-Marked Assignment (TMA) to evaluate what you have learnt. You can download the courseware into your device so that you can study it whenever you are offline.

Assessment

There are two main forms of assessments namely; formative and the summative. The formative assessments are at the end of every unit of study

will enable you to evaluate your learning output. The university uses the summative assessments to evaluate your academic performance in the courseware you studied. The summative assessment which is a Computer-Based Test (CBT) is made up of objectives and sub-objective questions. There are 3 continuous assessments, 10% each and final examinations are based on 70%. You are required to take all the computer-based tests and the final examination.

Study Units

There are 19 study units in this course, divided into six modules. The modules and units are presented as follows:

Module 1 Introduction to Computer

- UNIT1 Concept and Evolution of Computer
- UNIT2 Types/Classification of Computer
- UNIT3 Functions of Computers

Module2 Components of Computer Systems

- UNIT1 Hardware Components 1
System Unit
Input Devices
- UNIT 2 Hardware Components 2
Output Devices
- UNIT 3 Software Components
- UNIT 4 Computer Storage
Types of Storage Devices

Module 3 Computer Operating System

- UNIT1 Concept of Operating System
Types of Operating Systems
- UNIT 2 Features of Operating Systems
- UNIT3 Functions of Operating Systems

Module 4 Understanding the Computer Desktop/Window

- UNIT1 Desktop / Window Environment
 UNIT2 Management of Files and Folders

Module 5 Application of Microsoft Office

- UNIT 1 MS Word
 UNIT 2 MS Excel
 UNIT 3 MS PowerPoint

Module 6 Computers for Information Access, Dissemination and Transfer

- UNIT1 Internet Basics
 UNIT2 Computer for Information Access, Dissemination and Transfer in Library Computer competency skills needed by librarians for Information Delivery
 UNIT3 Benefits and Challenges in the utilization of computer technology in Library and information services in Nigeria.

How to Get Most from this Course

To get the most from this course, there is an urgent need for you to acquire a personal laptop and access to the internet. This will give you ample opportunity to study anywhere and time. The unit objectives of the course will guide your self- study effort.

Always evaluate your learning at the end of the unit by attempting the tutor mark assignment to find out your learning outcome in each unit. Endeavour to participate in all facilitations organized for this course for better understanding. If you run into trouble, arrange to meet your facilitator or the Librarian at the E-library for further clarification.

To get the most from this course endeavor to do the followings:

- Read the course guide thoroughly
- Develop a study schedule. Whatever method you choose to use, you should decide on it and write out dates for working on each unit.
- Always adhere to study schedule, mmajority of the students fail because they do not have a study schedule or that they have but do not follow it religiously.
- Read the introduction and the objectives of any unit you want to study before going into the content of the unit.
- At the end of the unit, review the objectives and see how many of them you have achieved.
- Attempt the Tutor-Marked Assignment

- Do the same in every unit throughout the course.

Summary

Basic computer skills and operating Systems is intended to make you a computer literate and the needed computer skills to be used in library operations for providing access, dissemination and transfer of library and information services to desired users. At the end of the course, you will achieve the objective if you follow the instructions and do what you are asked to do.

We wish you success as you adhere strictly to the instructions and advice given to you for this course.

MODULE 1 INTRODUCTION TO COMPUTER

UNIT 1: CONCEPT AND EVOLUTION OF COMPUTER

CONTENTS

- 1.0 Introduction
- 2.0 Intended Learning Outcomes
- 3.0 Main Content
 - 3.1 Definition of Computer
 - 3.2 Computer Terminologies
 - 3.3 Computer Generation
- 4.0 Conclusion
- 5.0 Summary
- 6.0 References/Further Reading

1.0 Introduction

This unit introduces you to the definition of a computer. It also discusses the various concepts or terminologies used frequently in talking about computers. The unit further traces the historical evolution of computers, which is commonly referred to as Computer Generation.

2.0 Intended Learning Outcome (ILOs)

By the end of this unit, you should be able to:

- i. Define computer
- ii. Identify some concepts/terminologies associated with computers
- iii. Identify computer generations along with their distinguishing technologies.

3.0 Main Content

3.1 What is Computer?

The term computer is derived from the word “compute” which means to calculate. According to an online dictionary (www.dictionary.com) and <https://byte-notes.com> computer comes from a Latin word *computare* which means “to calculate, to sum up, to count or to think together. Several authors over the years define computer differently Adejola (2011), Oleary & Oleary (2005) and Giwa (2013), central to their definitions is an **electronic** machine that accepts **data** as **input**, manipulates the data (**processing**) and produce **information** as **output**.

3.2 Concepts Related to Computer

Arising from the definition above, there are some concepts that are key to defining what a computer is. An **electronic** device or machine is any device that requires any form of electric current (either Direct Current

(DC) or Alternating Current (AC)) to work. Examples of devices in this category include calculator, television, radio sets etc.

Input refers to the set of instructions (or commands), also called programs, that are supplied by the computer user to guide the system in a specific operation. Input can also be in the form of data. **Data** refers to a collection of raw facts and figures that have no meaning until it is processed. It is also a collection of unorganized (raw) facts derived from a particular process or event. Examples of data include weights, employee names, addresses students' tests scores in English Language in a given class, records of antenatal visits in a certain clinic, numerical observations in a given experiments, etc.

The manipulation of data is called **processing**. Processing can either be arithmetic or logical. In arithmetic processing, the data is subjected to arithmetic principles such as addition, subtraction, multiplication and/or division. For instance, the students' test scores in English Language above can be used to calculate the average (summation of scores divided by the number of students) score. The logical processing revolved around comparing entities using logical operators such as greater than (>), less than (<), equals to (=) etc. For instance, like comparing students' scores to determine their ranking (class position) in a given subject.

The result of data processing is information or **output**. This output can be used for decision making or as input for further processing. For instance, the average score calculated above can be used to determine the students' performance in the subject and measure the effectiveness of teaching strategies employed in teaching the students.

3.3 GENERATIONS OF COMPUTER

Generations of Computer refers to the historical development of computers. The various developmental stages and technologies are what differentiate the evolution of computers over the years. Adejola (2011) identified five (5) computer generations. These include:

3.3.1 First Generation of Computers - 1940 To 1950

The first generation of computers lasted from 1940 to 1950. These set of computers were very slow and used vacuum tubes as Central Processing Unit (CPU), they were huge and programmed using machine language. They had limited memory capacity of 14KB and used punched cards and magnetic tape as input devices. Because of their size, the first generation of computers generates a lot of heat.

3.3.2 Second Generation of Computers - 1950 To 1960

The vacuum tube was replaced with a silicon chip in this generation, thereby making the second generation faster than the previous one. They are more durable and easier to manufacture and had an improved memory capacity of 432KB.

3.3.3 Third Generation of Computers - 1960 TO 1970

This represent the era of minicomputers; there was also a great reduction in size as a result of using Integrated Circuit (IC) as CPU. They were faster than the first and second generation because it used a high-level programming language. The memory increase was between 512KB and 1MB.

3.3.4 Fourth Generation of Computers - 1970 To 1980

The CPU in this generation was a microchip, which made the computer to be smaller than the previous generations with versatile applications. There was also an increased awareness of computers. The memory size was up to 4MB.

3.3.5 Fifth Generation of Computers - 1990 And Beyond

This category represents the present-day computers and the ones to be manufactured in the future. In this generation, the computers were smaller, faster, with sophistication in hardware technology and software applications. Pentium processors are used as CPU and there are vast improvements in both primary and secondary storage capacity.

4.0 Conclusion

The computer is an electronic device that accepts data, process data and produces information as output. There are five generations of computers spanning from the period of 1940 to date.

Tutor Marked Assignment

1. What is a computer?
2. Write short note on the following: electronic, input, data, processing and output
3. State the Generations of computer and their technologies

5.0 Summary

In this unit, you have learnt the definition of computer, concepts related to computers and generations of computers.

6.0 References and Further Reading

Adejola, A. P. (2011). Computer Science for Undergraduate and Professionals. VolII. Abuja: Daladi Press Ltd.

Oleary, T. J. & Oleary, L. I. (2005). *Computing Essentials*. Complete Edition. McGraw-Hill Technology Education.

Giwa, K. O. (2013). *Standard Computer Studies Series*. Kaduna: Lifotech Computers.

Zakari, I. (2019). History of computer and its generation.

https://www.researchgate.net/publication/336700280_History_of_computer_and_its_generations

MODULE 1

UNIT 2: TYPES/CLASSIFICATION OF COMPUTER

CONTENTS

- 1.0 Introduction
- 2.0 Intended Learning Outcome
- 3.0 Main Content
 - 3.1 Classification of the computer by size
 - 3.2 Classification of computer uses/purposes
 - 3.3 Classification of computers by logic
- 4.0 Conclusion
- 5.0 Summary
- 6.0 References and Further Reading

1.0 Introduction

In the previous unit, you learnt the definition of computer system and its generation. In this unit, you are going to learn the classification of computer which is based on the size of computer, its purpose or its logic.

2.0 Intended Learning Outcomes (ILOS)

By the end of this unit, you should be able to:

- i. State the different types of computer by size
- ii. State the different types of computer by uses/purposes
- iii. State the different types of computer by logic

3.0 Main Content

As stated in the introduction, there are three criteria upon which computer are classified; they are size, uses/purpose and logic

3.1 Classification of the Computer by Size

In this classification, computers are classified based on the physical size. There are four types of computers classified by size, namely supercomputers, mainframes, minicomputers and microcomputers

3.1.1 *Supercomputers*

These are room-size high capacity computers with enormous processing power designed for specific purposes and are mainly used by large organizations.



Super Computer (Source: <https://www.livescience.com/62827-fastest-supercomputer.html>)

3.1.2 Mainframe computers

Although not as powerful as supercomputers, mainframes also have great processing speed and data storage. They are capable of processing a huge amount of information for millions of users.



Mainframe Computer (source: rpcontact.ro/index.php/blog/item/40-mainframe-story.html.)

3.1.3 Minicomputers

Minicomputers are medium size computers designed for specific purposes especially in manufacturing industries.



Minicomputer (source: <https://en.wikipedia.org/wiki/Minicomputer>)

3.1.4 *Microcomputers*

Microcomputers are relatively small sized machine that can fit on the office desk (as in a desktop computer), or briefcases (as in laptop). There are four computers in this category, namely;

i. Desktop



(source: <https://www.indiamart.com/proddetail/desktop-computer-14627457273.html>)

ii. *Notebook (laptop)*



(source: <https://www.computerhope.com/jargon/l/laptop.htm>)

iii. *Tablet PC*



(source: https://en.wikipedia.org/wiki/Microsoft_Tablet_PC)

iv. *Handheld computers*



(source: <https://industrychronicles.com/2019/02/26/handheld-computer-market/>)

3.2 Classification of The Computer by Use/Purpose

In this classification, the computers are classified according to the area of application of the computer. These areas are basically two, Special purpose computers and General-purpose computers

3.2.1 *Special Purpose Computers*

These computers are designed to perform a single specific task. The programs or instructions required to perform the task are permanently stored into the computer's internal memory, this enables the computers to perform such task on a single command. They are usually less expensive. The Automated Teller Machine (ATM) is an example of special purpose computers.



(source: <https://www.pocketedu.online/2018/11/types-of-computers-on-basis-of-purpose.html>)

3.2.2 *General Purpose Computers*

General purpose computers are designed to handle a wide range of tasks. Programs for each task are stored into the systems internal memory so that each can be loaded and executed when required. General purpose machine can be used for word processing, graphics, print sale report, prepare pay-bills etc



(Source: <https://www.pocketedu.online/2018/11/types-of-computers-on-basis-of-purpose.html>)

3.3 Classification of Computers by Logic

In this classification, the computers are classified according to the underlying operating principles. That is, a computer can either be digital, analogue or hybrid.

3.3.1 Digital Computers

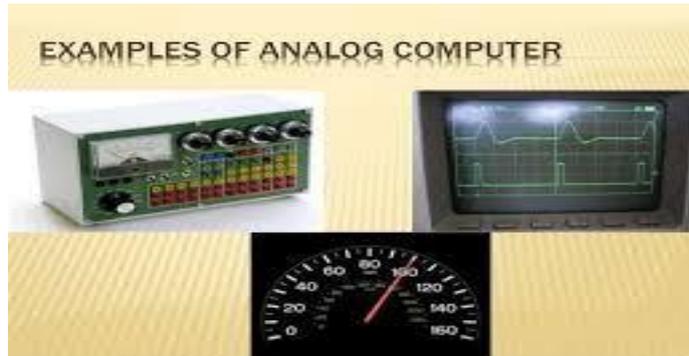
Digital computers operate based on physical quantities with the help of numbers or digits. Digital computers are effective in arithmetic calculation and making logical decisions. They are also called counting machines



(source: <http://www.vidyagyaan.com/computer-knowledge/different-types-of-computer/>)

3.3.2 Analogue Computers

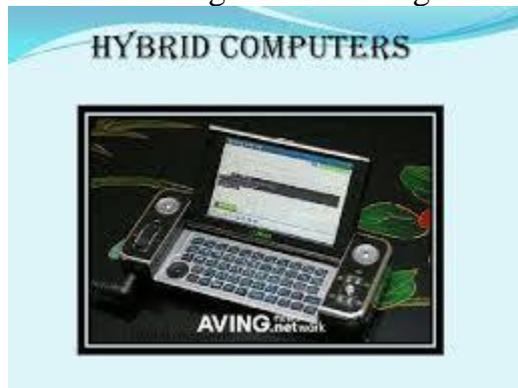
These machines, as the name implies, are used in processing continuous data (think of analogue signals). They are effective in measuring data with continuous values (floating numbers) such as speed, temperature, pressures, etc. They are also called measuring machines.



(source:<http://www.vidyagyaan.com/computer-knowledge/different-types-of-computer/>)

3.3.3 Hybrid Computers

Machines that combine the attributes of both digital and analogue computers are called hybrid computers. They combine the advantages of digital and analogue computers when working as a system. They are very effective in process control systems where good precisions are required along with greater control. They also have the ability to accept data in both digital and analogue form.



(Source:<https://www.kullabs.com/classes/subjects/units/lessons/notes/note-detail/3407>)

Tutor Marked Assignment

1. List classification of computer by size
2. State the classification of computer by purpose
3. Write short notes on digital computers, analogue computers and hybrid computers

4.0 Conclusion

Classification of computers by size includes supercomputers, mainframe computers, minicomputers and microcomputers. Classification by uses comprises special purpose computers and general-purpose computers while classification by logic has digital computers, analogue computers and hybrid computers.

5.0 Summary

In this unit, you have learnt that computers are classified by size, purpose and logic.

6.0 References and Further Reading

FME/NTI, Kaduna (2018). 2018 SGDs workshop manual for primary school teachers on information and communication technology (ICT). Kaduna: National Teachers Institute Press.

Sinha, P. K. & Sinha, P. (2007). *Computer fundamentals* (6th ed.).
<https://fastdunya.blogspot.com/2016/10/computer-fundamentals-by-pradeep-k.html>

MODULE 2 COMPONENTS OF COMPUTER SYSTEMS

UNIT 1: HARDWARE COMPONENTS (INPUT DEVICES)

CONTENTS

- 1.0 Introduction
- 2.0 Intended learning Outcomes (ILOs)
- 3.0 Main content
 - 3.1 Description of Components of Computer System
 - 3.2 Concept of Computer Hardware
 - 3.3 Input Devices
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor- Marked Assignment
- 7.0 Reference/Further Reading

Introduction

You have been taught the concept and evolution of computer, types and functions of the computer system in Module 1. Now, you can identify a computer system, its functions and also classify them according to their types. You are now positioned to ask what the components of a computer system are and their uses. The answer will introduce you to the content of what you should learn in this module as stated in the study unit objectives below.

2.0 Intended Learning Outcomes (ILOs)

At the end of this unit, you should be able to

- Explain the components of a computer system
- Define the concept of computer hardware
- List various types of Input Devices and their functions

3.0 Main content

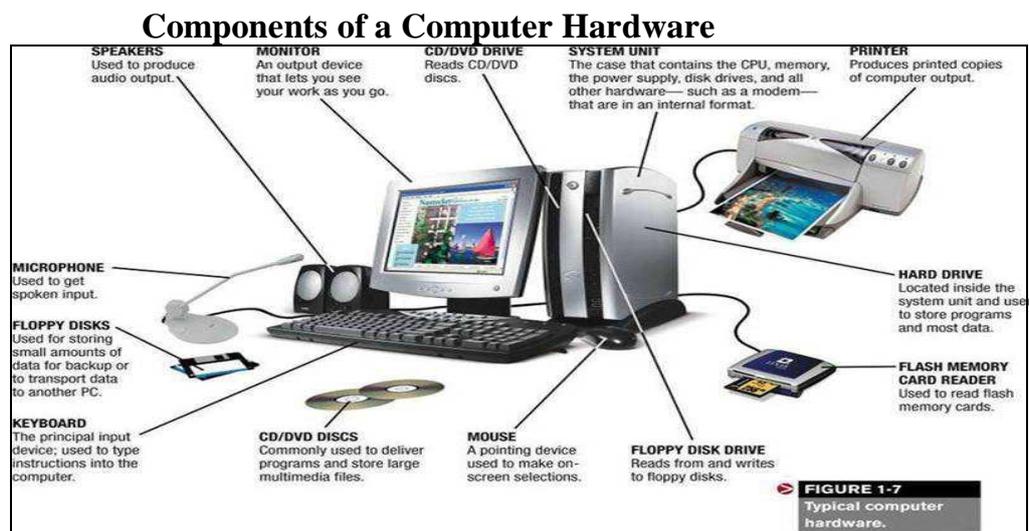
3.1 The components of a computer system are what make up a computer system. The computer system is made up of **hardware** and **software**. The computer cannot perform their task without the use of both hardware and software systems. Also, you should note that when the hardware and software components of the computer system are put in place, the computer still needs the **peopleware** that is human resources to make it perform its functions.

Now, think about this question: what are computer hardware and their functions in a computer system?

3.2 Computer Hardware

Computer hardware refers to the physical parts of or components of a computer system. It is regarded as the electrical and mechanical parts of a computer system. You can identify these components of a computer by touching and feeling them with your hands. The basic components of computer hardware are;

- 3.2.1. System units
- 3.2.2. Input devices
- 3.2.3. Output devices



Adopted From

http://www.bngkolkata.com/web/wpcontent/uploads/2015/08/081615_0346_TheHardware1.jpg

3.2.1 System Units

The system units include the motherboard, CPU, RAM, and other cases that house the internal components of a computer.

The Central Processing Unit (CPU)

The central processing unit (CPU) can be referred to as the brain of the computer system. It is the computer hardware which supervises the whole computer operations by receiving instructions from the hardware and the software installed in a computer system. It carries and executes all the instructions made by users. It controls all devices attached to the computer and even the primary and secondary system. It is made up of arithmetic and control unit.



Central Processing Unit (CPU)

Arithmetic and Logical Unit (ALU): Performs arithmetic operations such as calculations (plus, minus, multiplication and division) which require comparing two numbers or items to produce a result which is sent to the computer memory while operations such as NOT, OR, AND are the logical operations.

Control Unit: This unit controls and manages instructions or commands from different parts of the computer including the input devices like mouse, keyboard and scanner and output devices. Every instruction and command given is registered and prepared for its execution like recording of information, storing data, and printing of files or documents.

Random Access Memory (RAM): Your computer stores data and information temporary with the help of RAM, but if the computer shuts down or switches off, all the data in RAM will definitely be wiped out. So, you use RAM for the temporary storage of data, programs and applications in a computer while the system is running. RAM can also be called a temporary memory.

Motherboard

The motherboard is a hub that houses all the essential components of a computer such as the Memory, Central Pressing Unit, input and output devices for the effective functioning of a computer. The motherboard is made up of computer circuit board, data traffic and BIOS.



The Motherboard

- ✚ Computer circuit board: This allows data to be passed to different parts of the computer pathway called buses.
- ✚ Data Traffic: It is a communication hub for all the computer components attached to it. It manages the flow of information and data within a computer system.
- ✚ BIOS (Basic Input Output System): The BIOS controls and manages the booting up process of the computer system when it is turned on or switched off. It helps in loading your operating system in your

computer system and manages the flow of data in attached devices such as hard disk mouse, adapter, keyboard and printer.

3.4 Input Devices

The input devices are used in entering data, information and instructions into the computer system. The input devices are the only major way through which users communicate, control and command the computer system. Computer input devices include the followings;

1. Computer Keyboard
2. Mouse
3. Joystick
4. Digital or graphics tablet
5. Optical Character Rader
6. Magnetic Ink Character Reader (MICR)
7. Barcodes

Examples of Manual Input Devices			
Keyboard 	Numeric Keypad 	Pointing Device 	Remote Control 
Joystick 	Touch Screen 	Scanner 	Graphics Tablet 
Microphone 	Digital Camera 	Webcams 	Light Pens 

<https://ictlounge.com/Images/Manual%20Input%20Devices.gif>

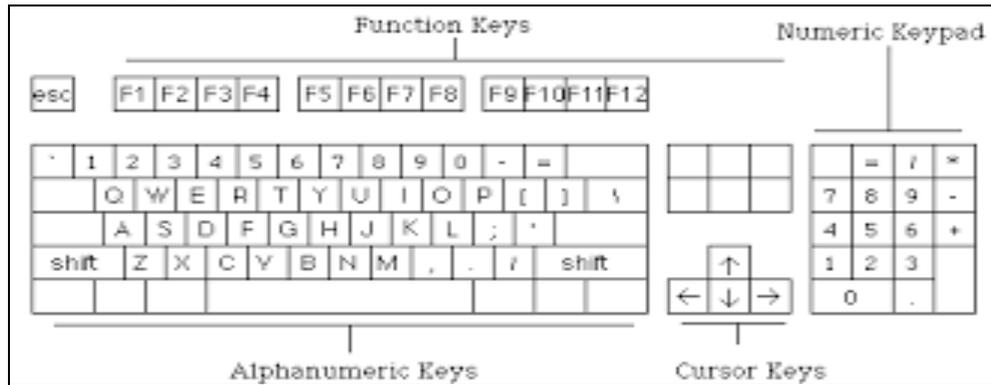
3.3.1 Computer Keyboard

A computer keyboard is like a conventional typewriter keyboard but has more keys than the typewriter keyboard. The keyboard enables you to interact freely with your computer. When you want to use the keyboard to input data, make sure that you rest your fingers on the keys. Hold your hands with your thumbs on the spacebar key while the index finger on the “F” on your left hand while your right hand will be on “J”, and the rest of your fingers on top of the next key along the same horizontal row.

The computer keyboard is divided into four parts namely;

- a. Function keys
- b. Alphanumeric keys
- c. Numeric Keys
- d. Control keys

A KEYBOARD



Adopted

from

<https://www.humanities.mcmaster.ca/~hccrs/INPUT.HTM>

3.3.1a Function keys of a Computer Keyboard

The function keys are made up of 12 keys arranged in a row at the top of the keyboard. Each of the keys has a definite meaning and use for the specific purpose. These function keys are from F1 to F12 which are used in programs as shortcuts keys in performing frequent task.

For you to use function keys, you may need to press another special key 'fn' (beside Windows key) and then any of the function keys. You can use this function key to perform a task with the combination of other keys like **ctrl or alt and shift key**.

F1:

- Press F1 key to open any program
- F1 with windows key shows up Windows Help and Support screen

F2:

- Alt + Ctrl + F2 opens document window in a Microsoft Office
- A press on Ctrl + F2 displays print preview window in Microsoft Office
- Alt + F2 opens Save As window in Microsoft Excel package
- When you hold on Shift + F2, you use it to add comment box in Microsoft Excel

F3:

- Press F3 to open search windows to find files and folders
- A press on F3 repeats the last command in MS-DOS or windows command prompt,
- A press on F3 opens a find bar
- In Microsoft Word, a press on Shift + F3 changes the text from upper case to lower case or all capital letters

F4:

- Hold on the Alt + F4 to close a current program window. If no program is open in a window, it launches a Shutdown dialogue box
- Press on Ctrl + F4 to close active window within the current active window in Microsoft Windows
- Press F4 to open an address bar in Windows Explorer and Internet Explorer
- Press F4 to repeat the last action performed in Microsoft Word

F5:

- Pressing F5 refreshes or reloads the web page
- Use in starting a slide show in PowerPoint
- Opens Find and Replace window in Microsoft Word, Go To window in Excel

F6:

- Pressing on F6 moves the cursor to the address bar
- Ctrl + F6 toggles between various Microsoft Word documents

F7:

- Press F7 to launch Spelling and Grammar dialogue box in Microsoft Office program
- Shift + F7 opens Research window in Microsoft Office
- In few browsers like Internet Explorer, Mozilla Firefox, pressing F7 turns Caret Browsing on or off

F8:

- When you hold F8 during Windows boot process enters into Windows Safe Mode
- Then press F8 display a thumbnail image of all workspaces in Mac OS X

F9:

- It is used to send an email like Microsoft Outlook, Siebel CRM
- A combination of Ctrl + F9 and Alt + F9 are used to build mail merge document in Microsoft Word
- As a programmer, you can use F9 to compile and execute code in combination with Ctrl or Alt key

F10:

- In many programs, Shift + F10 open up the menu window, just as right-click
- Shows menu bar in Mozilla Firefox, internet browser or highlights the same in many programs.

F11:

- You use it to enter and exit from full-screen mode in all modern internet browsers
- In Microsoft Excel, Shift + F11 adds a new sheet, Ctrl + F11 adds a new macro to the workbook
- Pressing Alt + F11 in MS Office program invokes Microsoft Visual Basic window for that document

F12:

- Press on F12 to Open a 'Save As' window in MS Office program
- Shift + Ctrl + F12 open Print window in MS Office
- Ctrl + F12 opens a document in MS Office
- F12 opens and closes developer tools in most of the internet browsers

Keyboard Shortcuts Keys for performing various tasks.

S/N	Shortcut Keys	Descriptions
1.	Alt+F	File menu options in current program
2.	Alt+E	Edit in the current program
3.	Ctrl +A	Select all text or document
4.	Ctrl +X	Cut all selected text or document
5.	Ctrl +C	Copy all selected text or document
6.	Ctrl +INS	Copy all selected text or document
7.	Ctrl +V	Paste copied text or document
8.	Ctrl +P	Takes you to print platform
9.	Ctrl +Home	Takes you to the beginning of the document
10.	Ctrl +End	Brings you to the end of the document
11.	Ctrl +Left Arrow	Moves one word to the left at a time
12.	Ctrl +Right Arrow	Moves one word to the right at a time
13.	F1	Universal Help in every window
14.	Shift+DEL	Cut selected items or document
15.	Shift+Ins	Paste
16.	Shift+Home	Highlights from the current position to the end
17.	Shift + End	Highlights from the current position to the end of the line

3.3.1b Alphanumeric Keys

The alphanumeric keys in a keyboard as the name implies contains numbers and alphabets on the keypad. These keys are found in computer keyboards and cellular phone. Some of these keys have two key characters, one at the lower part and the other at the upper part of the

key. For the upper character keys to be functional you have to hold on the **Shift key** and press the desire upper key to perform a given task.

An alphanumeric keyboard is divided into five rows:

- numeric,
- top alphabetical,
- middle alphabetical,
- bottom alphabetical,
- functional - these are keys such as, Spacebar, CTRL, ALT, Windows and Context menu

3.3.1c *Numeric keyboard*

The numeric keys are the keys you see on the right-hand part of a computer keyboard. The main switch is on the top left position (Num Lock) changes between two states (numeric and functional). You activate these keys through pressing on the Numlock key. You can reproduce some characters that are not found in the keyboard by combining numeric keys with Alternate key (ALT). You use the numeric keyboard to input numeric values only. The functional version of the numeric keyboard is the Arrow, Home, End, Page Up and Page Down keys. The numeric keyboard is divided into five rows namely signs, top, base, middle and bottom.

3.3.1d *Cursor Control Key*

The cursor control keys indicate to you where you are pointing to in any document. As you type or input a data in a document, the cursor moves with the keyboard and the character being typed on the computer screen. Cursor control keys include four directional arrow keys such as Home, End, Control (Ctrl), Alternate (Alt) and Escape (ESC).

S/N	Cursor Control Keys	Their Functions
		When you press this arrow, the cursor moves up to the line in a document.
		When you press this arrow, the cursor moves down to the line in a document
		When you press this arrow, the cursor moves to one character to the left line in a document.
		When you press this arrow, the cursor moves to one character to the right line in a document.
	Home	Brings the cursor to the beginning of a page or a line
	Page Up	Press this keypad, it takes your cursor to the top of the previous page. If you are on page12 it takes you back to page 11.

	Page Down	Press this keypad, it takes your cursor to the top of next page. If you are on page12 it takes you to page 13.
	End	When you press on End key. Your cursor moves to the bottom left of the page in a document.

Apart from all these four types of keys in the keyboard, there are some commonly used keys that perform special functions.

These keys are:

Delete (DEL) – You use it to delete or clear letters or numbers. To perform this task, place the cursor on the character or letter to be deleted, press the delete key and it will clean the letter to the left while the cursor remains at the same position.

Spacebar – When you press on this key, you use it to create a space between words and letters.

Cap Lock – A press on the key will change all alphabetic characters to Capital letters (Uppercase). When you do not press this all the letters on the keyboard appear in lower case (small letters) when you type.

Control (Ctrl) – This key is used in creating a shortcut when you hold Control (Ctrl) together with another key. For example, holding on the ctrl keypad with alphabet C performs the task of “Copy” while with the letter V performs the task of “Paste” of copied documents or words.

Escape Key (ESC) – When you press on Escape key it cancels any operation that is running or in progress. It terminates the earlier command you gave the computer.

Number Keypad – These numbers are the same as the ones at the top of the keyboard. You can decide to use any of them when you are typing any document.

3.3.2 MOUSE

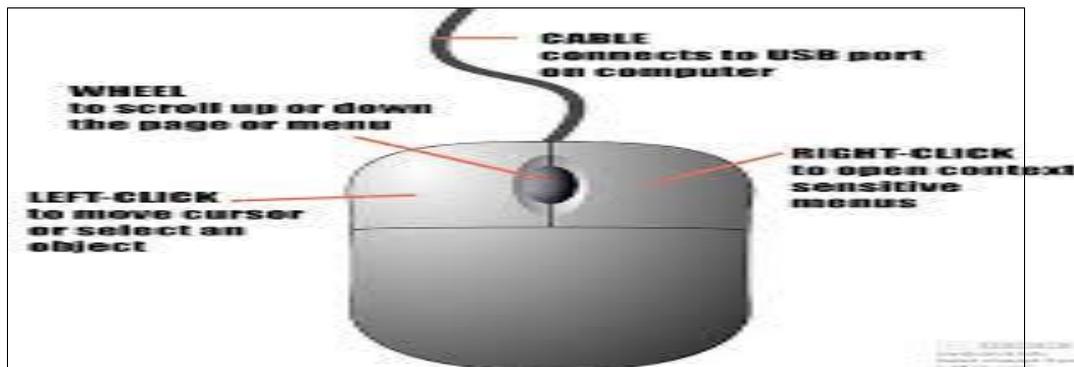
The mouse is a pointer in the computer screen which is mainly used in navigating or moving around in the computer screen. The mouse is a pointing device and a cursor control device which appears as a small size palm box. Mouse comes in various sizes and shapes but they perform similar functions. So, the type of mouse you choose to use depends on your choice. The mouse has two buttons with a wheel in between the two buttons, one on the left hand and one on the right hand.

Different Shapes of Mouse



<https://i2.wp.com/www.informationq.com/wp-content/uploads/2016/12/Types-of-Computer-Mouse.jpg?ssl=1>

#Parts of a Mouse and their Functions



<https://www.google.com/url?sa=i&source=images&cd=&ved=&url=https://www.pinterest.com/pin/852095191969478764/?psig=AOvVaw38uHIEcWVuz7n66cvrdUv&ust=1559902369457118>

How Mouse Appears on the Computer Screen

Whenever the mouse appears on the computer screen it changes its look as shown in the table below.

	I		
<p>Hourglass or Circle Shows that the computer is waiting to comply with a command like loading a program, such as a website or a program</p>	<p>I Bar or Text Cursor shows a place where you can enter or type a text</p>	<p>The mouse looks like this when it appears and moves on the screen</p>	<p>Hand Pointer Indicates a hyperlink that <i>links</i> you to a page with related information</p>

How to Hold the Mouse



<http://askatechteacher.com/wp-content/uploads/2014/08/mouse-hand-position-with-hand.png>

Watch the picture above. For you to master how to use the mouse, hold the mouse, make sure that your thumb is on the left-hand side of the mouse while your ring finger and **pickle** finger sits on the right-hand side of the mouse to give you control over the movement of the mouse. Your pointer finger should rest on the left mouse button and your middle finger on the right mouse button, then you are good to go.

How do I use a mouse?

As a beginner, you do not have to be scared about learning to use the mouse. What you need is patience and practice in order to master the skills involved. The more you practice the use of a mouse with the computer the easier it becomes for you. Regular practice is required in mastering all computer skills. When you press on the Left mouse button, it is known as “**Left-click**”. While a press on the right mouse is called “**Right-click**”.

- **Click:** When you press on the left mouse button with your index finger on the mouse button, it selects an item or document. But when you right click on the mouse button, it gives you options like Paste, Font, Paragraph, Bullet, numbering etc.
- Then you **double-click on the right** mouse button with your index finger to open a program on the desktop.
- When you **double-click on the left** button of the mouse, it does not perform any function.
- To **drag an object** with the mouse, hold the left mouse button down with your index finger while you are moving the mouse to move an object.

Steps to Enable a Left-Handed User Use the Mouse Buttons

- Click **Start**
- Select **Control Panel**
- **Double-click** the **Mouse icon** in the control panel window
- Click **Left-handed**
- Click **Ok**

Self-Assessment on the use of Mouse: Visit

<http://www.pbclibrary.orgmousing/intro.htm>.

This practical exercise will help you to master the skills involved in the effective use of mouse. Remember that this practical site can only be accessed with a computer which is connected to the internet.

3.3.3 Scanners

Scanners are computer input devices that allow you to copy images, pictures and documents into the computer. These images and documents can be edited and resized on the computer screen before printing them. You can scan printed documents and upload them into a web database, even attach such documents, images, pictures to someone through your email and WhatsApp. Scanners transfer information on paper to the hard disk of the computer.

Types of scanners are

- Hand-held Scanners
- Sheet-fed scanners
- Flatbed Scanners
- Drum Scanner
- Photo scanner

Flatbed Scanner

A flatbed scanner has a glass plane or bed which is flat, where you place the document to be scanned on it before pressing the power button on.



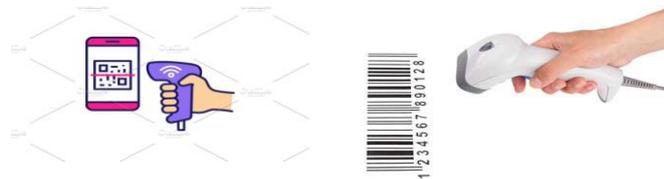
<https://encryptedtbn0.gstatic.com/images?q=tbn:ANd9GcSIYr6A8Puwoq7tM7ELJZ4OMkc8QJxaAxe9LIYtatBU8Ah16JJJBg>

Sheetfed Scanner

In using the sheetfed scanner the document has to be fed into the horizontal or vertical slot provided in it. It scans single page documents and cannot scan a thick material like books.

**Sheetfed Scanner*****Handheld Scanner***

A handheld scanner is a manual scanning machine which you need to move over the object that you want to scan. One of the commonly used handheld scanners is the barcode scanner which is used in libraries for numbering of books and in shopping stores to evaluate goods.



www.cincinnati-libray.org.

Handheld Scanner

For Payment of goods
in library

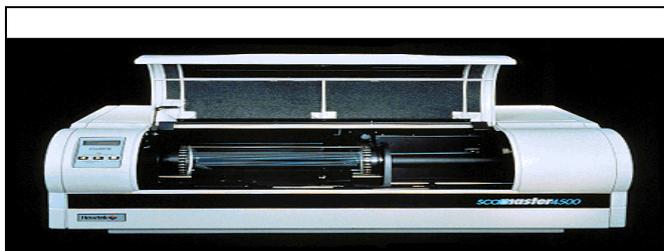
<https://cmktimageprd.global.ssl.fastly.net/0.1.0/ps/5763050/600/400/m2/fpnw/wm1/qmdb0pgu7ewnuocqkikqtzuzoptfex87qb4qouolfkokn9vfcax2yqglbszct3lz.jpg?1548406192&s=5d871f6eee3da564218e7a995368af78>.

Handheld Scanner

For Numbering books in the
library

Drum Scanner

The drum scanner uses photo-multiplier tube to scan images which are mounted on the glass tube. Unlike flatbed scanner, it is not common because of its size and cost.



<http://www.circuitstoday.com/wp-content/uploads/2010/03/Drum-Scanner.GIF>.

Photo Scanner

You use a photo scanner to scan pictures. It has a high resolution and can scan colours. It uses digitizing film negatives and slides, although flatbed scanner can be used in scanning photographs very fast. You use a photo scanner to clean and restore old photographs.



https://encryptedtbn0.gstatic.com/images?q=tbn:ANd9GcSJb4ueLEAWLGF9oSaxjoPJqyWTks7G0InjcK_LQdL65shjOfNiw.

4.0 Conclusion

Knowledge of the components of a computer system which is the hardware and software devices are the necessary tools a librarian should acquire in order to help you know the type and specification of computer hardware to be acquired in the library. The basic components of computer hardware are system units, input and output devices.

5.0 Summary

In this unit, you learnt that components of computer hardware are system units, input and output devices. The system units are made up of motherboard, CPU, RAM, and other cases that house the internal components of the computer. The input devices are keyboard, mouse, Joystick, digital or graphics tablet, optical character Rader, Magnetic Ink Character Reader (MICR) and Barcodes. Have you mastered the skills of using the mouse, printer and keyboard in performing some task? If not go back and do the practical exercise.

6.0 Tutor- Marked Assignment

1. What is computer hardware?
2. Enumerate various types of computer hardware systems? `
3. What is the central processing unit of a computer and state its functions?
4. Discuss four parts of a computer keyboard?
5. Define the term input device of a computer system and give four examples

6. Explain the function of these cursor control keys

Cursor Control Keys
↑
↓
←
→
Home
Page Up
Page Down
End

7.0 Reference/Further Reading

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MODULE 2

UNIT 2: COMPONENTS HARDWARE 2 (OUTPUT DEVICES)

CONTENTS

- 1.0 Introduction
- 2.0 Intended Learning Outcomes
- 3.0 Main content
 - 3.1 Concept of Output device
 - 3.2 Various Output Devices and their functions
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor- Marked Assignment
- 7.0 Reference/Further Reading

1.0 Introduction

You have been taught the concept of computer hardware, and its components which included system units, input devices and output devices. You learnt about system units and input devices in unit 1. You can now identify and explain the system units and the input devices of a computer system. You are now positioned to ask what a computer output device is which is one of the components of a computer hardware. The answer will introduce you to the content of what you should learn in this module as stated in the study unit objectives stated below.

2.0 Intended Learning Outcomes (ILOs)

At the end of this unit, you should be able to

- Explain the meaning of Output device
- Identify various types of output Devices
- State and discuss their functions and uses

3.0 Computer Output Devices

You output devices to get processed data and information from the computer system. The computer output device delivers information to users. The output devices include

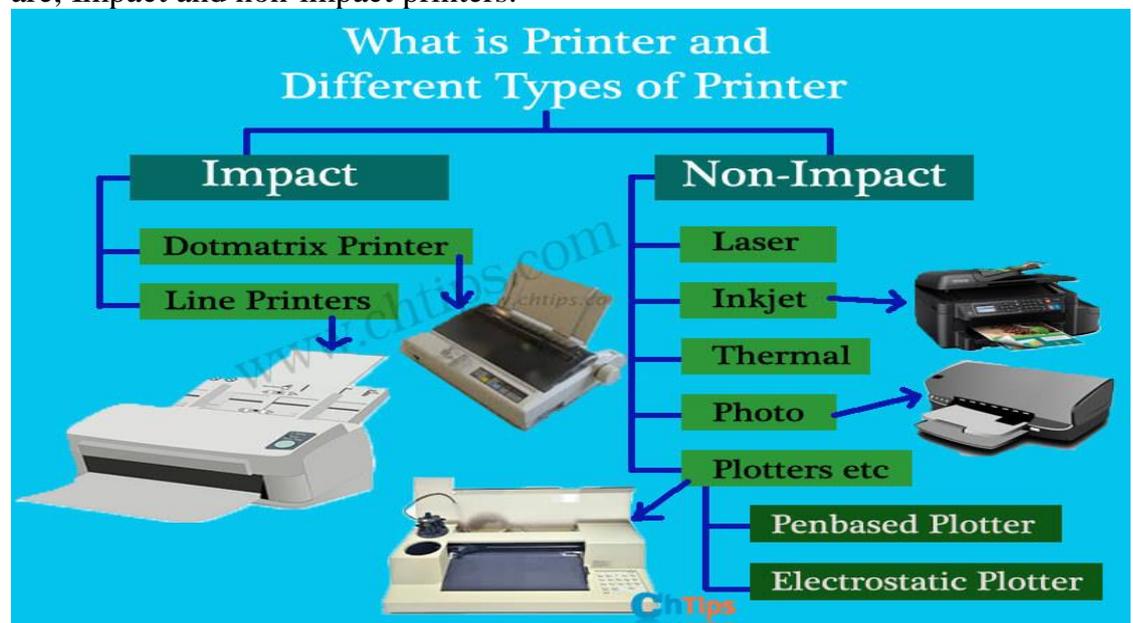
- 3.1 Printers,
- 3.2 Monitor
- 3.3 speakers
- 3.4 Earphones.

- 3.5 Global Positioning System (GPS)
- 3.6 Projector
- 3.7 Braille Reader
- 3.8 Plotter



3.1 Printer

The printer is one of the computer output devices use in creating copies of information stored in a computer system on a paper. You use the printer to produce a hard copy of the information, images and data stored inside the computer. Printers are divided into two types and they are, Impact and non-impact printers.



<https://www.chtips.com/images/Printer-Types-of-Printer.jpg>.

Impact Printers

The impact printers are dot matrix and line printers which uses a printer head to strike a ribbon unto the paper to form a character like the traditional typewriter.

“Dot Matrix Printer”

- The term dot matrix refers to the process of placing dots to form an image.
- Its speed is usually 30 to 550 characters per second (cps).
- This is the cheapest and the most noisy printer and has a low print quality. Dot Matrix were 1st introduced by Centronics in 1970.



• <https://image.slidesharecdn.com/yasirali-131202042045-phpapp01/95/printers-and-its-types-6->

LINE PRINTERS

- A line printer is a special type of impact printer
- IT uses a special wide print head that can print an entire line of text at once
- Line printers have low resolution but are incredibly fast
- It can print 3000 lines of text per minute



SLIDES CREATED BY ENGR. MUMTAZ ALI KALOI LECTURER COMPUTER SYSTEMS ENGINEERING SURKUR BKA

IBX

<https://image.slidesharecdn.com/printers-150503011110-conversion-gate01/95/printers-14-638.jpg?cb=1430616165>.

Non-Impact Printers

The non-impact printers are laser printer, inkjet, thermal, photo and plotter printers. This type of printer uses some chemicals and heat processes to print the document and can print more than 2,000 characters per second.

PRINTERS

Laser

Use heat technology and specialized powder called toner (or another medium) that's heat-sealed onto a piece of paper.



Study.com

https://study.com/cimages/videopreview/videopreview-full/computer-output-devices-monitors-speakers-printers_101915.jpg.

“Ink-Jet Printer”

- ▶ It is a non-impact printer producing a high quality print. A standard Inkjet printer has a resolution of 300dpi. Newer models have further improved dpi. Inkjet printers were introduced in the later half of 1980s and are very popular owing to their extra-ordinary performance.



10

<https://image.slidesharecdn.com/yasirali-131202042045-phpapp01/95/printers-and-its-types-10-638.jpg?cb=1385958490>.

Thermal Printer

- Thermal printers are inexpensive printers mostly used in fax machines. The Thermal printers are further classified into two types.
- (1) Electro thermal printers:
- (2) Thermal Wax printers:



13

<https://image.slidesharecdn.com/yasirali-131202042045-phpapp01/95/printers-and-its-types-13-638.jpg?cb=1385958490>.

3.2 Monitor

The monitor is a device which displays images and text on the screen. The computer monitor works with the video card and displays information with the help of the video card. So, without the video card, no information will be displayed by the monitor. The monitor comes in different sizes and shapes. Some of the monitors have LCD (Liquid Crystal Display) or LED (Light Emitting Diode) display. The older monitors that have Cathode Ray tube (CRT) appear bigger, heavier and compile more space on the desk more than the LCD or LED. Monitors with cathode rayed tube have increased brightness, enhanced quality of image and color production more than the LCD or LED (Plasma).

Different Types of Monitors



LCD/LED Computer Monitor
Computer



Cathode Ray tube (CRT)
Monitor

https://www.google.com/search?q=images+of+different+types+of+monitor&rlz=1C1CHBF_enNG803NG803&tbm=isch&source=iu&ictx=1&fir=NpB1HhkUygiRkM%253A%252CaBYpg72Zn9Ji3M%252C_&vet=1&usg=AI4_kS05kCXbi6bPSUwTgcS2abuyNckQ&sa=X&ved=2ahUK_EwjWm4j_idfiAhUBCewKHRDzBjgQ9QEwA3oECAAQCg&biw=1584&bih=768#imgrc=&vet=1

3.3 Speakers

Speakers are output devices in a computer system that produces sound and makes music to be audible to the users. The speakers may be inbuilt

into the monitor or they come separately and maybe connected to the computer to produce sound.



Speakers

https://en.wikipedia.org/wiki/Computer_speakers

3.4 Earphones

Earphones are use in listening to music and movie clips. You can plug your earphones into the monitor and speakers to listen to music and watch movies without disturbing people around you.



Earphone



Headphone

https://cdn.pixabay.com/photo/2014/04/05/11/41/earphone-316753_340.jpg.

https://cdn.pixabay.com/photo/2014/07/31/23/38/headphones-407190_960_720.jpg

3.5 Global Positioning System (GPS)

Global Positioning System is an output device which uses a network of satellites in providing information on the ground position of or location of a specific device or object. Global Positioning System application functions include;

- a) Locating - determining a position of an object
- b) Mapping - creating maps of the world
- c) Tracking - monitoring object or personal movement of your phone, cars e.t.c
- d) Timing - bringing precise timing to the world.
- e) Navigation - getting from one location to another like moving airplane from the ground.



Car and Mobile phone GPS Satellites

3.6 Projector

A projector is an output device use for presentation in seminars, lectures and watching of movies. It performs these functions by placing the computer images, data and information onto a wall or screen.

3.7 Braille Reader

The Braille reader is an output peripheral device that is connected to a computer or mobile device which allows or enables a blind person to read digital resources and information from websites displayed on a computer monitor. The text from the computer is translated into Braille format through pushing rounded pins up through a flat surface.



A Braille Reader

https://www.himsinc.com/img/B40K_02-1.jpg.

Plotter

A plotter is a printer that is commonly used by engineers to draw a design of cars, building and ships. The computer gives the plotter command to make drawing on a paper using pen, pencil and marker.

“Plotter”

- ▶ A large scale printer which is very accurate in producing engineering drawings and architectural blueprints.
- ▶ Two types of plotters are flatbed and drum.
- ▶ Flatbed plotters are horizontally aligned while drum plotters are vertically positioned.



<https://image.slidesharecdn.com/yasirali-131202042045-phpapp01/85/printers-and-its-types-2-320.jpg?cb=1385958490>.

4.0 Conclusion

All librarians need to understand the output devices of a computer system so as to know which device to be acquired for the provision, access and dissemination of library and information services to users. The choice of the output devices to be acquired depends on their uses in the library.

5.0 Summary

You have been taught in this unit that, computer output devices are used in getting processed information and data out of the computer system. These output devices are printers, monitors, speakers, earphones, a global positioning system (GPS) and projectors. You can also explain their functions.

6.0 Tutor- Marked Assignment

1. List four components of the output device of a computer?
2. Printers are divided into two names and explain the two types?
3. What is the function of a computer monitor?
4. Outline five uses of a Global Positioning System?

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MODULE 2

UNIT 3: SOFTWARE COMPONENTS

CONTENTS

- 1.0 Introduction
- 2.0 Intended Learning Outcomes (ILOs)
- 3.0 Main content
 - 3.1 System software
 - 3.2 Utility software
 - 3.3 Application software
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor- Marked Assignment
- 7.0 Reference/Further Reading

Introduction

In unit 2, you learnt about output devices as one of the components of a computer hardware system, their types and functions. You should also be able to identify types of computer hardware, the input and output devices. Have you mastered the skills of using the mouse, printer and keyboard in performing some task? If your answer is “Yes” kudos, you have actually learnt many things in the previous units. You can now ask yourself since the components of a computer are hardware and software, what then is the software and its components? The answer will introduce you to the content of what you should learn in this unit as stated in the study unit objectives below.

2.0 Intended Learning Outcomes (ILOs)

At the end of this unit, you should be able to

- Describe the components of computer software
- Explain the concept of three computer software
- Distinguish between three computer software through their functions

3.0 Main content

Components of computer software are system, utility and application software. The computer cannot perform their task without the use of both hardware and software systems. Also, you should note that when the hardware components are available, the computer cannot function without written instructions and programs that will tell it what to do. These instructions and programs are written and are called computer software.

Now, think about this question: what are computer software and their types?

3.1 Computer Software

The computer software is a series of programs which are written to enable the computer to perform its task. They are written instructions that help the computer to function. Computer software are information stored in the hardware of a computer. The computer software is divided into three main components namely;

- System software
- Utility software
- Application software



<https://hi-static.zdn.net/files/d13/84917bf73308a39302d6efe8b105e268.jpg>.

3.2 System software

The system software is also called operating software. Its function is to ensure that all the hardware components of the computer come together and function as a unit. It coordinates the communication of the user and other computer software in order to perform a task. The following are examples of the system software in a computer system;

- Personal computer disk operating system (PC/M)
- UNIX and XENIX used for computer networking
- Microsoft Disk Operating System (MSDOS)
- Control Program for Microprocessor (CP/M)
- Window Operating System which aids or allows the running of more than one application program at a time.
- Digital Research Disk operating System (DR DOS)
- LINUX

- ADD

3.3 Application Software

The application software allows you to carry out a specific task with the computer system. Examples of application software are

- **The Word processing application software:** Permits you to create a text by typing them with keyboard, save, retrieve, edit and print documents. The packages of word processing application software are word perfect, Ms-Word, Word Star and Editor.
- **Education Application Software:** These are packages like DBASE ATI, Word perfect ATI, Learn Dos and Typing Tutor use in learning about computer hardware and software.
- **Electronic Spreadsheet Application Software:** You use this software for calculation, budgeting, bidding and financial projections. This software is commonly used by bankers and accountants. Examples of this spreadsheet are Supercalc, Lotus, Ms Excel, Symphony etc.
- **Data Base Management Application Software:** You use it for collection development, keeping useful information or record of events. Its examples are Dbase, Paradox, Clipper, FoxBASE, Oracle etc.
- **Game Application software:** This is an application software that enables you to play game with your computer. Examples of this software package are Golf, Snooker, Test-drive, Football, etc.
- **Communication Application Software:** This software permits you to use the computer as a communication gadget. Examples of such computer software packages are Ms-com, Net-com and Net Ware etc.

3.4 Utility Software

The utility software of a computer system are packages stored in the hardware of a computer which helps in diagnosing computer problems, detecting, removing and preventing virus from contaminating the system. Such software packages are;

- Anti-Virus tools for the security of files and applications. Examples are AVG, and Microsoft security essentials
- PC tools
- Norton Disk Doctor (NDD)
- Doctor Solomon etc.

- Data recovery to help get back lost data. Examples include iCare Data Recovery, Recuva, and Ease Us Data Recovery Wizard
- File Compression to optimize disk space such as WinRAR, Winzip, and 7-Zip.
- Hardware diagnostic services, examples are Hard Disk Sentinel, Memtest, and Performance Monitor
- Firewall is for protection against external threats, e.g., Windows Firewall.

Computer People Ware

Computer system consists of hardware and software components, but the computer cannot work or perform any task without the help of people manipulating or feeding in the data or information into it. This brings us to another ware called computer people ware. Computer people ware refers to people working in computer departments and electronic library.

They include;

- The Media/ System Librarian
- The Computer Operator
- The System Analyst
- The Data Control Officer
- The Computer Programmer
- The System programmer
- The Application programmer

4.0 Conclusion

Software is the engine that drives the computer system because it is a written instruction that directs or instructs the computer on what to do. So, with the computer software, your system cannot carry out commands.

5.0 Summary

In this unit you have learnt about the computer software, types and their functions. For further understanding of the lesson read the text below.

6.0 Tutor- Marked Assignment

1. What are the functions of utility software of in a computer system?
2. What is the software that allows you to carry out a specific task with the computer system? Give three examples of the software?
3. What is computer software?
4. What is system software and state its functions?

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MODULE 2

UNIT 4: COMPUTER STORAGE AND TYPES OF STORAGE DEVICES

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- 1.0 Introduction
- 2.0 Intended Learning Outcomes (ILOs)
- 3.0 Main content
 - 3.1 Computer Storage Devices
 - 3.2 Types of storage and their uses
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor- Marked Assignment
- 7.0 Reference/Further Reading

Introduction

In unit 3, we discussed about computer software systems, which included the system software, utility software and application software. You can also explain the three types of computer software. In addition, you should be able to describe the function of each. Let us now examine where these data and information generated from the computer system can be stored for present and after use. This will take you to our next study, storage devices in a computer system.

2.0 Intended Learning Outcomes (ILOs)

At the end of this unit, you should be able to

- Define the concept of storage device in a computer
- Explain the various computer storage devices and their uses

3.0 Main content

In the previous unit, our discussion was centered on software and the components of computer software are system, utility and application software. You also learnt that computers cannot perform their task without the use of hardware system, software system and peopleware. Also, you should note that when the hardware components are available, the computer cannot function without written instructions and programs that will tell it what to do. Then you should ask yourself after giving the computer instruction to perform a task, where do you keep the result for present and future use? Your question will take us to the concept of storage devices, types and their uses.

3.1 What is Computer Storage?

The computer as you have learnt is an electronic data processing system which accepts information, or data, programs in form of input. This computer processes these data or information based on commands given to it, stores the processed data in the memory, controls and output these data and information to the users. Storage is a process of saving digital data and information in a computer memory device which may be temporarily or permanently. Computer Storage is a process in which a computer retains processed digital data and information in the memory which may be for a short period or for a longer period of time. Storage in a computer are classified into two and they are volatile (Primary) and non-volatile (secondary) storage.

These two types of storage in any computer system earn their names by what happens to the data, applications and information stored when you switch off the computer.

The two types are

- A. Primary or Volatile storage
- B. Secondary storage or Non- volatile

3.2.1 Primary or Volatile Storage

The primary storage holds data in memory for a short period of time and it stores data faster when it is being used. So, data stored in the primary storage of the computer system are instantly lost when the power light goes off. The primary also known as volatile storage needs a constant power supply to keep the data and information stored on them active in the computer system. The primary storage in the computer affects the function of the computer system because it stores application that helps your computer to function effectively and these applications are accessed by the Central Processing Unit. Types of primary or volatile storage devices are; Random Access Memory (RAM) and Cache.

Random Access Memory (RAM): Your computer stores data and information temporary with the help of RAM, but if the computer shuts down or switches off, all the data in RAM will definitely be wiped out. So, you use RAM for the temporary storage of data, programs and applications in a computer while the system is running.

Cache Memory: It is a primary memory storage device found in the central processing unit (CPU) which is used in reducing the time or energy use in accessing data from the main memory of the computer. So, it stores copies of frequently used data or information from the main memory (RAM).

3.2.2 Secondary storage or Non- volatile

The secondary storage or non-volatile storage stores written data or information that last for a long period of time. The secondary storage does not require constant power in order to retain the data or information stored on it but it retains the data or information until it is deleted by you. The secondary storage devices store almost all the programs and computer applications even the operating system, your data and device driver. The secondary storage is also known as offline storage and external memory. Examples of secondary storage devices are;

- i. Hard drive
- ii. Solid-State drive
- iii. Universal Serial Bus (USB) drive
- iv. Secure Digital (SD) card
- v. Compact Disk (CD)
- vi. Digital Versatile Disc (DVD)
- vii. Floppy diskette.
- viii. Tape drive.

3.2.2i *Hard Drive*

Hard Drive has a memory space which stores documents, operating system, images and data on a rotating disk called hard disk. This shows that the hard drive houses the hard disk. The hard disk is made of aluminum or magnetic metal alloys. You should not remove the hard disk from the hard drive pack in the computer system because it is an internal storage device with a large capacity for storage in your system. Simply put, the hard disk is your computer.

3.2.2ii *Solid-State Drive*

The Solid-State Drive (SSD) performs the same function of storing files, programs just as the Hard Disk Drive. The only difference is that SSD uses “flash memory” which allows it to retain data whenever the computer loses power supply and it is more expensive than the Hard Disk Drive



Solid-State Drive

3.2. iii *USB drives*

Universal Serial Bus (USB) drives are hardware devices used in storing and copying data, documents, files and folders from and into computer systems. It has a storage capacity size which is measured in **gigabytes**. This shows that they can contain a huge amount of information and they

are easy to carry along anywhere at any time. To use it, just plug the USB driver into your computer port. You can also use the USB drive as a backup for information stored on your computer.



USB DRIVES

3.2.2. iv *Secure Digital Card*

Secure Digital Card (SSD) is a small sized flash memory card which has a high capacity memory. The SD cards are your memory cards which can be used in mobile phones, digital cameras, and handheld computers. Files, music, movies and other information can be copied into SD card from or to computer aided technologies.



Secure Digital Card

https://www.123rf.com/photo_42134637_sd-card-mini-sd-card-micro-sd-card-for-storage-data-in-mobile-and-computer.html?fromid=dWdMd2VMUjAvbTRQWFVEMlhUTHdmQT09.

3.2.2. v *Compact Disk (CD)*

Compact disk is a storage device which is portable and convenient to carry. It is used for recording audio music, transferring information or data into or from the computer system. Some of the compact disks are rewritable which means that it allows for changes to be made on the files it contains while some do not. For your compact disk to serve you effectively, you must format it before using it. After formatting, give the disk name for easy identification. Formatted Disks can also serve as a backup device for your personal files and library records.



Compact Disk (CD)

https://e.wikipedia.org/wiki/DVD%2BR_DL

3.2.2. vi *Digital Versatile Disc (DVD)*

It is an external storage device used in storing digital data such as software programs, files. It is also use in storing and viewing video plays or movies. It has a large storage capacity.



https://en.wikipedia.org/wiki/DVD%2BR_DL

(Also visit this cite to practice how to burn or copy information into the CD and DVD. <https://en.wikipedia.org/wiki/DVD%2BRDL>.)

3.2.2. vii *Floppy Diskette.*

Floppy diskette is used as a storage device in the computer system, but the emergence of wireless internet connection and introduction of USB have made floppy diskettes outdated. Also, floppy disks have a small and unreliable storage capacity which led to its disappearance in many computer systems.



Floppy Diskette

<https://www.google.com/imgres?imgurl=https%3A%2F%2Fcdn4.iconfinder.com%2Fdata%2Ficons>

3.2.2 viii *Tape drive*

Tape drive is one of the outdated storage computer devices which stores data on a magnetic tape. This device can be rewound at the end of each session. It is used for audio and video recording.



Tape Drive

<https://www.shutterstock.com/search/tape+drive>.

https://en.wikipedia.org/wiki/Tape_drive

4.0 Conclusion

Knowledge of storage devices and their uses are so important in the provision of library and information services to users. The acquired information sources and records generated from library routine services should be stored to ensure adequate retrieval and use for the present and future decision making and most importantly, to satisfy the information needs of the users.

5.0 Summary

You have been taught that Computer Storage is a process in which a computer retains processed digital data and information in the memory for a period of time which may be temporarily or permanently. Storage in a computer is classified into two volatile (Primary) and non-volatile (secondary). What you have learned about these storage devices can now be added to your knowledge on input and output devices of a computer technology to help you in understanding the information processing cycle in a computer setting.

6.0 Tutor- Marked Assignment

1. What is Computer Storage?
1. Enumerate the various types of Secondary storage or Non- volatile use for the storage of information in a computer?
2. What are the functions of Random Access Memory (RAM) in a computer system?
3. Explain the functions of a USB drives?
4. What is a Cache Memory?

7.0 Reference/Further Reading

Adebayo, P. A. (2011) Computer Science for undergraduates and professionals 1. Abuja: Danladi Press Ltd,52 -77.

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<https://agrieconomics.uonbi.ac.ke/sites/default/files/cavs/agriculture/agriecon/AEB%20101%20INTRODUCTION%20TO%20COMPUTERS.pdf>

MODULE 3 OPERATING SYSTEM CONCEPTS

UNIT1: CONCEPT OF OPERATING SYSTEM AND TYPES

CONTENTS

- 1.0 Introduction
- 2.0 Intended Learning Outcomes
- 3.0 Main Content
 - 3.1 Definition of Operating System
 - 3.2 Evolution of Operating System
 - 3.3 Types of Operating System
- 4.0 Conclusion
- 5.0 Summary
- 6.0 References/Further Reading

1.0 Introduction

In this Unit, we shall discuss the operating system and its types. The operating system is a system software that is responsible for the management and usability of hardware resources.

2.0 Intended Learning Outcomes

By the end of this Unit, you should be able to:

- i. Define Operating System
- ii. Discuss the evolution of Operating System
- iii. List and explain the different types of Operating System

3.0 Main Content

3.1 Definition of Operating System

Operating System, often called OS, is the collection of software programs that control and manage computing resources, such as memory, input and output devices, tasks and other software resources. It is usually the first software that is installed on a computer system. OS provides the platform upon which other applications software are installed. OS also manages control over software and hardware integration. It is the set of computer programs that make the hardware usable. It also provides the interface between a computer and its user.

3.2 Evolution of Operating System

Operating systems evolve over time, especially with improvement and miniaturization of hardware. There are four generations of the operating system according to Tanenbaum (2001), each reflecting the improvement in hardware technology.

3.2.1 The First Generation (1940s to 1950s)

In this generation, computers were mainly used to solve simple mathematics calculations and there was limited need for operating systems. Machine language was used in the programming often by wiring up plugboards to control the machines' basic operations.

3.2.2 The Second Generation (1955 to 1965)

This represented the period in which operating systems were introduced. The OS was named GMOs (General Motors Operating System) and was created by General Motors for IBM's machine 701. This set of OS was single-stream batch processing system. The machines were called mainframes and mainly used by professional operators in large computer rooms.

3.2.3 The Third Generation (1965 to 1980)

In this period, the OS designers were able to develop multiprogramming systems, which allows programs to perform multiple tasks at the same time. This was a major improvement as it allows the CPU to be nearly 100 percent busy with operations. In this period also, there was a noticeable growth of minicomputers, which help to create a whole new industry.

3.3.4 The Fourth Generation (1980 to Date)

This generation saw the creation of personal computers. Although PC (Personal Computers) was similar to minicomputers, PCs are less costly to acquire than minicomputers. A major factor in this period was the creation of Microsoft, Windows operating system and Apple Macintosh. Although the first batch of this operating system was based on the cryptic command, they later developed into sophisticated GUIs (Graphical User Interface) which gave an unprecedented rise in the number of people owning and using computers. As technology advances, so do operating system.

3.4 Types of Operating System

The Operating System usually consist of two parts that enable it to perform essential operations. These parts are called Kernel and shell. The shell is placed between the user and the kernel and it provide services to the kernel. The shell is responsible for interpreting and converting use commands into machine code. The kernel, on the other hand, is a bridge between the shell and hardware. The kernel is responsible for running programs and providing secure access to the hardware.

The operating system can be broadly classified into two (2) main types, the Normal Operating System and Real-Time Operating System.

3.4.1 Normal Operating System

Normal Operating System is designed to manage the hardware resources of a computer system. Normal Operating System is further classified into two types, Character User Interface (CUI) and Graphical User Interface (GUI).

3.4.1.1 Character User Interface Operating System (CUI)

This is a text-based operating system that provides an interface with the software and other programs through typing commands to perform specific jobs. It is also called a command line operating system because it uses a keyboard to receive commands. Examples of CUI include DOS (Disk Operating System) and UNIX.

3.4.1.2 Graphical User Interface Operating System (GUI)

As the name implies, this type of OS is a mouse-based system in which users perform tasks without typing the command from the keyboard. The files and icons are presented graphically and can be opened or closed by clicking them with a mouse button.

3.4.2 Real-Time Operating System

Real-time operating systems are a multitasking system designed to especially run programs at a scheduled time with high reliability. They are used in real-time applications such as industrial robots and embedded system, and scientific research etc. There are two types of real-time operating system, namely; Hard Real-Time Operating system and Soft Real-Time Operating System.

i. Hard Real-Time System

This is a time constant system in which finishing assigned task within the deadline is extremely important for the efficient performance of the system. Hard real-time systems are used in the Army and Defence industries.

ii. Soft Real-Time Systems

In this system, finishing the task within the deadline is not necessary, and thus the deadline can be missed by a second or two. However, performance is degraded if deadlines are missed in every operation. Example of Soft real-time system is automatic gate openers.

Tutor Marked Assignment

1. What is OS?
2. Discuss the historical evolution of OS?
3. Write short note on GUI and CUI.
4. Briefly explain Real Time Operating System

4.0 Conclusion

In this unit, you have learnt that operating systems are set of computer programs that provide a platform upon which other programs are installed, loaded and executed. We have also discussed the four generations of OS evolution. Also, you have learnt the two types of the operating system; the Normal Operating System and Real-Time Operating System.

4.0 Summary

You have learnt the definition of OS in this unit, and as you will be interacting with computers during your studies, it is important you have an idea about OS and what they do in computer systems. Also, you learnt that CUI operating system is a character-based system in which user supply command line through the keyboard. GUI is a mouse-based system that allows the user to open or close files and programs by clicking on a mouse button. Hard time system performs a task based on a schedule deadline and system performance is measured against keeping the deadline. Soft real-time systems may not have to accomplish every task within the deadline, although system performance is degraded if the deadline is missed in every operation.

7.0 References and Further Reading

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Adejola, A. P. (2011). *Computer science for undergraduate and professionals 1*. Abuja: Daladi Press Ltd.

MODULE 3

UNIT 2: FEATURES AND FUNCTIONS OF OPERATING SYSTEM

CONTENTS

- 1.0 Introduction
- 2.0 Intended Learning Outcomes (ILOs)
- 3.0 Main Content
 - 3.1 Features of Operating System
 - 3.2 Functions of Operating System
- 4.0 Conclusion
- 5.0 Summary
- 6.0 References and Further Reading

1.0 Introduction

In the previous unit, you have learnt the different types of the operating system. In this unit, we are going to discuss the features and functions of the operating system. But first let's see the intended learning outcome of this unit.

2.0 Intended Learning Outcome (ILOs)

By the end of this unit, you would be able to:

- i. List the features of an operating system
- ii. Discuss the functions of an operating system

3.0 Main Content

3.1 Features of Operating System

There are several features that distinguish operating systems from other software. The commonly found features of the operating system according to <https://www.guru99.com/operating-system-tutorial.html#4> include;

- i. Protector and supervisor mode
- ii. Provision of access to the disk, file system and device drivers
- iii. Loading and executing programs
- iv. Multitasking and virtual memory management
- v. Managing input and output operations
- vi. Detection and handling of errors
- vii. Allocation of resources
- viii. Information security

3.2 Functions of Operating System

The operating system performs several functions and services, these services include;

3.2.1 *Input and Output Management*: The OS control and manage the activities of the input and out devices.

3.2.2 *Device Management*: The OS also keeps track of all devices. It performs the task of allocation and de-allocation of devices attached to the computer system.

3.2.3 *Memory Management*: As the computer system has several layers of memory; primary storage, secondary storage and cache storage, OS manages the activities of these storage areas.

3.2.4 *Security*: The security module of the OS protects information of a computer system against unauthorized access.

3.2.5 *Task Accounting*: The OS also keeps track of time and resources, used jobs and users.

3.2.6 *Communication Management*: Coordination and assignment of compilers, interpreters and other resources of the various users of the computer system.

Tutor Marked Assignment

1. List 3 features of operating system
2. State 5 services/functions of operating system

4.0 Conclusion

In this unit, you have learnt the various features of the operating system. You have also learnt some of the functions of the operating system.

5.0 Summary

Some of the major functions of OS include memory management, device management, I/O management and task accounting.

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Silberschatz, A., Galvin, P. B., & Gagne, G. (2009). *Operating system concepts*(8th ed.). U.S.A: John Wiley & sons. pp. 1-972
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MODULE 4 UNDERSTANDING THE COMPUTER DESKTOP/WINDOW

UNIT 1: COMPUTER DESKTOP/ WINDOW ENVIRONMENT

CONTENTS

- 1.0 Introduction
- 2.0 Intended Learning Outcome (ILOs)
- 3.0 Main content
 - 3.1 The parts of the Window/ Desktop
 - 3.2 Parts of the start menu
 - 3.3 Computer Taskbar
 - 3.4 Notification Area and their Icons
 - 3.5 The Recycle Bin
 - 3.6 Log On and log Off computer
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor- Marked Assignment
- 7.0 Reference/Further Reading

1.0 Introduction

In Unit 3 of Module 2, we discussed computer storage devices. The computer storage devices are where data and information generated from the computer system are stored for present and after use. You can classify computer storage devices. In addition, you should be able to describe the function of each. Let us now examine where these stored data and information are created and displayed. This will take you to our next study computer desktop/ window environment and its features.

2.0 Intended Learning Outcome (ILOs)

At the end of this unit, you should be able to

- Discuss the parts of the start menu
- Explain Icon
- Identify the Taskbar
- Identify Notification Area and their Icons
- Locate the Recycle Bin
- Log On and log Off computer

3.0 Main Content

The computer desktop environment is a workspace where you can access any system components and applications you want to work with. Some of the components and applications are start menu, taskbar, Icons, recycle bin, restart, send your system to sleep and log off the computer.

Now, the question is how does computer desktop/window environment look like and what are their features?

3.1 Start Button/Menu: If you are looking for a program like Microsoft word in a computer desktop when you want to type a document, you should go to the taskbar and click on the **Start Button / Menu**. Also, you can turn off, restart, hibernate and send the computer to sleep when you click on this button to select the above instruction.

Windows Start Menu



3.2 Icons

When you switch on your computer after booting, the first thing you will notice on the desktop environment are small logos or pictures on the screen which are called Icons. These are programs or files you have installed and save on the desktop of the computer. You open or launch an Icon by double –clicking on it or right – click and click open.



Icons on the Desktop Screen

3.3 Taskbar

The task bar on the desktop appears across the top or bottom of the computer screen showing all the programs you have opened and allows you to click and switch between programs at the same time.

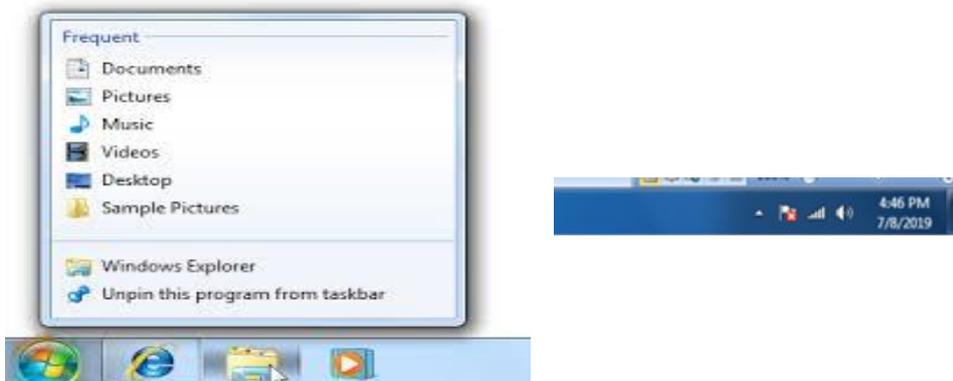


<https://www.computerhope.com/jargon/t/windows-taskbars.jpg>

3.4 Notification Area

The notification area is also known as a "system tray" because it is loaded by **SysTray.exe** and is located at the Windows Taskbar. It is usually at the bottom right corner of the desktop. It contains miniature icons for easy access to system functions such as antivirus settings, printer, modem, sound volume, battery status, and more. You click on any of these icons to view, access their details and also to control them. It also shows you message concerning computer updates.

Images of a Notification Area on a Desktop/window Environment



3.5 The Recycle Bin

The recycle bin in a computer that serves as a dust bin or refuse bin where you throw away materials you no longer need. The only

difference between a waste bin and the recycle bin in a computer system is that you can recall the information or data you deleted.



The Recycle Bin

3.6 Log Off

This is when there is no light and sound from the Central Processing Unit (CPU), and the monitor is black. When the computer is off, it does not respond to the movement of the mouse or the pressing of keys on the keyboard. That exactly indicates that the computer is off.

- **Log On:** when you press on the **Power Button** of a computer, the computer will start **Booting** for you to see images and the pointer (mouse) on the screen of the monitor. This indicates that the computer is on for you to give it commands or task to perform.
- **Sleep Mode:** Most computers have a mode called “**sleep, standby or suspend mode**” which is regarded as a power sparing state or minimal power mode which a computer enters when it is not in use but the monitor is on. You will wake the computer by touching any key on the keyboard, clicking the mouse or pressing the power button.

3.7 Control Panel

The control panel consists of system folder which controls the installation, removal and setting on the computer system. Some of the settings or adjustments on the computer desktop is done in the control panel. The settings are as follows;

- Installing / Uninstalling or addition/removal of hardware
- Installing / Uninstalling or addition/removal of software
- Desktop Setting
- Setting of Date and Time
- Setting you Password
- Setting the computer mouse
- Setting the Display Unit
- Adding and removing telephone and modem
- Setting keyboard properties
- Getting System information.

4.0 Conclusion

The knowledge of the desktop environment will enable you to master the programs and icons on the desktop and how to carry out library

operations using the computer. An understanding of the desktop will help you to adjust the settings on the input and output devices and the software according to the users' styles and needs.

5.0 Summary

You have been taught that the element of a computer desktop environment is a workspace where you can access any system component and applications you want to work with in a computer system. The desktop environment has many elements such as start menu showing programs, icons, taskbar and notification areas etc. To understand this unit better, read and practice with your laptop or desktop to identify these elements and their functions.

6.0 Tutor- Marked Assignment

1. What is a sleep mode in a computer?
2. Explain the functions of the Start Button/Menu?
3. What is the work of a recycle bin in the desktop environment?
4. List five functions that can be performed in the control panel of a computer?
5. What are the uses of the notification area and taskbar on the desktop of a computer system?

7.0 Reference/Further Reading

Ravichandran, D. (2008). Introduction to computers and communication. New Delhi: Tata McGraw- Publishing Company Ltd. 318 -333.

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MODULE 4**UNIT 2 : MANAGEMENT OF FILES AND FOLDERS****CONTENTS**

- 1.0 Introduction
- 2.0 Intended Learning Outcome (ILOs)
- 3.0 Main content
 - 3.1 Concept of File
 - 3.2 Create Files and save a new file
 - 3.3 How to Delete Files
 - 3.4 Concept of Folder
 - 3.5 Create a Folders and Save
 - 3.6 How to Delete Folders
 - 3.7 How to Copy Files and Folder into a Drive
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor- Marked Assignment
- 7.0 Reference/Further Reading

1.0 Introduction

In unit 1, you learnt that a computer desktop environment is a workspace where you can access any system components and applications you want to work with. Also, you should be able to identify the components and applications found on the desktop/window environment and their various uses or the task they perform. Now, the question is how and where do I perform some tasks like creating files and folders found on the desktop environment?

2.0 Intended Learning Outcome (ILOs)

At the end of this unit, you should be able to

- Define the concept of files
- Explain how to create a file and save a new file
- Demonstrate how to delete a file
- Identify and define what folder is
- Explain how to create a folder and how to save files in a folder
- Describe how to delete a folder
- Explain how to copy files and folders into a drive

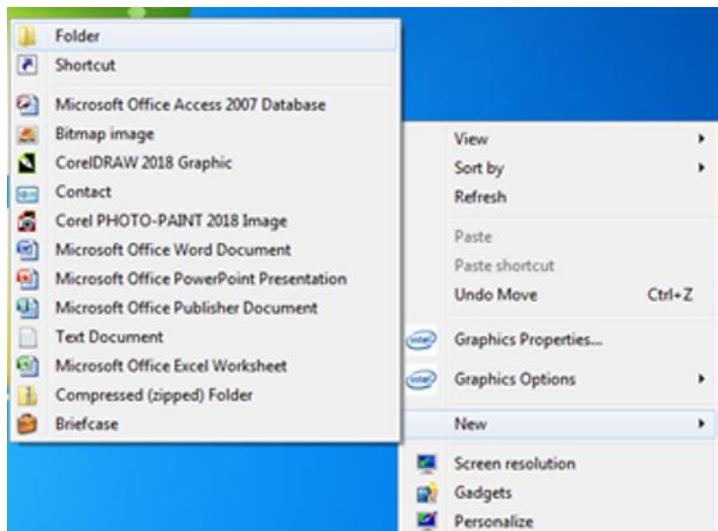
3.0 Main Content

3.1 Definition of Files

Files are collections of related data, programs or information which are stored under a single name. Computer stores information in files. There are different types of files namely text, graphics or sound.

3.2 Steps in creating a file

- I. **Navigate to the file you would like to create.** For example, *My Documents*.
- II. Right click an empty section of the folder window or desktop.
- III. Select "New" from the context menu if it is a folder you want to create.
- IV. Select the type of **file** you would like **to create, if it is a file.**
- V. Enter a name for the newly created **file or folder**. Open the new **file** to edit it.

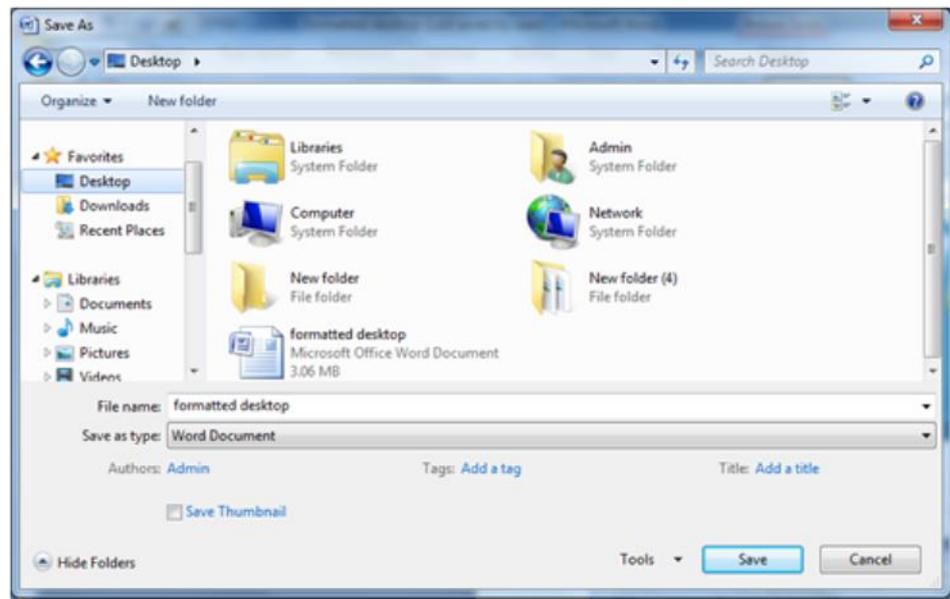
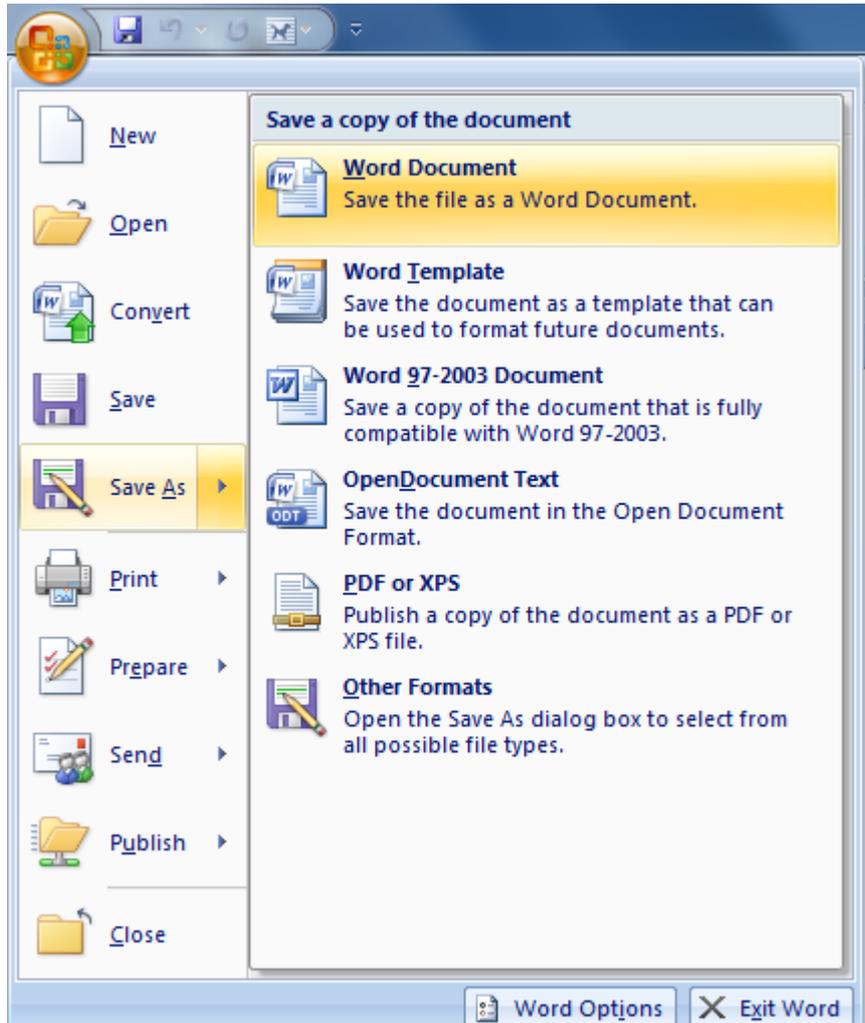


How to create a new File

For practice on how to create a file log on to <https://www.wikihow.com/Make-a-New-File-in-Windows>

3.3 How do I save a new file?

- I. Click the File tab.
- II. Click Save As.
- III. Choose a file location, such as One Drive or This PC to store your file.
- IV. In the File name box, enter a **new name** for the file.
- V. In the **Save as type list**, click the file format that you want to save the file into,
- VI. Click **Save**.



Dialog Box on how to save a new file

For your practical exercise on how to save a file visit, <https://help.gnome.org/users/gnumeric/stable/sect-file-save.html.en>.
OR <https://www.wikihow.com/Save-a-Microsoft-Word-Document>

3.4 What is a Folder?

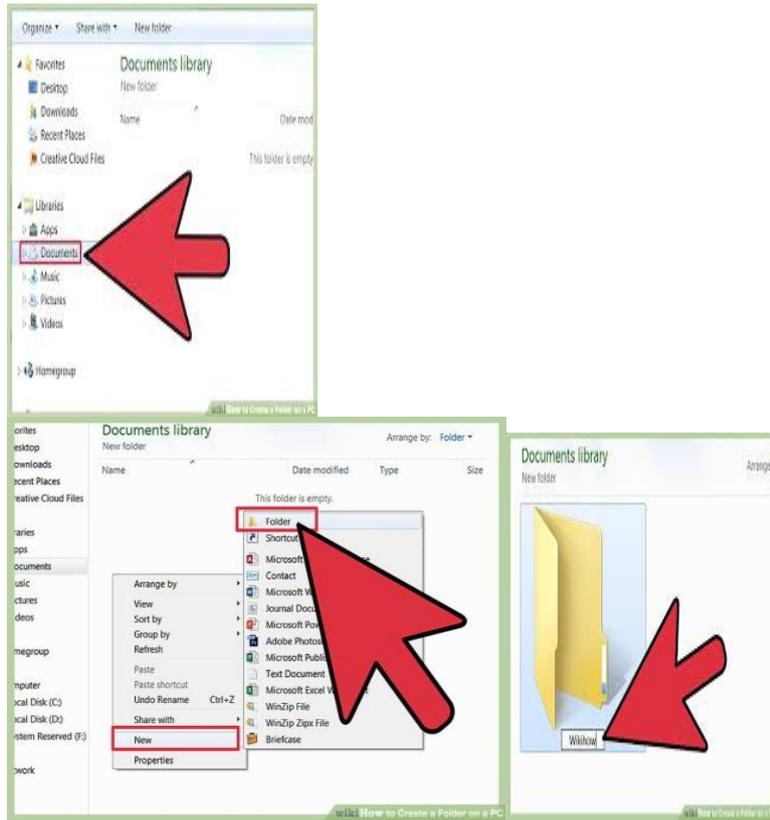
When you start using your computer, first, you create files which are seen on the desktop screen. As you continue to create the files, there will be a time when the files will be numerous or many on the desktop screen. You will ask yourself; how do I organise these files so that I can easily retrieve or bring similar files together? The only answer to your question is creating a folder. So, a folder is defined as a directory or special casing use in storing or organising files. Folders are “file manager”.



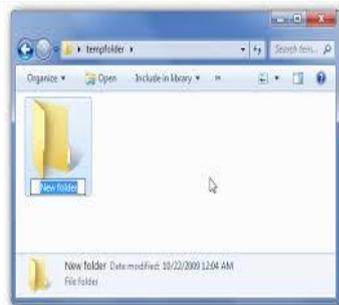
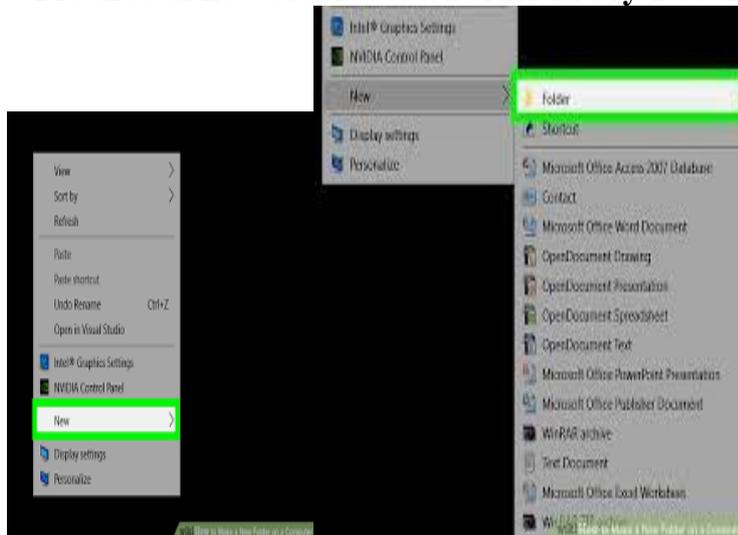
Picture of a folder

3.5 Steps in Creating Folders in a Desktop Environment

1. Go to the area where you want **to create the folder**, which can be done in my document but it is easy to create a folder on your computer's desktop. However, you can **create a folder** anywhere on your computer.
2. Right-click on a blank space on your desktop to open a drop-down menu on the desktop
3. Select New from the drop-menu
4. Click **Folder**, folder Icon appears on the desktop
5. Type in a name for your **folder**
6. Click **Save** or press **Enter**



Pictures of how to Create a Folder in My Document



Pictures of how to Create Folders in a Desktop Environment

Self-Assignment. For practice on how to create a folder visit <https://www.wikihow.com/Make-a-New-Folder-on-a-Computer> or https://www.youtube.com/watch?v=czV32F2jv_4.

3.6 Steps in Deleting a Folder

- i. Use your **mouse** to locate the **folder you want to delete**
 - ii. **Right-click** on the folder icon
 - iii. Select **Delete**
 - iv. A **dialog box appears** requesting whether you **are sure** that you want to **delete the folder or** send it to the **Recycle Bin**
 - v. Select **Yes** to confirm your task
 - vi. **The folder will be deleted and sent to recycle Bin.**
- OR**
- a. **Open your folder**
 - b. **Click** on the **folder icon**
 - c. **Select Delete this Folder** from the File and Folder Task Menu.

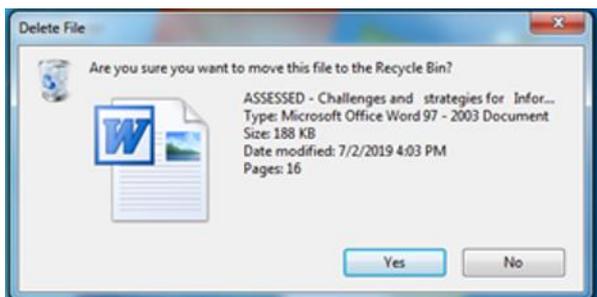
3.7 How to Delete Files and Folders

- i. **Select** either the **file or folder**,
- ii. Press on the **Delete key** on the keyboard
- iii. If you are using **Windows 8.1** and **Windows 10**, the file or the folder will be deleted immediately
- iv. But if you are using **widow 7** a **dialog box** will pop-up asking you if you are sure that you want to delete the file. When you click **Yes**, it will go to the **Recycle Bin** but when you choose **“No”** the action of deleting the file or folder will be cancelled.

OR

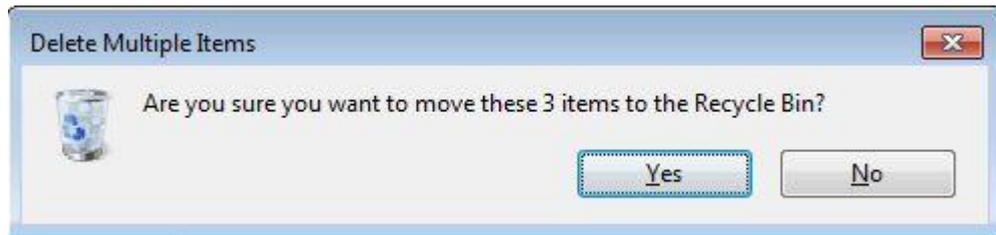
- a) **Right click** on your **mouse** and hold it
- b) **Select Delete** from the **right click menu**.

The file or folder will be deleted immediately if you are working with windows 8.1 and 10; Window 7 will always ask you a question if you are sure that you want to move the file or folder to the Recycle Bin.





You can also delete a multiple item by selecting them. Then this pop-up will appear on the screenshot below for you to select whether to continue with you action or not.



3.8 How to Copy Files and Folder into a Drive or into another location

- On your computer **window/Desktop**
- **Click** on the **File or Folder** you want to **Copy**
- On the **Edit Menu, Click Copy**
- Open the **Folder or Disk** where you want to put the **File or Folder**
- On the **Edith Menu, Click PASTE.**

OR

To Copy to a Floppy Disk.

- a. **Insert the Disk Drive**
- b. **Click** on the **File or Folder** you want to **copy**
- c. On the **File Menu**, use your **Mouse** to Point to **Send To**
- d. **Click** on the **Drive** on which the **file or Folder** will be **copied to**
- e. The **file or the folder** will be copied to the **Drive**

Note: the original file or Folder still remains in their location.

4.0 Conclusion

File and folders management are vital tools for librarians in the storage of information and records of library activities for easy access and effective retrieval of such documents for information dissemination to the desired users. When any information or data stored are given a file name, it makes it easier for identification. Also, folders enable you to organise similar files and store them in a folder bearing a name that is

common among the files, just as it is done with the classification of books in the library.

5.0 Summary

What you have learnt in this unit is the definition of files and folders. You can now create files, folders and save each of them. Also, you learnt how to copy files and folder into a drive and the steps to follow whenever you want to delete a folder or a file. For further understanding read the recommended text books below.

6.0 Tutor- Marked Assignment

1. Explain the steps in opening and closing of programs under window desktop?
2. Outline the various steps to be followed to accomplish the following operation with regards to files and folders
 - a) To create a file
 - b) To save a file
 - c) To create a folder
 - d) To rename a folder
 - e) To delete a folder
3. What are the procedures of Copying Files and Folder into a Drive or into another location?
4. What is a file?
5. Explain the functions of a folder

7.0 Reference/Further Reading

Adebayo, P. A. (2011) *Computer Science for undergraduates and professionals 1*. Abuja: Danladi Press Ltd, 78-82.

Bhatnagar, S. (2008). *Textbook for computer science for class XI*.
https://books.google.com.ng/books?id=bjE5EHw35DkC&pg=PA93&lp_g=PA93&dq=MANAGEMENT+OF+FILES+AND+FOLDERS+textbook&source=bl&ots=0CmQUzaCY6&sig=ACfU3U1d5N9fePwfZxrIYlu5ZiIwhuGHvw&hl=en&sa=X&ved=2ahUKEwiawe6PndHnAhWk4IUkHQCODJg4ChDoATAGegQICBAB#v=onepage&q=MANAGEMENT%20OF%20FILES%20AND%20FOLDERS%20textbook&f=false

Ravichandran, D. (2008). *Introduction to computers and communication*. New Delhi: Tata McGraw- Publishing Company Ltd. 287 – 303.

Parson, J. J. and Oja, D. (2004). *New perspectives on computer concepts-7th ed.* USA: Course Technology Thomson learning inc, 78 – 89.

MODULE 5 BASIC COMPUTER SKILLS

UNIT 1: MICROSOFT WORD

CONTENTS

- 1.0 Introduction
- 2.0 Intended Learning Outcomes
- 3.0 Main Content
 - Basic Features of MS Word
 - Creating and saving MS Word document
 - Inserting tables in MS Word
- 4.0 Conclusion
- 5.0 Summary
- 6.0 References/Further Reading

1.0 Introduction

Microsoft word, also called MS Word, is an application package resident in Microsoft Office Suite. Microsoft office suite is a suite of office productivity software that runs on Windows and Macintosh operating systems. The suite offers different application platform that caters for office and business needs. In this unit, we shall take a look at the MS Word, which is word processing software that allows you to create letters, reports, newsletter, tables, brochures and web pages. Microsoft office has several versions, each with improvements over the previous versions and there is compatibility among the versions. Now let us take a look at what you are expected to learn at the end of this unit.

2.0 Intended Learning Outcome (ILOs)

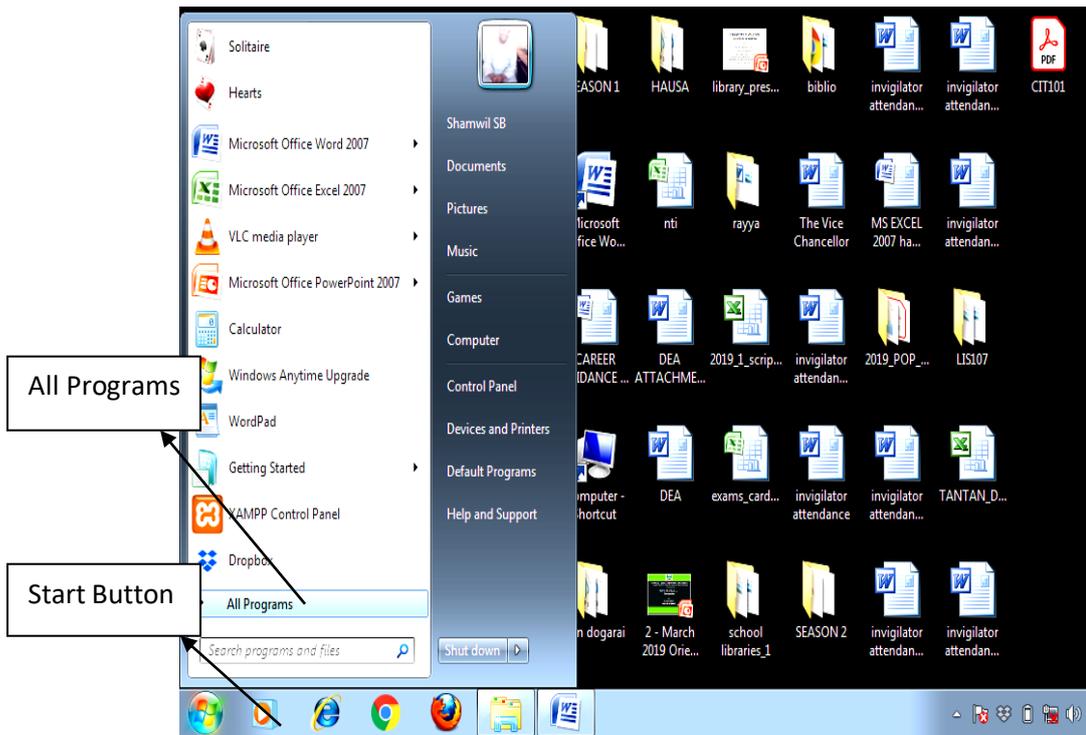
By the end of this unit, you are expected to be able to:

- i. Open, create and save a word document
- ii. Identify the basic features of MS Word documents
- iii. Insert tables in a word document

3.0 Main Content

3.1 Basic Features of MS Word

To identify the basic features of MS Word, we need to load (open) the application on our computer. To do that, you click on the **Start** button on the Desktop, select **All Programs**, locate and click on Microsoft Office and then select Microsoft Word. (For this tutorial, we are using Microsoft Office 2007 version). This process is indicated in Figure 1 below.



Once you click on All Programs, the computer will display installed applications on the system, click on Microsoft Office and then Microsoft Office Word 2007. The MS Word environment is displayed in Figure 2 below.

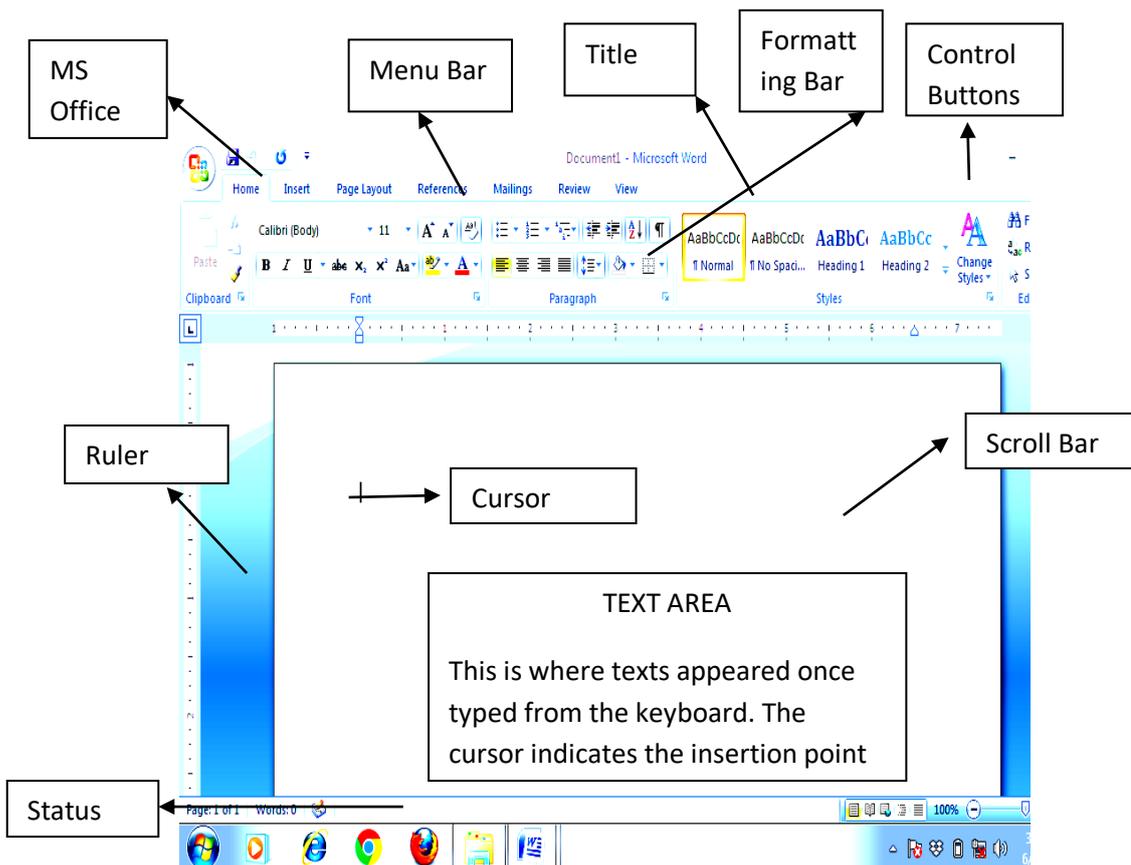


Figure 2: MS Word environment

Figure 2 above indicates some common features of MS Word.

Title Bar: This bar is located at the top of the MS Window and it indicates the title (name) of the document. In this case, the documents have been given a default name *document1*. This means that the document is temporarily stored in RAM, and would be lost on the incidence of a power surge.

Menu Bar: This bar contains menus such as files, insert, etc. A menu usually consists of related commands/items grouped together under a single item. A drop-down menu allows users to select a single command/operation from a list of command. When a drop-down menu is inactive, it usually displays a single value.

MS Office Ribbon: This feature first appeared in MS Office 2007 version and subsequent versions. It is a command bar that organizes an application's features into a series of buttons/tabs at the top of the application window. It provides quick access to commands.

Formatting Bar: This is a toolbar that gives users the ability to format the texts and other graphics in MS Word. Formatting includes **Justification** which determines where a text appears on the page (e.g. left, right or centre), making a text **bold** (I know you noticed how "bold" was written in thick letters), or making a text appear in *italics* (again notice how the word "italics" is written). Formatting also allows the user to control the size and type of font.

Control Buttons: These buttons allow the user to **minimize**, **restore down** or **close** a document window. Minimizing takes a document to the bottom of the screen; restore down reduces the document to about half the screen while closing means exiting the document completely.

Cursor: This is the text insertion point. It shows where texts would appear once typed from the keyboard.

Text area: This is where texts and other graphics appear in the documents.

Activity

1. Move your mouse over these buttons and click
2. Observe and see how the buttons behaved under various commands

3.2 Saving Documents

Now all the work we have done in this MS Word document has not been saved. Should there be a power outage and the computer went off, all the

data and work would be lost! So, it is important to learn to save your work. Remember, the document is given a default name *document1*.

To save the document, click on the MS Ribbon at the top right corner of the page and select Save As from the command options, as indicated in Figure 3 below.

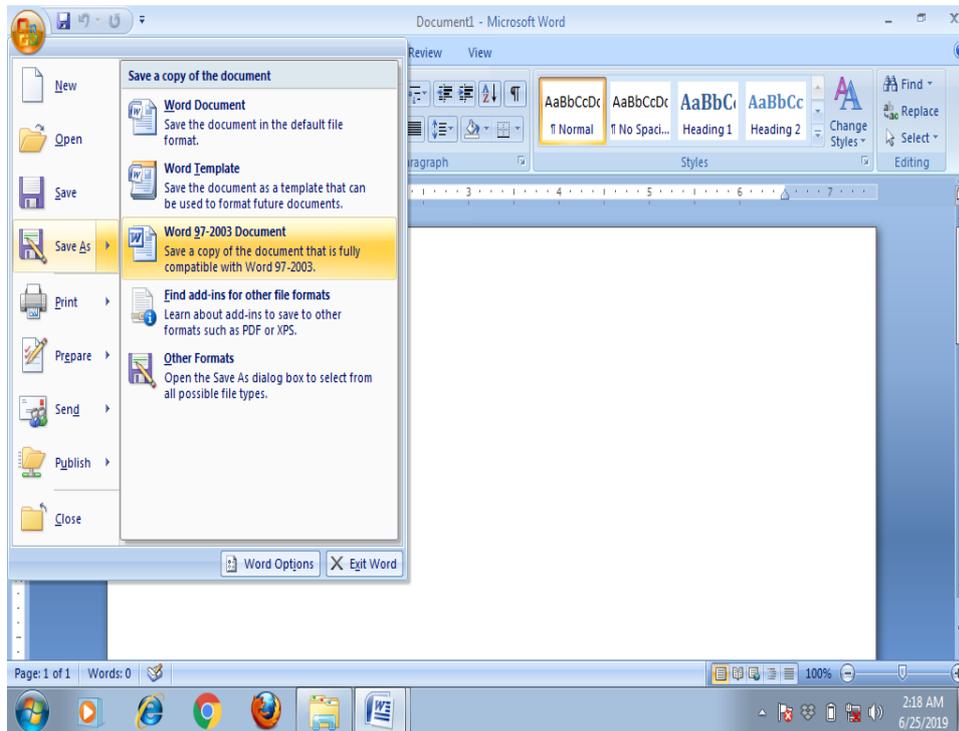


Figure 3: Saving documents

Once you click on Save As buttons, further options of saving are displayed. Choosing “Word 97-2003 Document” means that the previous version of MS Word would be able to open and load your document. After selecting the appropriate command, a dialogue box for the Save As appears, as in Figure 4 below.

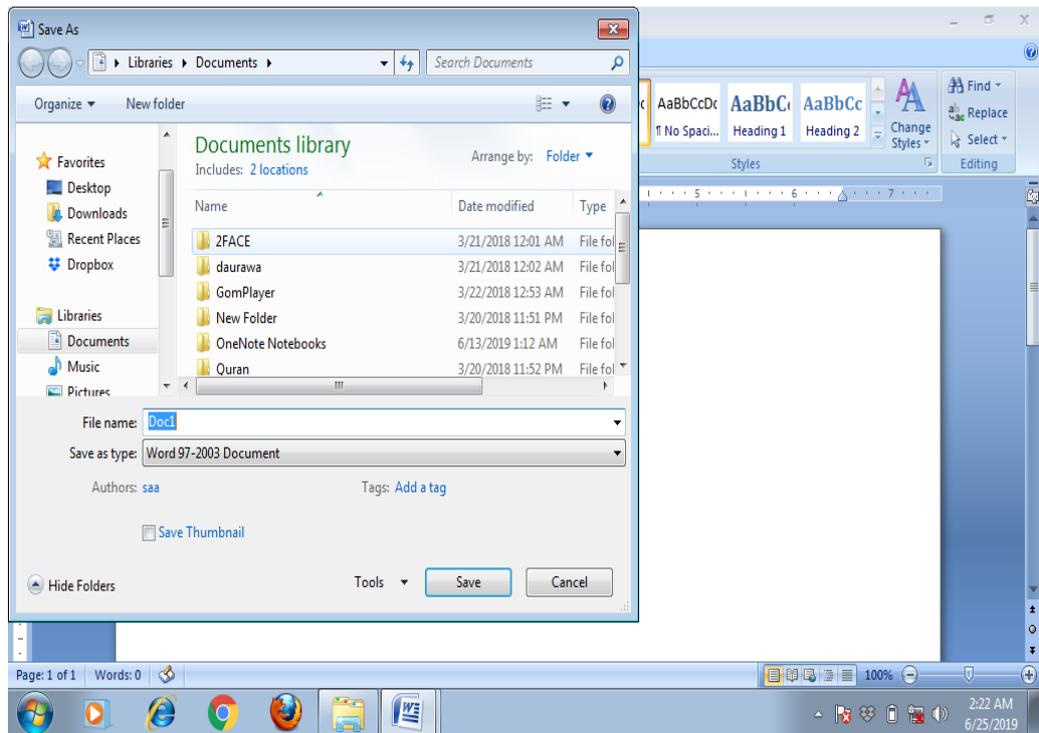


Figure 4: Save As Dialogue Box

You would notice that in the dialogue box above, there is a default file name *Doc1* in the file name bar. Once you click on the default name, you would be able to type the file name of your choice. Although there is no general convention regarding how files can be named, most professionals used the content of the file to determine its name. For example, a file containing new books arriving into the library for the year 2019 can be named *new_arrivals_2019*. You would see that characters and numbers can be used as file names. Also, underscore character (*_*) can be used as part of the file name, space can also be used as part of the file name, our new arrival file can thus be *new arrival 2019*. Characters such as */, ?, *, |, <* and *>* are not accepted as part of file names.

Files are saved in **Folders** and a folder may contain several other folders and files. To select the folder in which you want to save a file into, select from the list of available folders in the dialogue box pane on the right, scroll and locate the folder and then click on open, type the file name and click Save button. Once you click on Save, observe the title bar and noticed that it bears the new name of the document.

3.3 Inserting Tables in MS Word Document

MS Word accepts the tabulation of text and generally allows the insertion of pictures, images and diagrams. Some of the pictures are already preinstalled in the system and users can use them when the need arises. Other images and pictures can be scanned into the system by the user. To insert a table into a Microsoft Word, click on the **Insert** menu

from the menu bar and select tables' then select **Insert Table** tab, as indicated in Figure 4 below.

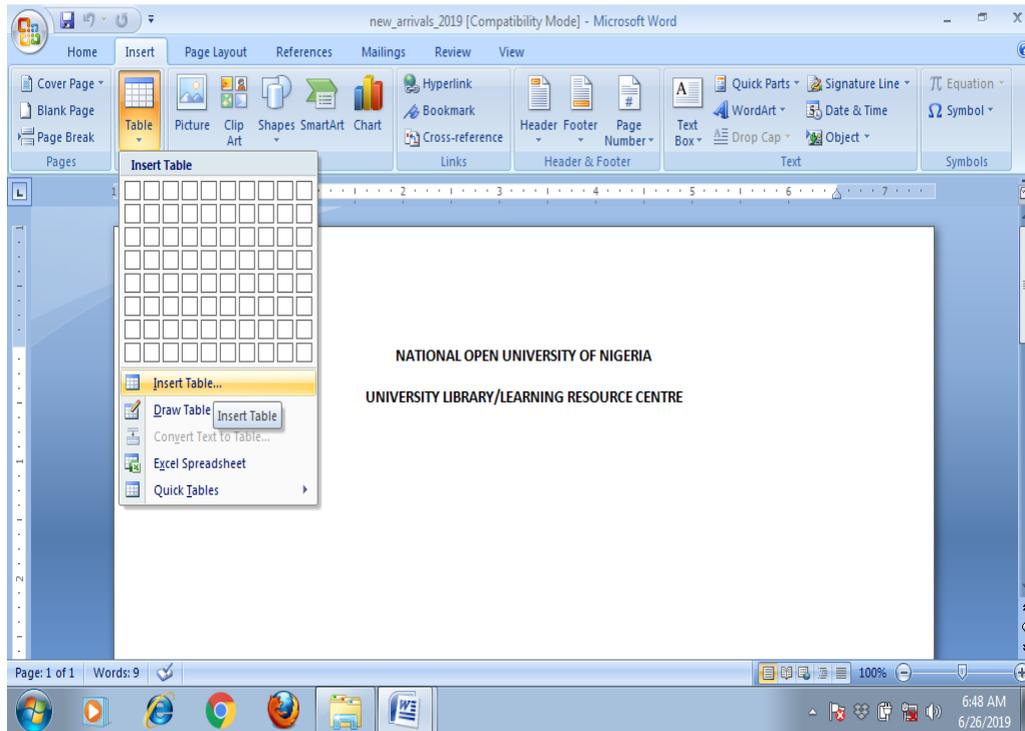


Figure 4: Inserting a table into MS Word

Once you click on the **Insert Table** tab, a dialogue box appears, asking you to specify the number of columns and rows for your intended table. The columns and rows intersect to form **cells** and the lines that indicate boundaries of the cells are **gridlines**. The dialogue box for column and row selection is pictured in Figure 5 below.

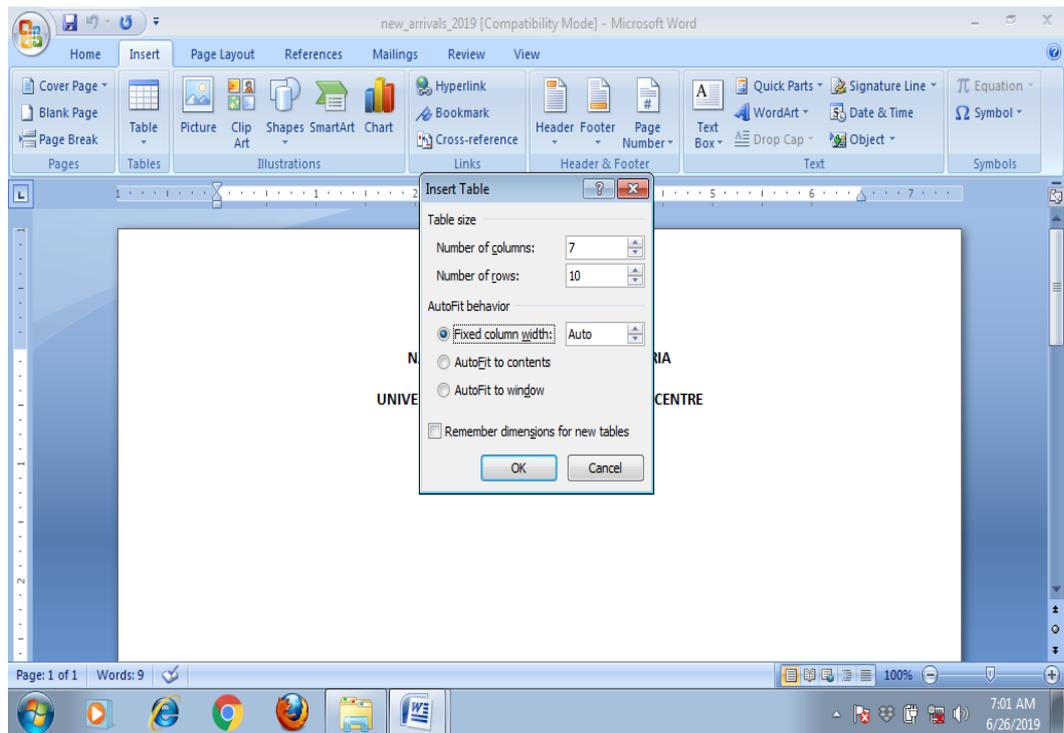


Figure 5: Selecting column and Rows

Here, we want the table to have seven (7) columns and ten (10) rows. Once we are done specifying the numbers of column and rows, we click on the **OK** button from the dialogue box and our table would appear on our document, as shown in Figure 6 below.

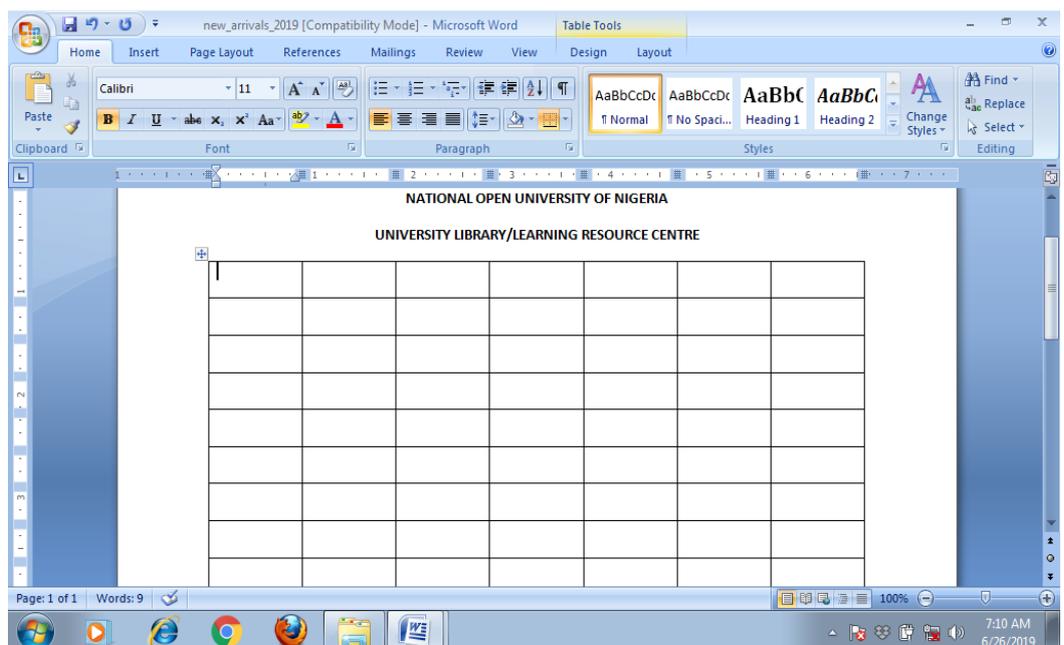


Figure 6: Table inserted into the document

The table is now inserted into the document. Movement between cells of the table is done through the use of the keyboard's direction keys or tab key. The gridlines can also be adjusted by moving them to and fro or left

and right. To do this, move your cursor over the gridline you want to adjust until the cursor becomes a straight line with arrowheads facing opposing directions, **click and hold** and then drag the line to the new position, as in Figure 7 below.

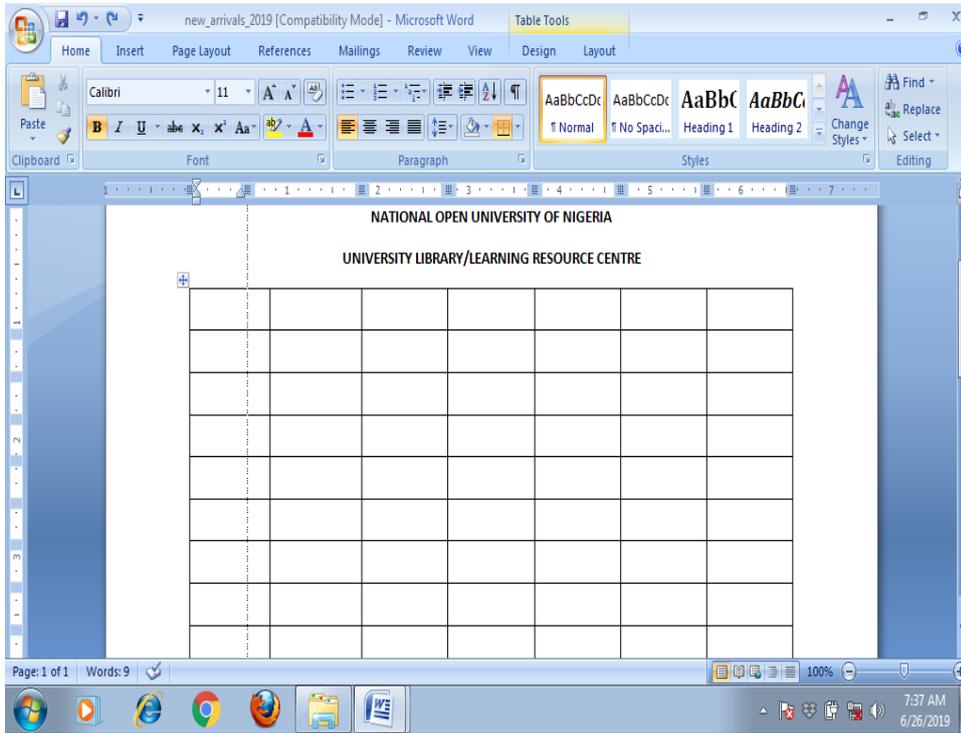


Figure 7: Adjusting gridlines

You would notice the dotted line as you move the main line to its new position. Once the line is in its desired position, release the mouse button.

Let us now enter some text into the table, as in Figure 8 below.

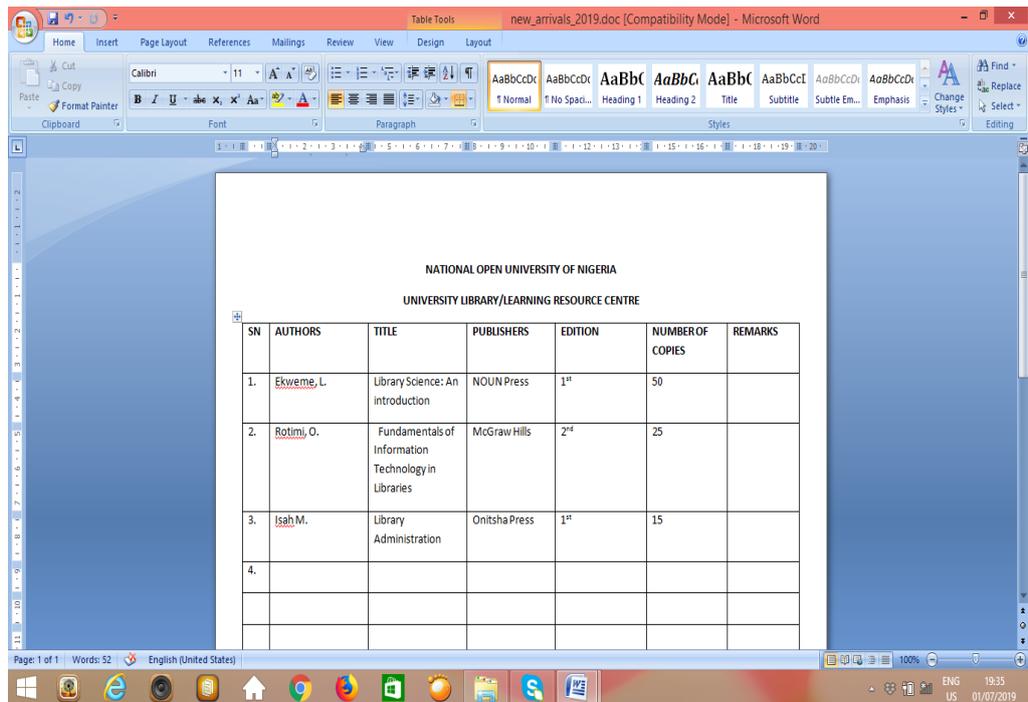


Figure 8: Inserting text into the table

Although you saved previously using the Save As button, all the activities you have done after that have not been saved and would be lost in the event of a power surge. To save the work we have added to the MS Word document, we can use the MS Ribbon button and click on **Save** command, or simply use a keyboard shortcut by pressing **Ctrl + S** keys on the keyboard.

Tutor Marked Assignment

1. Enumerate the steps of inserting tables in MS Word document
2. State 5 features of MS word

4.0 Conclusion

MS Word is a powerful word processing software that is used in the preparation of letters, memos, reports etc.

5.0 Summary

In this unit, you have learnt about the MS Word. You have been exposed to loading MS Word, saving MS Word Documents and inserting and manipulating tables in MS Word.

6.0 References and Further Reading

Frandsen, T. L. (2010). *Microsoft office word*. Torben Lage Frandsen & Ventus Publishing ApS.

<https://library.ku.ac.ke/wp-content/downloads/2011/08/Bookboon/Office-programs/microsoft-office-word.pdf>

FME/NTI, Kaduna (2018). 2018 SGDS workshop manual for primary school teachers on information and communication technology (ICT). KADUNA: National Teachers' Institute Press.

MODULE 5

UNIT 2: MICROSOFT EXCEL

CONTENTS

- 1.0 Introduction
- 2.0 Intended Learning Outcomes
- 3.0 Main Content
 - 3.1 Creating and saving MS Excel Workbook
 - 3.2 Basic Features of MS Excel
 - 3.3 Simple calculations (sum and average) using MS Excel
- 4.0 Conclusion
- 5.0 Summary
- 6.0 References/Further Reading

1.0 Introduction

In the previous unit, you have learnt the basics of MS Word. In this unit, you are going to learn the basics of MS Excel.

2.0 Intended Learning Outcome

By the end of this unit, you should be able to:

- i. Identify the basic features of MS Excel
- ii. Create and save MS Excel workbook
- iii. Calculate sum and average using MS Excel

3.0 Main Content

Microsoft Excel is electronic **spreadsheet** application software. The spreadsheet comes from the large pieces of grid paper used for accounting purposes and tracks business expenses and income. The manual spreadsheets were large and used for recording accounting items and the amount for a business. Calculations were separately done with calculators. Excel, therefore, combine the large piece of grid paper and the calculator into one application. This allows text and number to be entered and displayed in **cells** on an electronic grid. These cells can then be used to build equations, draw graphs, charts and create reports.

3.1 Creating and Saving MS Excel Workbook

To create MS Excel document, we follow the same procedures we used in creating MS Word document since both of the applications reside in MS Office suite. Remember the procedure? It is **Start Button >> All Programs >> Microsoft Office >> MS Excel 2007**. Once you follow the procedures above, MS Excel environment should be open in your desktop.

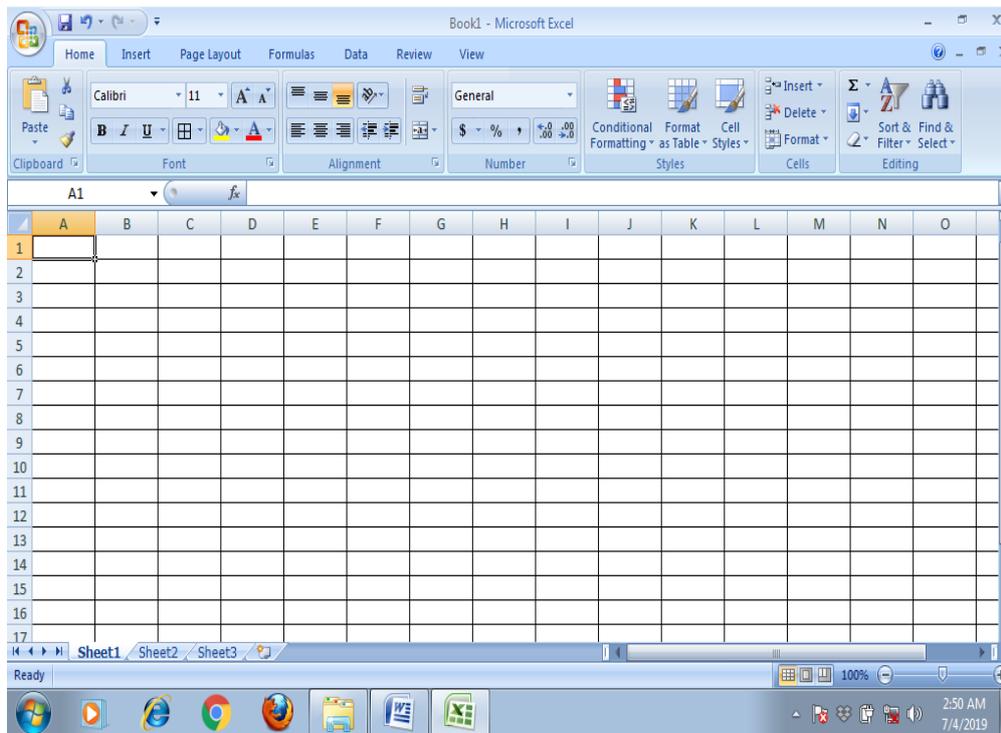


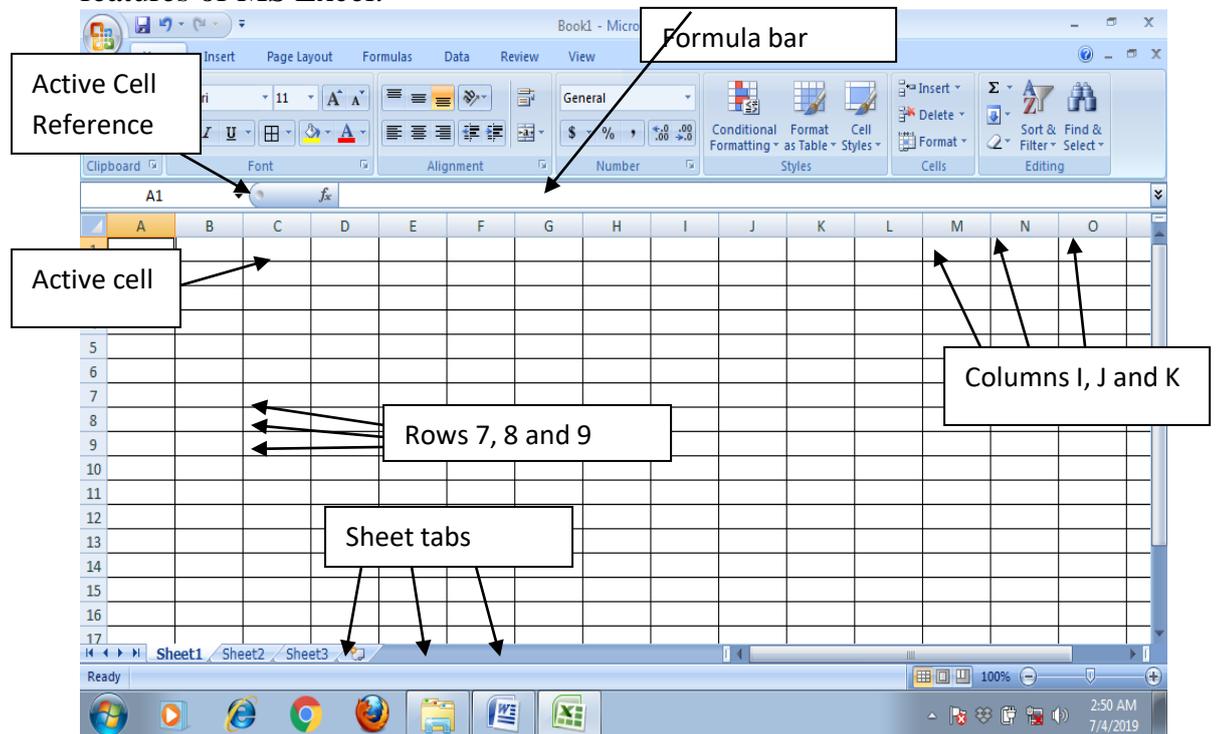
Figure 9: MS Excel window

You will notice a lot of similarities and differences between MS Excel and MS Word. The first major difference is the **gridlines** that appear on the MS Excel while MS Word has a plain text area. You will also notice that the title bar is given a default name **Book1**. This is because excel documents are referred to as **workbook**. Now let us save the workbook before we proceed to the basic features of MS Excel.

To save the workbook, click on the MS Office Ribbon at the top left corner and select **Save As** button, select the folder and file name and then click **Save** button on the Save As dialogue box. Once you have done that, you will notice that the **Book1** on the title bar is replaced with the new name.

3.2 Basic Features of MS Excel

MS Excel has several features noticeably different from MS Word and other MS Office applications. Figure 10 below shows some of the basic features of MS Excel.



Basic features of MS Excel

Figure 10 above shows the basic features of MS Excel. Now let us look at the identified features and see the functions they perform.

The cell is the grid intersection where the column and row meet. A cell is the basic unit of a worksheet where data is entered. You would notice from Figure 10 above that columns are numbered using alphabets (A, B, C, D etc) while rows are numbered using Arabic numeral (1,2,3,4 etc). A cell name contains the alphabet on the column and the number on the row. For example, **B3** refers to the intersection where column B and Row 3 meets. This allows the user to make a unique reference to cells in the worksheet.

Workbook excel document is referred to as workbook and a workbook contains several worksheets. In Figure 10, you would notice the three sheets name *sheet1*, *sheet2* and *sheet3* at the left bottom corner of the workbook. These sheets can be renamed and a number of them can be added by clicking the add sheet button. To rename a sheet, right-click on the sheet and select **Rename** button, type the new name and press **Enter** key on the keyboard.

The active cell is the cell that currently indicates the insertion point of the data and is usually darker around the borders.

An active cell reference is a name space where the name of the active cell is displayed. In figure 10 above, **A1** is displayed in the active cell reference.

The column is the vertical line of data identified by letters.

The row is the horizontal line of data identified by numbers.

The formula bar is the location where the cell actual content is displayed.

Activity

1. What is the difference between workbook and worksheet?
2. State the procedure for renaming excel worksheet

3.3 Performing Calculation using MS Excel

Now that we have seen the basic features of MS Excel, let us now perform some simple calculations using it. Let us consider the TMA and Exam scores of 10 students in the Department of Library and Information Science. We would use MS Excel to calculate the overall score (that is TMA + exam) and calculate the average performance of the students. We now design our worksheet as in Figure 11 below.

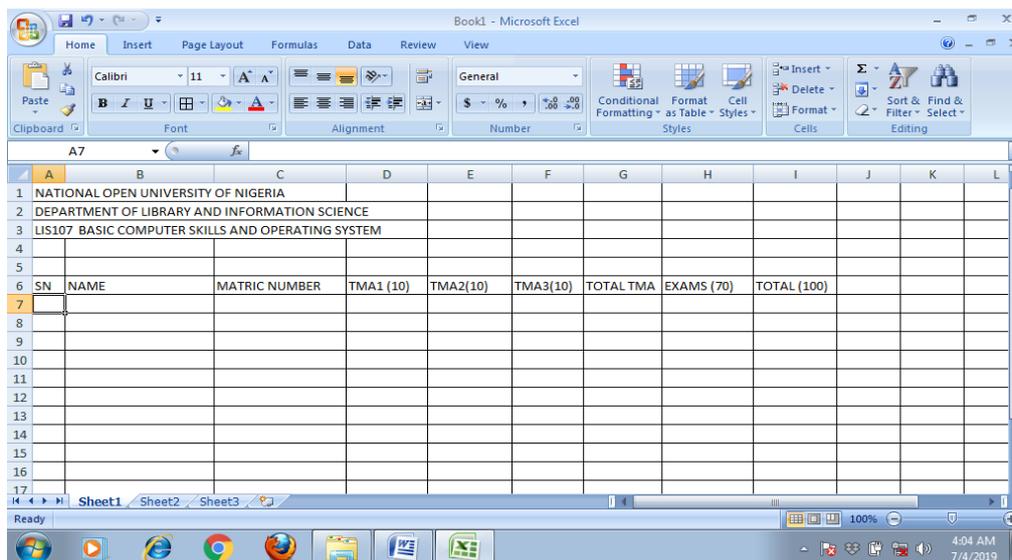


Figure 11: Excel Calculations

You will see that we have several columns for student name, matriculation number, scores for TMA1, TMA2 and TMA3. We also have columns for total marks scored in the 3 TMAs (Total TMA), exams score (70), and finally total scores (100). These columns are labelled D6, E6, F6, G6, H6 and I6 respectively.

Now let us enter the names and scores for the students that did TMA1, TMA2, TMA3 and Exams. To move between the cells, we either use direction keys from the keyboard or click on the cell where we want our data to be.

SN	NAME	MATRIC NUMBER	TMA1 (10)	TMA2 (10)	TMA3 (10)	TOTAL TMA	EXAMS (70)	TOTAL (100)
1	KABIR YUSUF	NOU123456789	9	9	8			59
2	JOHN GRACE	NOU987654321	6	7	8			37
3	SAMUEL BATURE	NOU975323578	3	5	7			29
4	ISAH MUSA	NOU678901234	6	8	9			38
5	OLATUNJI LUKMAN	NOU345678901	7	6	7			42
6	ADESANMI PHILIP	NOU456789032	9	10	9			52
7	MARYAM DAHIRU	NOU654321897	5	8	7			47
8	SAIDU BULUS	NOU987651234	6	7	7			34
9	ISREAL DAVID	NOU564321789	2	3	5			22
10	OBINNA IWU	NOU675432123	3	6	5			18

Figure 12: MS Excel with data

You would notice that G6 and I6 (Total TMA) and (Total 100) are empty. That is because you want to use excel to generate the values for these columns. Before you begin your calculations, let us look at the rules that apply when performing a calculation using MS Excel.

- i. Calculations always begin with an equal sign (=).
- ii. Brackets are used when working with functions.
- iii. Cell addresses are used in formulas instead of values.
- iv. (+) is used for addition, (-) is used for subtraction, (*) is used for multiplications and (/) is used for divisions.

Functions in MS Excel are embedded formulas predefined to perform calculations. You are going to be using two such functions. The SUM function which adds a given value and AVERAGE function which calculates the average of a given value.

Let us now calculate the total TMA score for the first student.

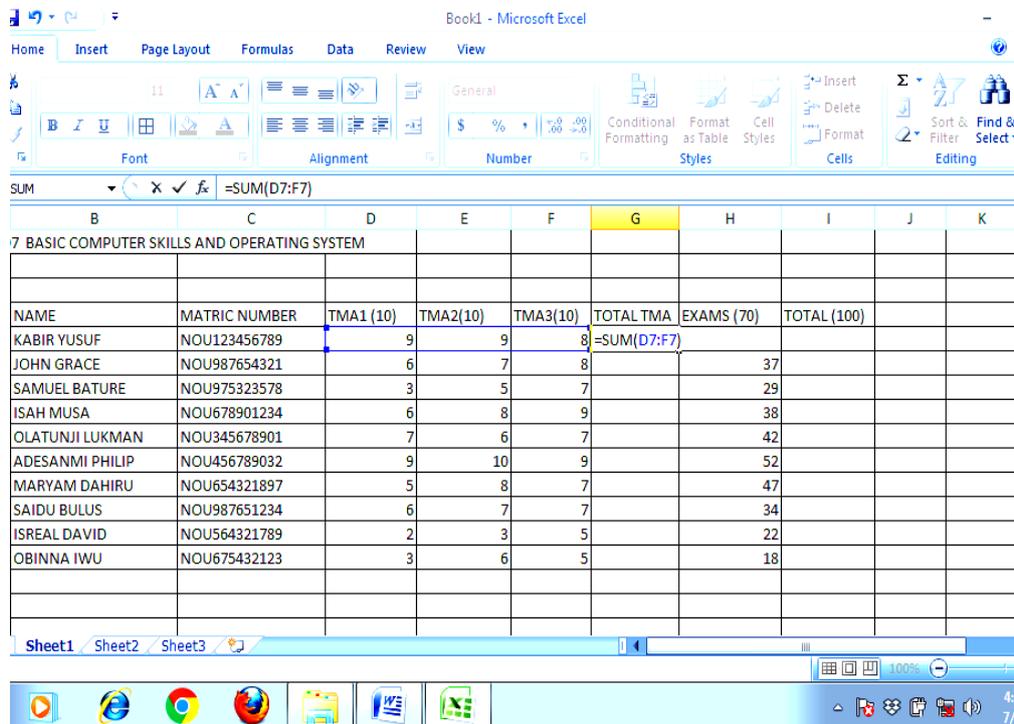


Figure 13: MS Excel SUM function

You would notice that G7 is active and we typed the function of SUM to calculate the TMA scores for the first student. The =SUM (D7: F7), when broken down, it is telling MS Excel to add the content of the cells D7 to F7 and write the value (result) in G7. The cells ranging from D7 to F7 are selected in blue lines as indicated in Figure 13 above. Once the function is inserted correctly, we press the **Enter** key on the keyboard and the value appeared as shown in Figure 14 below.

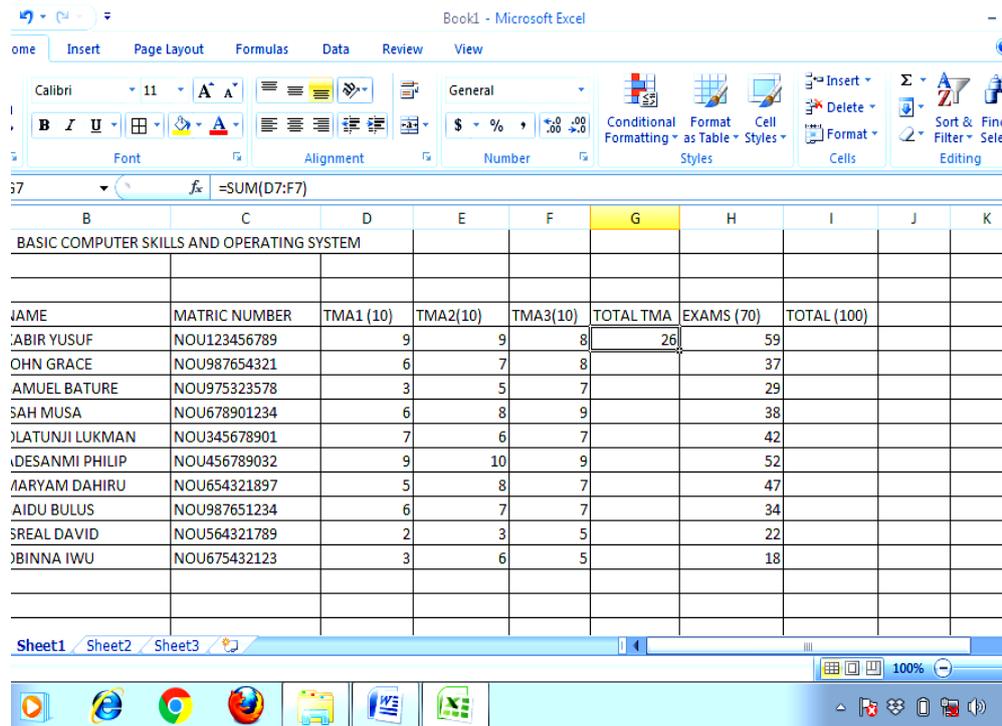


Figure 14: Value added by SUM function

You now have your value added in the G7 which is **TOTAL TMA**. To find the total TMAs scores for the remaining students, we need not write the function for each and every one of them, rather we simply copy the content of G7 and paste it on the Excel to sum up the TMA scores of the students. To copy the G7, we make the cell active and then select all the cells under it and paste as shown in Figure 15 below.

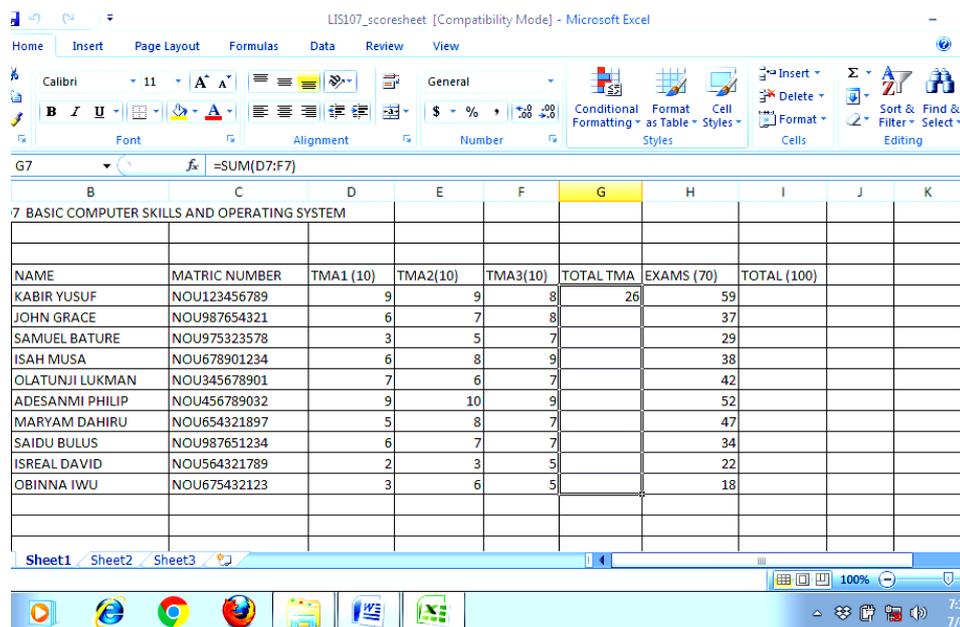


Figure 15: Copying SUM function

Once it is done, your worksheet should look like Figure 16 below

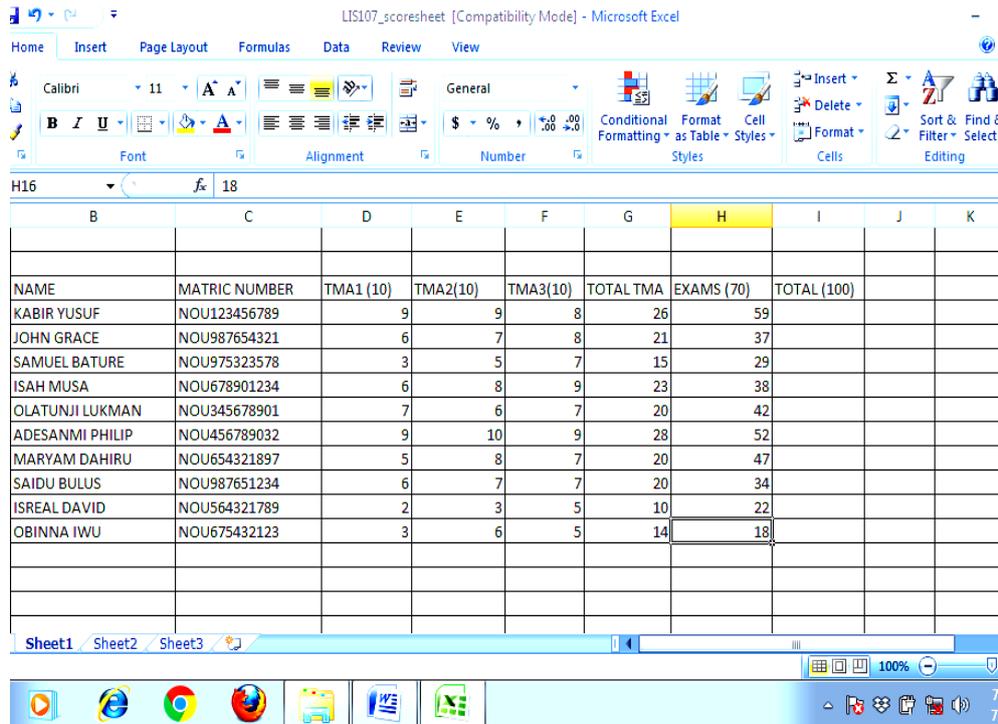


Figure 16: SUM function calculates TMAs score for all the students

Now we need to use the same pattern to add the students’ TMAs and Exam Score in order to obtain the overall mark in the course. So, we add G7 and H7 to get the overall marks for the first students. Once it is done, your worksheet should look like Figure 17 below:

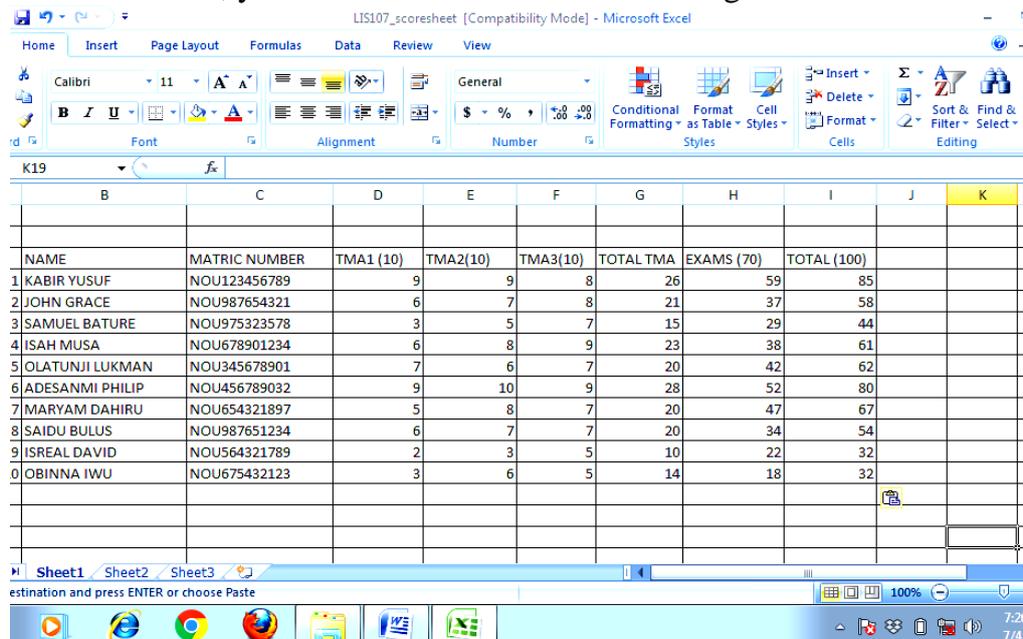


Figure 17: SUM function used to calculate overall scores of the students

Now to calculate the average score of the students, we use the AVERAGE function which adds all the student's overall scores and divides it by the number of the students. AVERAGE function is written as =AVERAGE (value1:value2).

We use cell I18 to compute the average score as in Figure 18 below

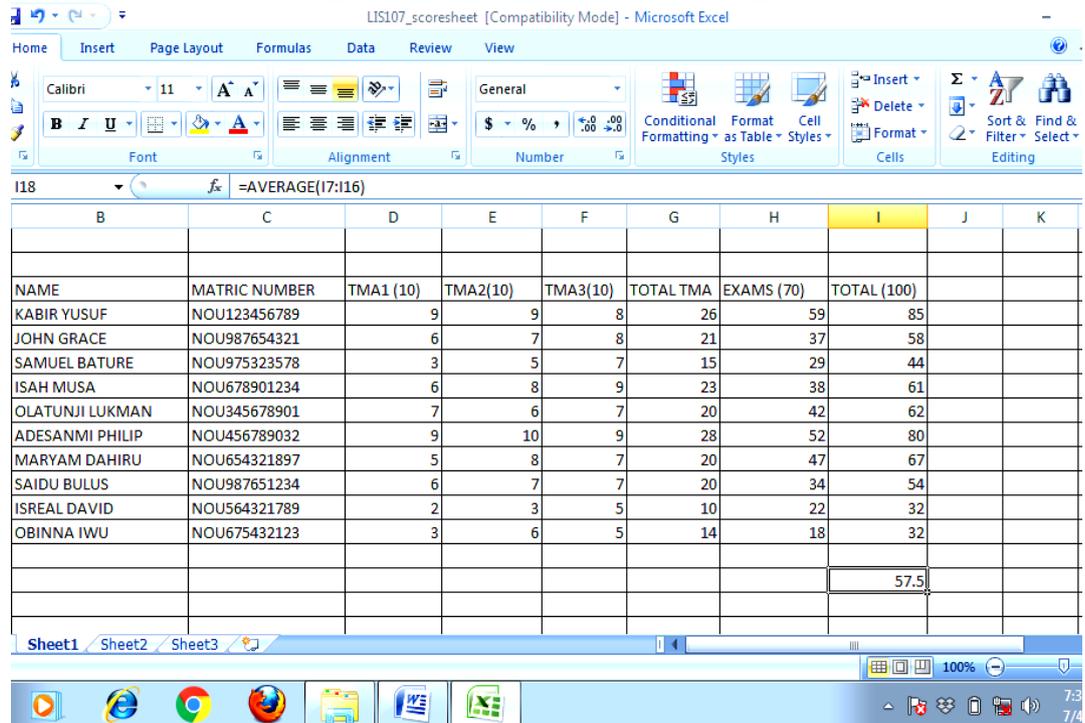


Figure 17: Computing average using AVERAGE function

Tutor Marked Assignment

- i. Compute the average score for TMA1
- ii. Compute the average score for TM2

4.0 Conclusion

You have learnt about the basics of MS Excel and how it can be used to perform some calculations.

5.0 Summary

MS Excel is an electronic spreadsheet application embedded with functions to perform calculations, generate reports, design charts etc.

6.0 Reference and Further Reading

FME/NTI, KADUNA (2018). 2018 SGDS workshop manual for primary school teachers on information and communication technology (ICT). KADUNA: National Teachers' Institute Press.

Hassan, A. (2017). Introduction to excel / what is Microsoft Excel used for and features? <https://www.infoapper.com/articles/microsoft-excel-tutorial/introduction-to-excel/>

Moffat, S. & The Mouse Training Company (2011). *Excel 2010 Introduction: Part 1 formulas, functions and formatting*. Stephen Moffat & Ventus Publishing ApS.

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MODULE 5

UNIT 3: MICROSOFT POWERPOINT

CONTENTS

- 1.0 Introduction
- 2.0 Intended Learning Outcome
- 3.0 Main Content
 - 3.1 Creating and saving MS PowerPoint document
 - 3.2 Basic Features of MS PowerPoint
 - 3.3 Presentations Using MS PowerPoint
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Reference and Further Reading

1.0 Introduction

In the previous units, you have learnt about MS Word and MS Excel, now you will learn the MS PowerPoint. MS PowerPoint is a presentation software incorporated in MS Office Suite. It is widely used by educators, trainers and businessmen as a persuasion technology. Now let us take a look at the Intended Learning Outcome of this unit.

2.0 Intended Learning Outcome

By the end of this unit, you would be able to:

- i. Create and save MS PowerPoint document
- ii. Identify the basic features of MS PowerPoint
- iii. Use MS PowerPoint for presentations

3.0 Main Content

3.1 Creating and Saving MS PowerPoint document

By now, you are familiar with open and saving documents in both MS Word and MS Excel. To open and save MS PowerPoint (also called MS PPT), click on the **Start** icon on the desktop, click on **All Programs**, select **MS Office** and click on **MS PowerPoint 2007**. (Start icon >> All Programs >> MS Office >> MS PowerPoint 2007). Once you follow the procedure correctly, the MS PowerPoint window should be displayed on your desktop, as in Figure 18 below.

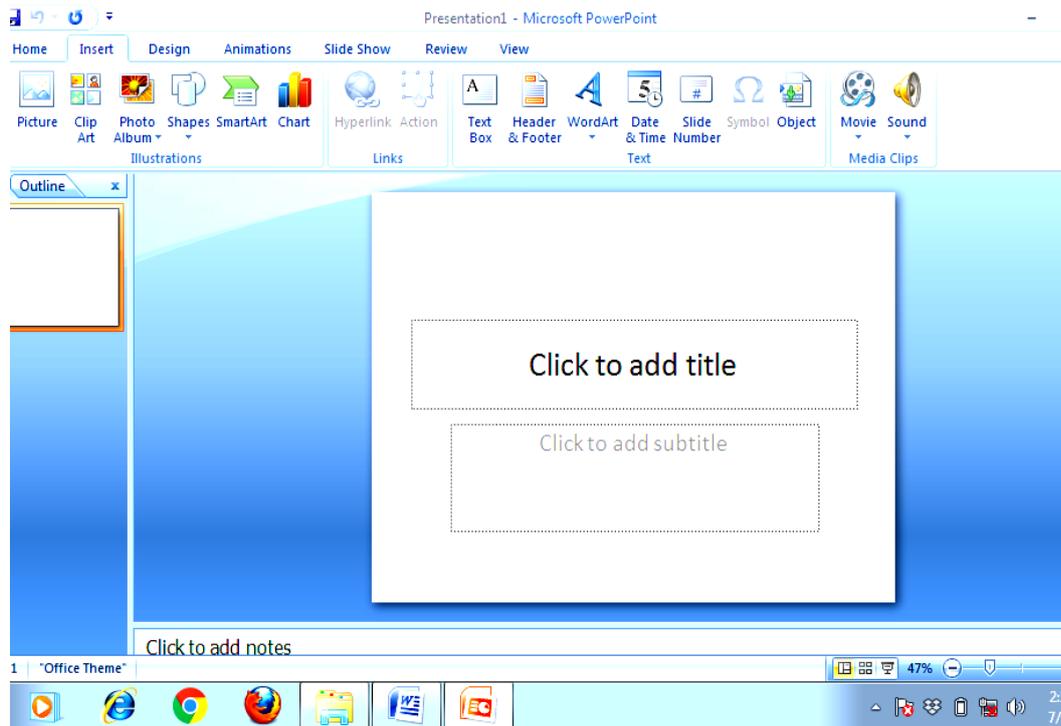


Figure 18: MS PowerPoint window

Now to save our document, we follow the same procedure outlined in saving MS Word and MA Excel documents. Click on Officer Ribbon, select **Save As** command, select the intended folder and type in the file name and click **Save** button on the Save As dialogue box. Once your document is saved, the name should appear on the title bar.

3.2 Basic Features of MS PowerPoint

Now let us look at the basic features of MS PowerPoint. You would notice that it has a title bar, menu bar and formatting bar as MS Word. Figure 19 below shows some basic features of MS PowerPoint.

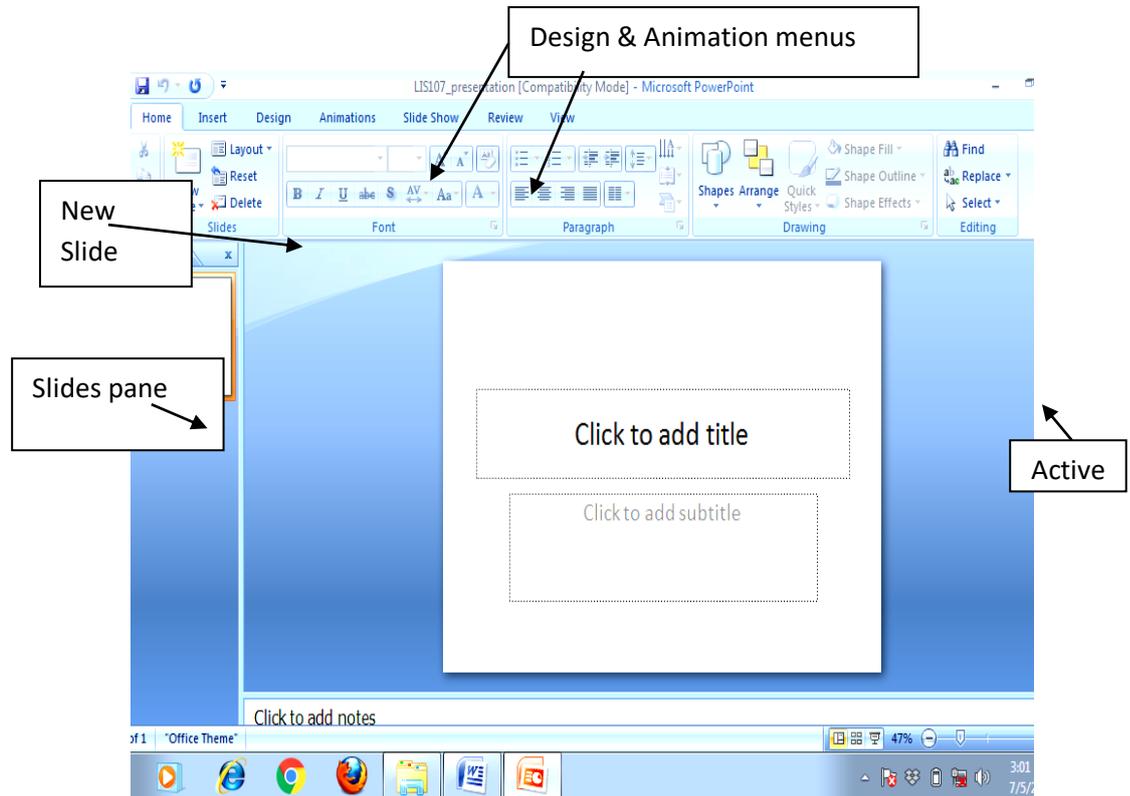


Figure 19: Basic Features of MS PowerPoint

Slides: MS PowerPoint use slide for presentations. A slide represents a single page of a presentation. Presentation is made up of several slides organized in such a manner that the audience can relate to the contents as a whole. Each slide has a predefined content, for instance, the active slide in Figure 19 above has title and subtitle sections. A slide can contain graphs, charts, images, text, pictures etc.

Slides Pane: Shows the preview of all the slides in a given presentation so that the user can easily navigate between slides.

New Slide Button: This can be use to add slides to the presentation.

Design Menu: Allows you to add designs and animation to your presentation.

Now let us see how these features work in MS PPT

3.3 Using MS PowerPoint Presentation

Suppose you are preparing LIS107 assignment using MS PPT, the assignment question reads “Using MS PowerPoint”, identify the input and output devices. Let us use three slides for this presentation. The first slide would be a **title slide** in which we give brief information about the presentation. The second slide would be **comparison slide** which shows side by side the input and output devices and the last slide would be a title only slide. Figure 20 shows the title slide.

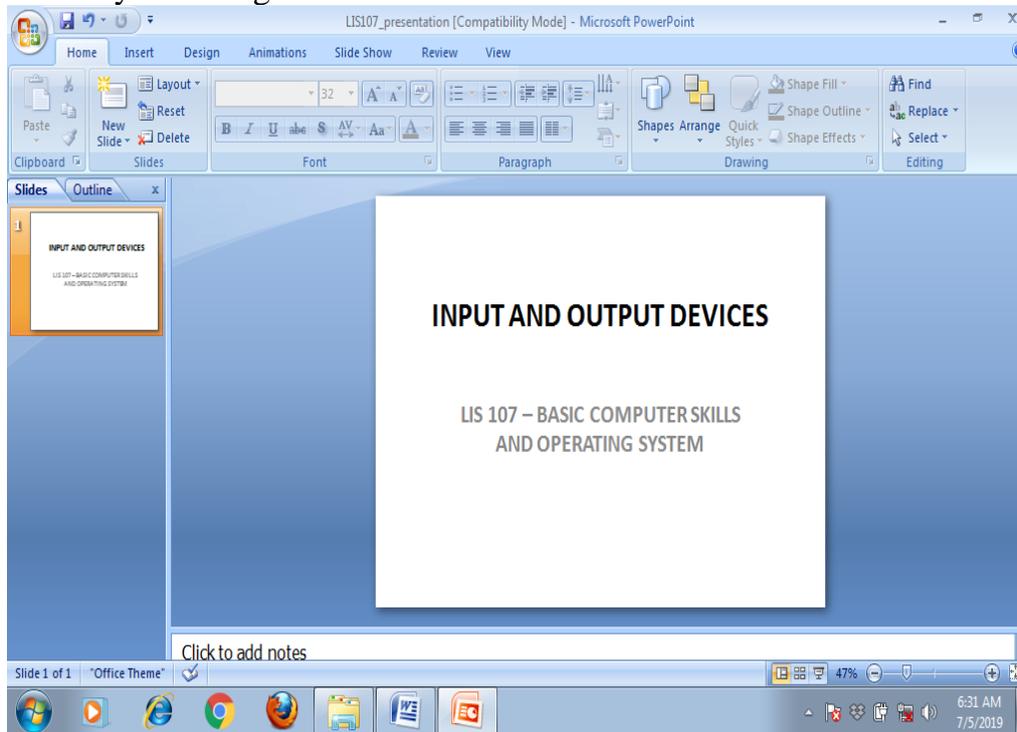


Figure 20: title slide

You can see we typed in the title and subtitle in the title slide and provide the details of the assignment and the course. Now to add the second slide, we click on the **New Slide** and the selected slide would appear on the MS PPT window

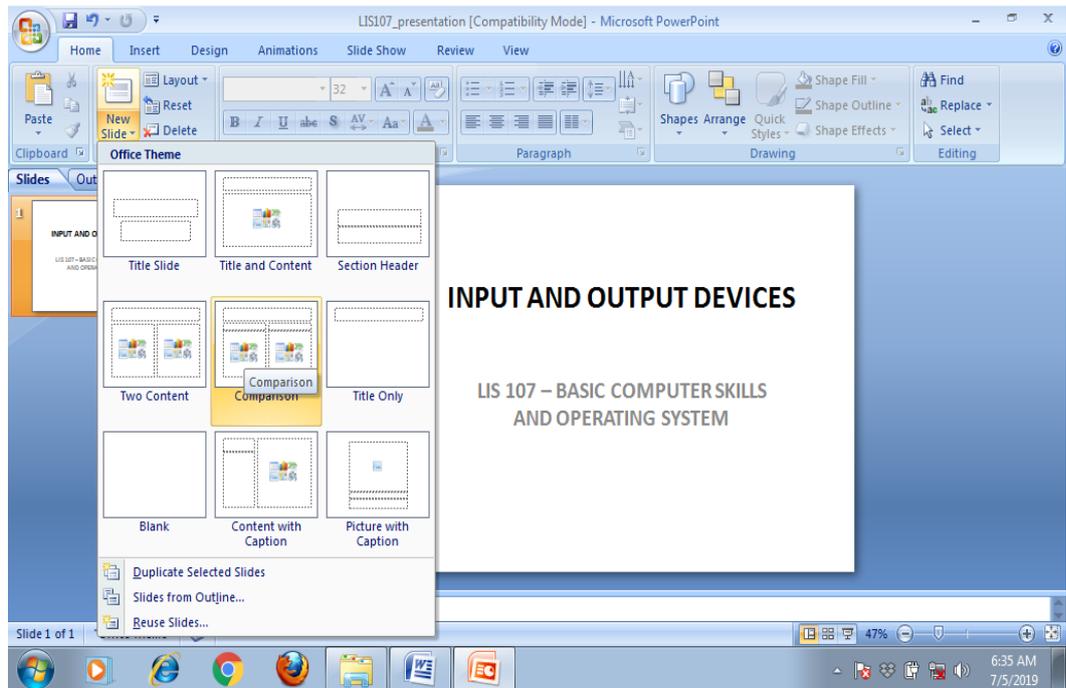


Figure 21: Comparison slide

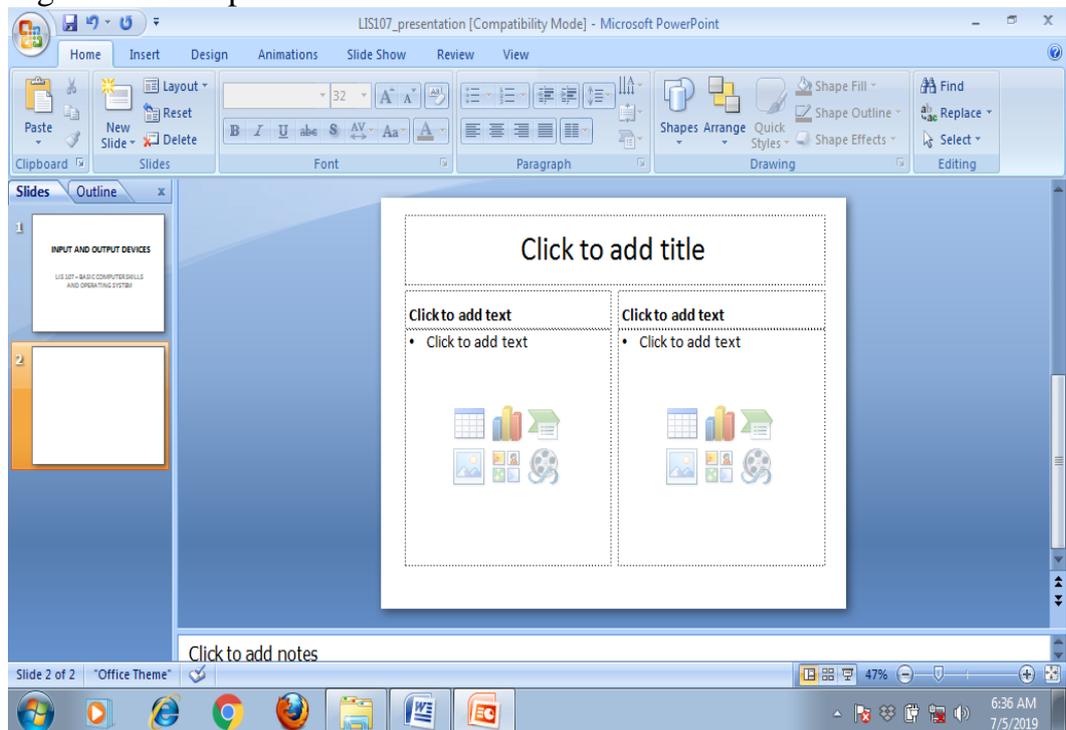


Figure 22: Comparison slide

You would notice the increase of slides in the **slide pane** as we added the comparison slide. We now proceed to add the relevant information on the slide.

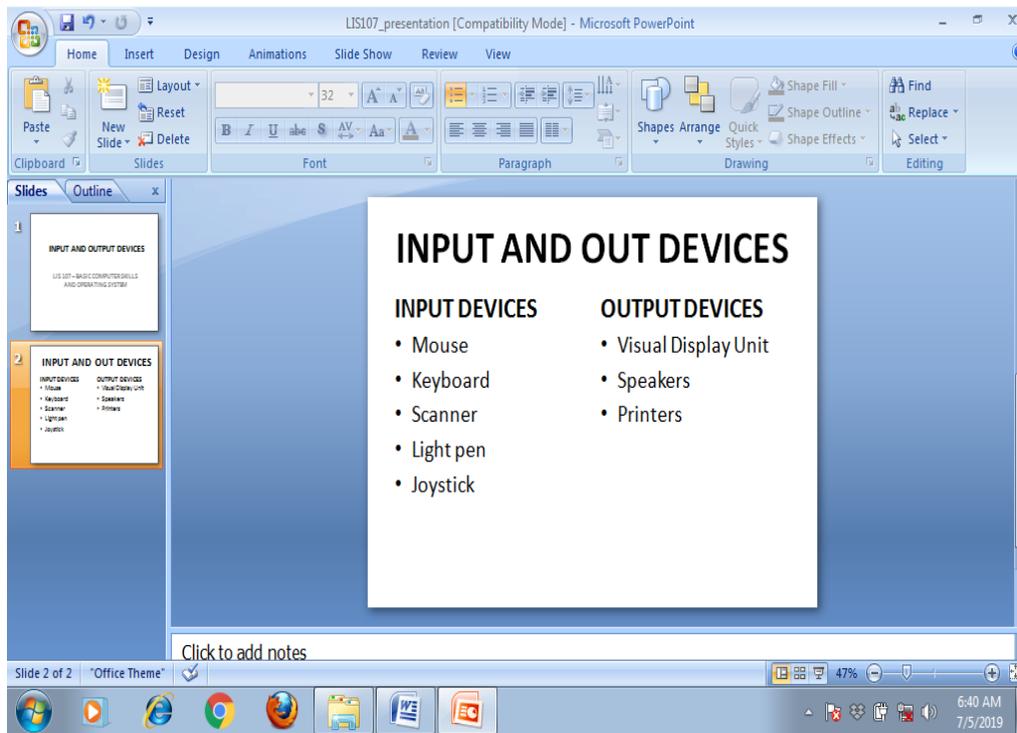


Figure 22: Comparison of the slide containing information

Now we add the final slide using New Slide button

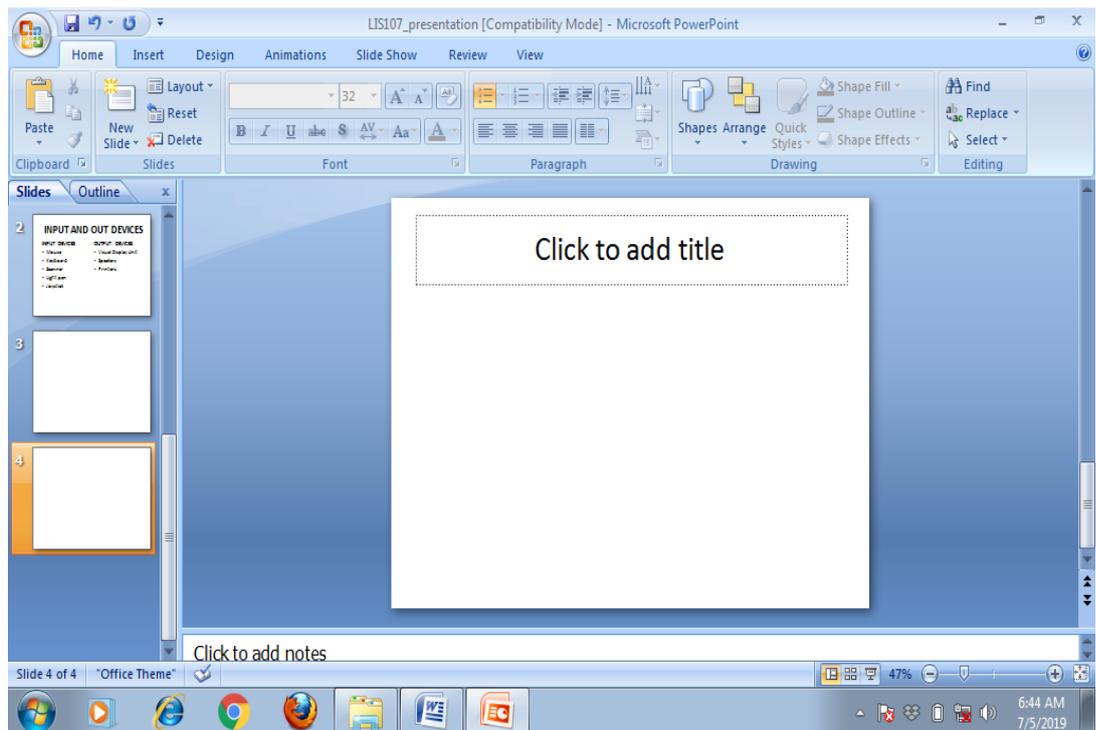
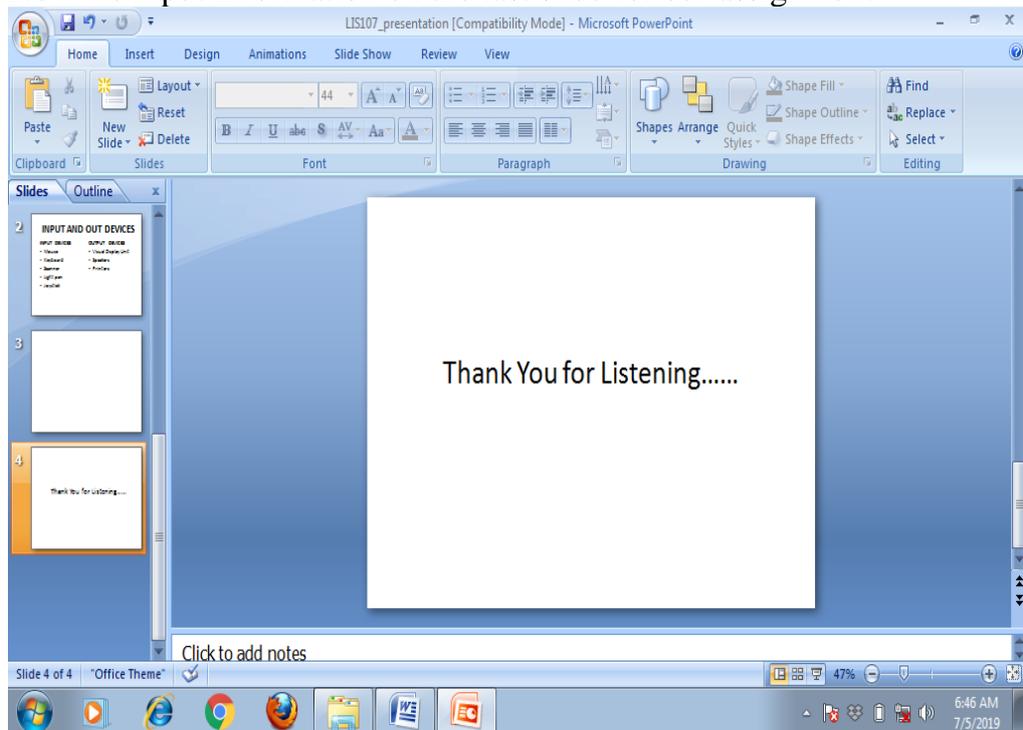


Figure 22: Title only slide

Now we input information on the last slide for our assignment



You are now done with slide. You can now add some design to make our presentation spicy. To do that, we click on the **Design Menu** from the menu bar. The design menu displays different sorts of background design that we can apply to our presentation.

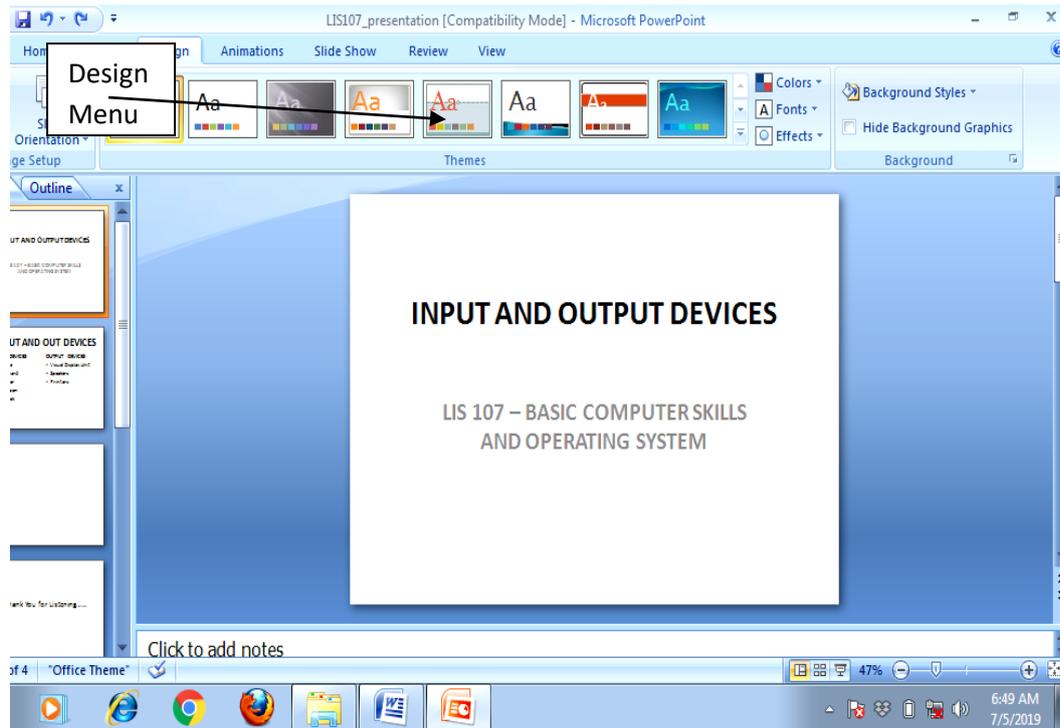
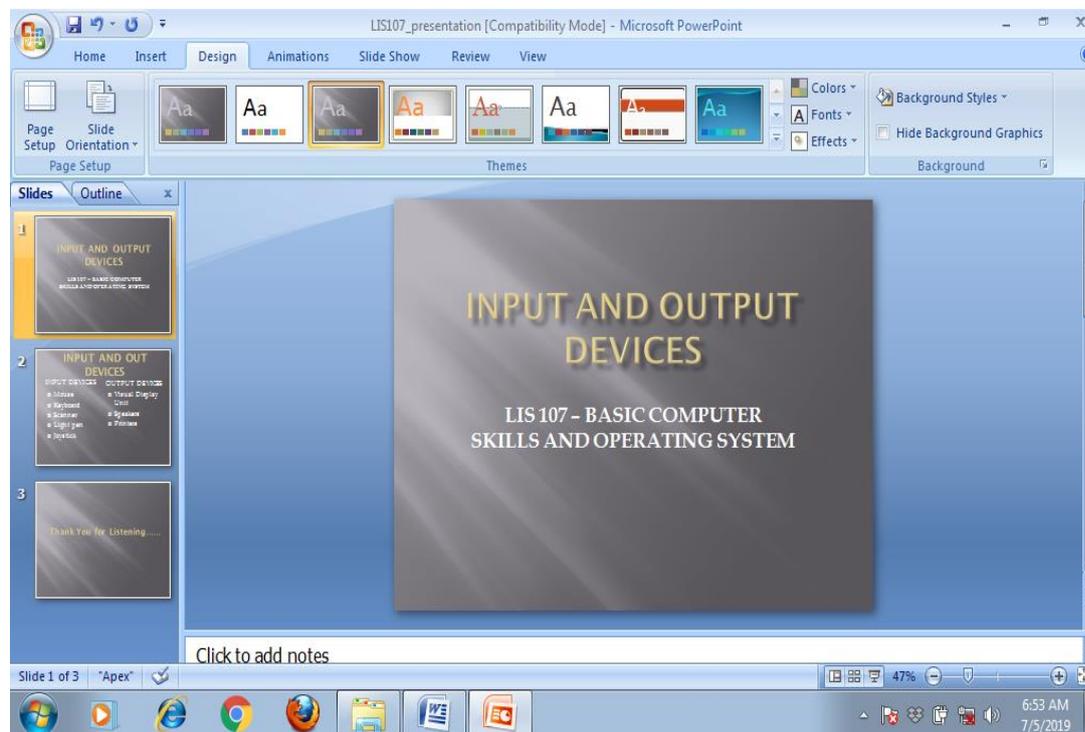


Figure 24: Design Menu



The **Animation** menu controls the way your slides appear during the presentation, which is the movement from one slide to another.

Activity

Click on the **Animation Menu** and see apply different animation styles to your MS PPT document.

To test how your presentation would appear when projected, press F5 on the keyboard.

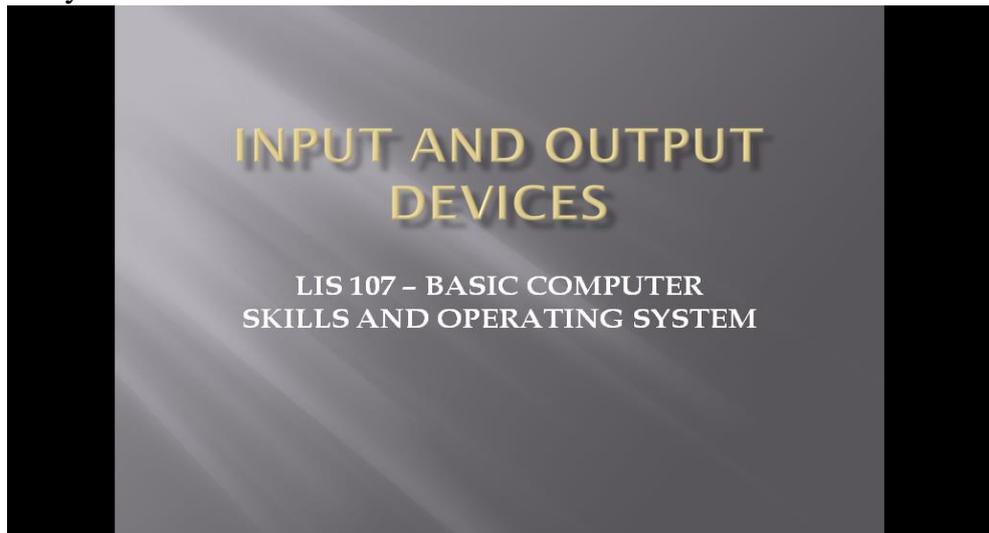


Figure 25: First Slide

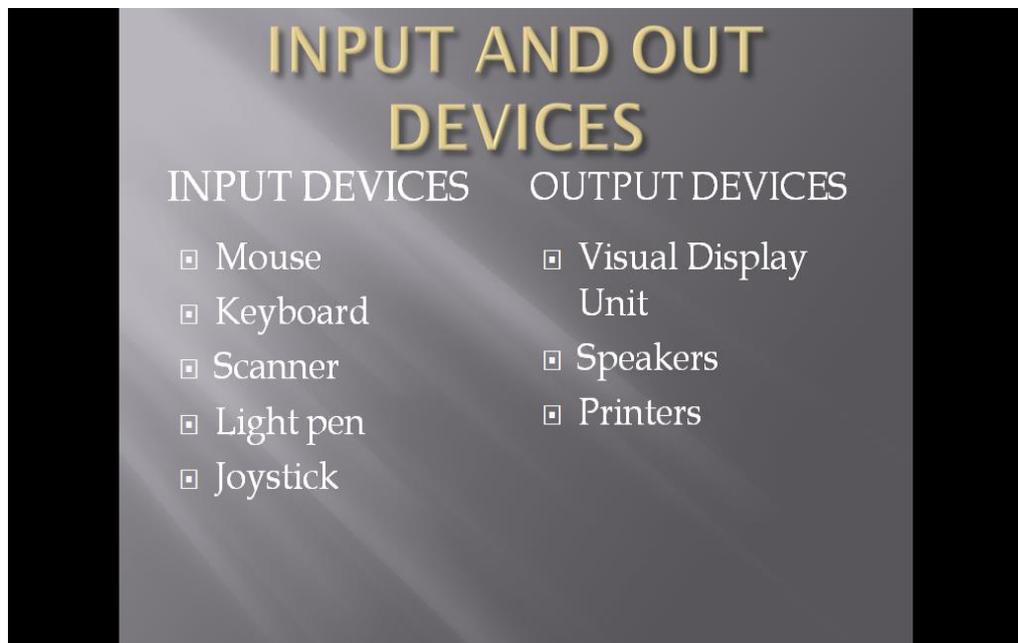


Figure 26: Second Slide



Figure 27: Third Slide

Tutor Marked Assignment

1. Outline the procedure of saving MS PPT documents.
2. State 3 features of MS PPT.

4.0 Conclusion

In this unit, you have learnt to create and save MS PPT document. You have also learnt the basic features of MS PPT and how presentations are prepared using MS PPT.

5.0 Summary

MS PowerPoint is a presentation software used by educators, trainers and businessmen. It is incorporated in the MS Office suite.

6.0 Reference and Further Reading

FME/NTI, Kaduna (2018). 2018 SGDs workshop manual for primary school teachers on information and communication technology (ICT). Kaduna: National Teachers' Institute Press.

Frandsen, T. L. (2010). *Microsoft office PowerPoint*. Torben Lage Frandsen & Ventus Publishing ApS.

<https://library.ku.ac.ke/wp-content/downloads/2011/08/Bookboon/Office-programs/microsoft-office-powerpoint.pdf>

MODULE 6 COMPUTERS FOR INFORMATION ACCESS, DISSEMINATION AND TRANSFER

UNIT 1: INTERNET BASICS

CONTENTS

- 1.0 Introduction
- 2.0 Intended Learning Outcome (ILOs)
- 3.0 Main content
- 3.0** Concept of internet
- 3.1** Internet Terminologies
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor- Marked Assignment
- 7.0 Reference/Further Reading

1.0 Introduction

You have been taught the concept of computer and its functions in Module 1. You can now explain some of the functions of a computer system as you have learnt that the computer gives access to information and helps in the dissemination and transfer of information among users. You are now positioned to ask how computer can be used to create information, give access to information and transfer of information among people in a given society or community?

The answer will introduce you to the content of what you should learn in this module as stated in the study unit objectives stated below.

2.0 Intended Learning Outcome (ILOs)

At the end of this unit, you should be able to;

- Define the concept of Internet
- Explain some internet terminologies

Main Content

3.0 Concept of Internet

Internet is the interconnection of two or more computers that receive and share global information available from web documents. The internet can be defined as a communication network which connects all the computers across the globe or all over the world. The internet connects to various websites and uses search engines to retrieve this information coming from different websites just as you can use the library catalogue to find all the books a library has and their various locations. The

internet is aimed at facilitating sharing and receiving information from among people across the whole world. You can only be linked to the network of the internet with the following accessories:

- a) A computer Technology
- b) A Modem
- c) A Software - a browser
- d) Telephone connecting line
- e) Network cables

3.1 Internet Elements and Terminologies

The following are the concepts and terms you will come across as you use the internet in creating, accessing, retrieving, sharing data and information with users and other people in the society. The following are elements and terminologies of internet;

1. Internet Service Provider
2. Protocols
3. Web Address/ URL
4. Browser
5. Menu Bar
6. Navigation Bar
7. Web Page
8. Tabs
9. World Wide Web
10. Search Engine
11. Downloading
12. Uploading
13. Error Message
14. Internet Virus
15. Electronic Mail (E-Mail)

3.2.1 Internet Service Provider (ISP)

An internet Service Provider (ISP) is any organisation or body who provides you with a login account to access the Internet System. The Internet Service Providers distribute internet account to people for use when you pay a stipulated amount of money. Whenever you connect your computer to your Internet Service Provider, you are connecting to networks of computers. All these computer/servers connected on this network talk to one another via Internet Protocol (IP) addresses using different protocols such as HTTP which is what makes the Web work. These ISPs provide other services like broadband, Wi-Fi and data services. Examples of ISPs in Nigeria are;

- CYBERSPACE LIMITED,
- NETCOM, COOLLINK,

- INTERNET SOLUTION NIGERIA L.T.D,
- MTN NIGERIA,
- GLOBACOM LIMITED,
- IPNX NIGERIA L.T.D. e.t.c

3.2.2 Protocols

This refers to the Standard set of rules which decides how a computer can communicate with each other across the networks. The protocols tell you the format the message must appear and the manner in which they will be exchanged in these computers. Hyper Text Transfer Protocol (HTTP) is an example of an internet communication protocol used in accessing information. It provides a mechanism for communication between the browser and the web server. Also, Telnet is a protocol used to log into a remote computer on the internet.

3.2.3 Web Address or URL (Uniform Resource Locator)

It is a standardised naming convention for addressing documents that is accessed over the internet. This is where you type in the address of the website you want to visit. Examples are www.nouedu.net, www.unn.edu.net.

Educational institutions: - **.edu**

Organizations: -**.org**

Commercial

Government: - **.gov**

Military: -**.mi.net**: - Information from the site should check carefully it does not fall into any of the above.

3.2.4 Web Browser

A web browser is a software application which allows you to access information from the World Wide Web. Every web page, image, and video are identified by a unique Uniform Resource Locator or web address which enables the browsers to retrieve these resources from a web server and display them on your device. Example of a web browser and their icons are shown below for your identification.



UC browser



Google Chrome



3.2.5 Browser menu Bar

Each menu bar contains many options. The followings are the functions of each ion;

Menu item:

Print: You use this option to print your current web page with your printer.

File: In file, you can change your browser to and from Full Screen, Save, find a phrase or a word in a webpage and also view other suggested sites.

Zoom: Zoom in or out to view pages easily in your web browser.

View: You can change the display of your browser here, including text size.

Safety: Use here to manage your browsing history and activate filters for browsing.

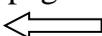
Favorites or Bookmarks: You place, store and access your favorite and most used websites, to do this just click on the star icon.

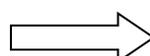
Options: It is used in advanced settings for your web browser; especially if you have the need to use these Options.

Help (or? icon): If you need more help with the browser, try this menu item

3.2.6 Navigation Bar

The navigation bar allows you to navigate or move around on a Web page.

 *Back button* takes you back to the previous web page that you already viewed.

 *Forward button* takes you forward to the web page that you viewed **before** you clicked on “**Back**” arrow.

 *Refresh button* will help you to reload the web page that you are currently viewing. Since some Web pages (especially news sites) keep on changing throughout the day, it is always advisable for you to refresh them periodically to view the recent changes.

 *Stop button*: when you click on the stop button, it stops the web page from loading. Whenever a page is taking a long time to load, just click on the **stop button**, then Refresh. Sometimes the Stop button will only show up if a page is loading and replaces the Refresh button in the navigation bar.



Home button: when you click on the home button, the mouse takes you to the initial webpage that opened when you first open your browser window.

3.2.7 Web Page

A web page refers to a document on the internet which includes text, pictures, sounds, video and graphics.

3.2.8 Tabs

A tab is an internet browser and a graphic control element that permits multiple documents to open in a single window or in selecting additional web page(s) that have been opened in the browser window. You use the tab to switch between sets of documents on the browser window.

3.2.9 World Wide Web/WWW/Net/Web

The World Wide Web is a portal of the internet which is made of collections of documents that are stored inside computers all over the world.

3.2.10 Search Engine

Search engine is an internet software program that you can use in finding or locating web sites, web pages and internet files or documents. Examples of search engines are;

- Google.
- Bing.
- Yahoo.
- Ask.com.
- AOL.com.
- Yippy.com
- Dodpiles.
- DuckDuckGo.

3.2.11 Downloading

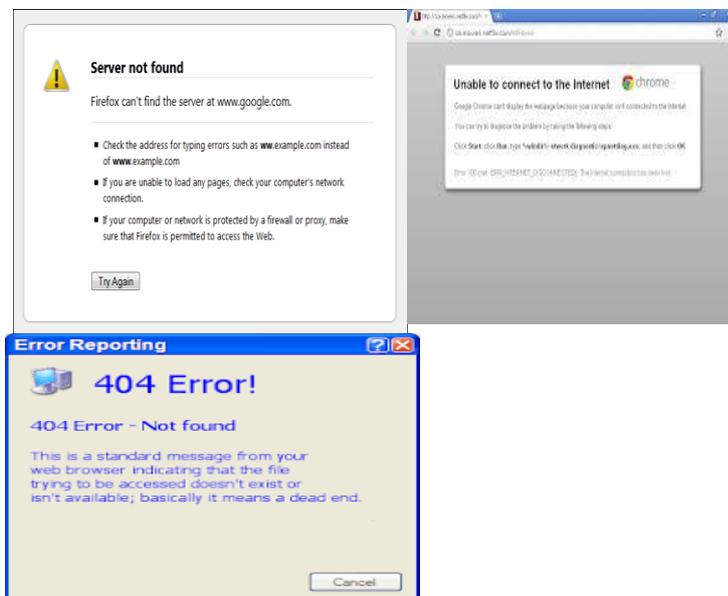
Downloading is the process of getting web pages, images, pictures and graph files from a web server.

3.2.12 Uploading

Uploading is the process of putting web pages, images, pictures and graph files onto a web server. To make your creative works such as pictures visible to everyone on the internet, you will need to **upload** them to a web server.

Error Message

Error message is sent to your browser from a remote server showing that there is a mistake somewhere. Is either that you are accessing a page that does not exist or there is a mistake in the web address you typed or that the web has been removed. Below are the samples of error messages you can see on the screen of your computer;



3.2.13 Internet Virus

Internet virus is a small dangerous program that duplicate itself thereby destroying the content of digital data or files making them inactive or not functional. Simply put, the internet virus causes damage to the computer system and can spread to every unit of the computer. These viruses can be stored in the hard disk, and floppy disk. Some examples of these viruses are Trojan Horse Viruses, My doom Worms e.t.c

E-Mail

E-mail is known as an electronic mail which you can use to communicate with one another, be it your friends or for official matters. You can use the email to disseminate information to library users. Your

email is personal to you except if it is a group or organisational e-mail. Each user has an email address to which to receive and send mails. Information sent through email reaches the receiver within few seconds.

4.0 Conclusion

The use of the internet has provided quick access to current and relevant information at anytime and anywhere. Communication and sharing of information among users and producers of such information have become easy and faster. Mastering the use of internet element and the terminologies of the internet will help you to apply the use of the internet in providing access to information and aid resource sharing among libraries.

5.0 Summary

What you have learnt in this unit is the definition of the internet. You can now explain the accessories that you must have to be linked to the internet. Also, you learnt internet elements and terminologies use in retrieving and sharing of information from the internet. Examples of such terminologies and elements are Internet Service Provider, browser, Protocols and Web Address/ URL.

6.0 Tutor- Marked Assignment

1. Define the internet?
2. What is a web browser and list three web browsers you have used?
3. What is the meaning of WWW?
4. List five facilities you required to connect to an internet service?
5. Explain the elements found in the Navigation Bar and their functions.
6. What is an Internet virus?

7.0 Reference/Further Reading

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MODULE 6

UNIT 2: UTILISATION OF COMPUTER FOR INFORMATION ACCESS, DISSEMINATION AND TRANSFER IN LIBRARY AND INFORMATION SERVICES DELIVERY

CONTENTS

- 1.0 Introduction
- 2.0 Intended Learning Outcome (ILOs)
- 3.0 Main content
 - 3.1 Uses of a computer for information access, dissemination and transfer in library and information services delivery
 - 3.2 Computer competency skills needed by a librarian for the provision of information access, dissemination and transfer of library and information services to library users
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor- Marked Assignment
- 7.0 Reference/Further Reading

1.0 Introduction

You have been taught the concept and evolution of computer, types, functions, components of computers, hardware, software, operating system and the storage devices used in a computer system. You can now identify a computer system and its components, their functions and used. Also, you have learnt about the internet and its components. You are now positioned to ask how computers can be applied in library and information service delivery so as to give access to information, aid dissemination and transfer of these information generated or stored in a computer to library users. The answer will introduce you to the content of what you should learn in this module as shown in the study unit objectives stated below.

2.0 Intended Learning Outcome (ILOs)

At the end of this unit, you should be able to;

- Explain the uses of a computer for information access, dissemination and transfer in library and information services delivery.
- Discuss the Computer competency skills needed by a librarian for the provision of information access, dissemination and transfer of library and information services to library users.

3.0 Main content

3.1 It is well known fact that the key success to information access is an efficient gathering of information, processing, storing, providing adequate access and effective dissemination of information to the desired users. In this digital era, computers with internet connectivity have changed the method of acquisition or gathering of information, processing, storage, retrieval and dissemination of information in libraries. These innovations have helped librarians to provide remote access to information and fast services to users. The provision of remote access to information and fast services to users is in line with the 1st and 4th law of library and information science by Ranganathan which says “Every reader his book” and “Save the time of the reader”. Computers can be used to access, disseminate and transfer information services in libraries through the following ways;

1. ***Online Public Access Catalogues and networked databases:*** Computer skills acquired by librarians help them in organising and storing of the list of all the library holdings in an online catalogue for users to have easy access and retrieval of information resources anytime and anywhere. You can access information from the online catalogue using your laptops, mobile technology like your cell phones.

2. ***E-mail based reference service:*** You use your computer or mobile phones with internet connectivity or internet data presence in your mobile phones and computer to exchange and receive information. You can send your question as a message and receive back an answer from the librarian. You can use this method to access and disseminate information even when the library is closed.

3. ***Online reference services:*** The availability and application of internet and computer in library services have aided librarians to provide you with online reference services without stepping your foot in the library. You can use your mobile phone to ask reference questions such as opening hours, call numbers, and dictionary definitions can be provided instantly in real time. This service is known as Ask-a-Librarian.

4. ***Library web sites:*** Application of computer in the dissemination and transfer of information gave rise to the creation of library websites that help you to have online access to information resources, online library orientation, staff information, other databases and library tour. The library website provides a direct link to services offered in your library. You can access the online library orientation, library tour and other announcements from the library whenever you visit the library's website. The National Open university of Nigeria library website is

www.nou.edu.ng/directorates/library. You can access information from the NOUN E-resources which comprises of Online Public Access Catalogue (OPAC) and subscribed databases like EBSCOHOST, HINARI, AGORA and announcements. Every library site gives you access to information available in such library and libraries market their services to users using the library website.

5. **Mailing lists:** The computer availability and internet connectivity allow the librarian to disseminate information to a group of people in a mailing list using the library's email. You and your course mates can receive personalized information from the librarian at the same time.

6. **Personal space/My Library:** You can have a self-service portal created by the library where you will be allowed to manage your personalised account with custom-made collections. Here, you can set up and manage your own profile, keeping a record of your catalogue searches, receive alerts on reserved items, you can track interlibrary loan request, renew information resources you borrowed and keep a record of document delivery requests. NOUN librarians can send audio books, scanned documents, images, eBooks and literature search to your personal library portal. Such service gives users of the library control over their information resources and enhances their interest in library service.

7. **Short Message Service (SMS) Alert:** Libraries use SMS notifications to disseminate and transfer information to users. You can receive a short message service and audio files from the library informing you that the book you borrowed is due for return; you can be notified of your outstanding fees, and the arrival of new titles through your mobile telephone systems.

8. **Social media networks:** Social media networks are powerful information access, dissemination and transfer tools. You use social media to access, disseminate and transfer online information and initiate knowledge sharing among people who are connected to you. The library uses social network in marketing information resources and services to users. These social media networks are WhatsApp, Imo, Twitter, Facebook, Skype, GoogleSMS and Instragam etc. Use of social media in information access, dissemination and transfer of information gave rise to Web 2.0.

9. **Printing Technology:** You can print the information resources you access from the web page or documents you typed and transfer the information to another user with the help of a printer. The internet has also enabled more computers to share one printer in the library through networking the systems.

10. **Research guides/ Webliographies:** Information is accessed, disseminated and transferred through creating topics- specific aids with their links to reliable and current resources on the specific topic which you can use as a research guides / webliography.

11. **Learning Management System (LMS):** Computers in the library have enabled librarians to use the learning management system to improve on access, dissemination and transfer of information from the library to its users. The Carmen Library Link allows libraries to build a collection of resources and services that can be delivered to students based on their courses and department. In each student's portal where their semester courses are posted, a link is created to integrate the "Carmen Library Link" into the student's portal. The Carmen Library Link is a list of all the resources and library services relevant to your course of study which is available in the library. They will help to create awareness, improve access, disseminate and transfer information on the services and resources provided in NOUN library.

12. **Quick Response (QR) codes:** These are two-dimensional barcodes use by librarians in disseminating information by directing you to the desired websites or a library website for you to access your needed information. It is a pointer to indexed or programmed URLs information which saves your time in information access and retrieval.

13. **Webinar Service:** You can provide a webinar for your library where the library users can see and communicate with each other using their Personal computer which is connected to the internet. Applications such as Skype can be use for webinars.

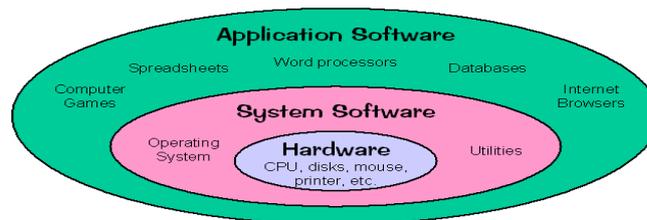
3.2 Computer competency skills needed by librarians for the utilization of computers for information access, dissemination and transfer

Applications of computers in library and information services have changed librarians' responsibilities to users in this digital era. You as a librarian need to acquire the skills that will aid in applying the computer technology into library and information services. These computer skills will help you to provide an adequate access point to any information resources, process and store information for easy access, dissemination and transfer to desired users. To use these computer systems effectively in library and information service delivery, you need to be knowledgeable and competent in the following computer skills;

3.2.1 Hardware Skills: - As a librarian, you need to know all types of equipment and appliances needed to make a computer work. For

example, you have learnt in module 2, unit 1, that hardware consists of monitor, computer keyboard, mouse, joystick, network switches, barcode scanner, printers, monitor, speakers, earphones and cables. You as a librarian should acquire the skills on how to purchase this computer hardware considering their specifications and installation procedures. You should be skilled to check the hardware and ensure their proper functioning before using the computer to perform a task.

3.2.2 Software Skills: - The software skills you need as a librarian in carrying out library and information services are divided into two and they are application software and system software.



<https://www.thecrazyprogrammer.com/2016/04/difference-system-software-application-software.htm>

3.2.2.1 The application software skills you have to learn are:

- i. *Word processing:* Is use for typing documents like internal and external memo in the library. As a librarian, you should know how to select words, choose the font size, color, check spellings, and insert text boxes in a document.
- ii. *Spreadsheet:* The spreadsheet is used in analysis and for storage of data in cells on a table. Examples of spreadsheets are Microsoft Excel and Open office. Spreadsheet software which is used in performing calculation can be used in keeping records of library routine services and the calculation of overdue charges for users who did not return borrowed resources on time.
- iii. *Power-point:* Power-point for displaying information in the form of text, graphics video and images on slides. You can also use it to present library orientation and tours to your new clientele or users of the library.
- iv. *Database:* Database is a collection of data and information in the form of text, numbers, images, sounds and videos which are organized for easy access and use. The Database is similar to file cabinet in the library, but they are electronically filed and it allows you to store and retrieve a huge amount of information. Examples are Microsoft Access, Oracle etc. To recall or retrieve information from the database, you must use queries and reports.

Academic libraries subscribe to many databases like Hinari, EBSCOhost, Questia, and Sage for access to scholarly published journals and e-books for research and study. As a librarian, you need to understand the skills involved in building up a library database; providing security for database and other methods and criteria to be considered before subscribing to any scholarly database for effective access and dissemination of relevant information to your clientele.

- v. *Internet Browsers:* You should master the skills needed for using an internet browser, search engines and searching skills like use of Boolean search and linear searching techniques. Information downloaded from the internet can be saved in files/folders and an access name given to the file or folder for easy access, dissemination and transfer of such information to users. As a librarian you must have the skills of how to upload, download, save, and attachment of files and folder to a document. Also, you should understand how to utilize social media such as Facebook and Twitter.

3.2.2.2The **System Software Skills** includes the operating system, hardware and utilities.

- i. *Operating system:* These are a set of instructions developed for performing the basic task of receiving input from the keyboard, displaying output on the monitor, allows you to navigate between different applications and keeps files in the storage devices. The system skills learnt will help you to download and install programs, connect auxiliary devices like the scanners, printers, barcode scanners to a computer and it will help you to understand the computer system settings.
- ii. *Hardware:* As a librarian, you should acquire the skills involved in copying and storing of information on hardware storage systems like CDs, CD-Rom, modem, and USB for the dissemination and transfer of information to users. Also, the skills you learnt will help you to know how to use the scanners for digitization of print resources and the use of computer storage devices as backups for library data and resources.
- iii. *Utility Software Skills:* As a librarian, you should acquire the skills needed in finding out packages in the computer software that can analyze, configure, monitor computer problems, detect, remove and prevent virus from contaminating your data and the computer system. The skills you acquired will help you select antivirus such as data encryption, spyware, AVAST and Anti-

Virus Guard (AVG). A librarian should be competent in the use of this security software to avoid loss of stored information and data.

4.0 Conclusion

The use of computer technologies in carrying out library operations cannot replace the physical form of information sources available in a traditional library setting; but the application is vital in order to meet present demand and also provide access to library and information services to remote users. Application of computers enable librarians to provide access, disseminate and transfer information services in libraries to remote users. Also, librarians need to be competent in handling these computers by acquiring the necessary skills needed in computer operations.

5.0 Summary

In this unit of study, you have been taught how computers can be use to access information, disseminate and transfer information services to users. Also, you have been exposed to the required computer competency skills you should acquire to help you use computer in carrying out library operations.

6.0 Tutor- Marked Assignment

1. List and explain five application software skills a librarian should master for effective utilisation of computers for library and information dissemination?
2. How can you as a librarian use Online Public Access catalogue and e-mail to disseminate library and information services to the library?
3. Discuss how computers can be used to access, dissemination and transfer information services in libraries?
4. State and explain five computer competency skills a librarian must acquire for effective utilisation of computers dissemination and transfer information services in libraries?
5. How can a librarian utilise the hardware competency skills to render efficient library services with the computer in the library?
6. List and explain the software skills needed by a librarian?

7.0 Reference/Further Reading

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MODULE 6

UNIT 3: BENEFITS AND CHALLENGES IN THE UTILISATION OF COMPUTER TECHNOLOGY IN LIBRARY AND INFORMATION SERVICES IN NIGERIA

CONTENTS

- 1.0 Introduction
- 2.0 Intended Learning Outcome (ILOs)
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 - 3.1 Benefits of the utilization of computer technology in library and information services in Nigeria.
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 - 3.3 Some possible solutions to solve the challenges associated with the use of computer technology in library and information services in Nigeria
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor- Marked Assignment
- 7.0 Reference/Further Reading

1.0 Introduction

You have been taught the concept and evolution of computer, types, functions and components of computers such as the hardware, software, operating system and the storage devices used in a computer system. You can now identify a computer system and its components, their functions and uses. Also, you have learnt about the internet and its components. You are now positioned to ask, how can I apply computer in the library and information service delivery such as to give access to information, disseminate and transfer information generated or stored in a computer to library user? The answer will introduce you to the content of what you should learn in this module as stated in the study unit objectives below.

2.0 Intended Learning Outcome (ILOs)

At the end of this unit, you should be able to;

- Explain the benefits of the utilization of computer technology in library and information services in Nigeria.
- Discuss the challenges associated with the utilization of computer technology in library and information services in Nigeria.
- Suggest some possible solutions to solve the challenges associated to the use of computer technology in library and information services in Nigeria.

3.0 Main content

3.1 Benefits of the utilisation of computer technology in Library and information services in Nigeria

The application of computers in library simply means the use of computer and other information technology application in information generating, coding, processing, storing, retrieving, disseminating and transferring information from one user to another or from one format to another. The use of computer and internet in providing library and information services to library users have given the librarians opportunity to know the information needs of their clientele and making the library to be relevant in this digital era.

The followings are the **benefits or the advantages** of using computer technology in library and information services;

- i. *Creation of Library Websites:* The use of computers in library and information services has allowed librarians to create websites where collections of information resources are linked together under a single subject or institutional name or library. Users can now access information from the library website without visiting the library physically.
- ii. *Online circulation control system:* Computer application in libraries have integrated various activities into online circulation control system showing a list of books on loan, date due notices, and users' profile. It enables sending of a reminder to users using emails and short messages informing a user date due of the resources he/she borrowed. A click on the user's profile tells all about the user at a glance.
- iii. *Improved Technical Services:* It has also improved the technical services provided in the library. Librarians can browse through some database to select titles of resources to acquire, even to place an order for resources using vendors' web address from the comfort of their offices. Also cataloguing of information resources have been made easy with the availability of World Cat, Online Computer Library Center (OCLC), and Library of Congress Online Catalogue which are available to cataloguers for classification and cataloguing of resources. These online cataloguing tools have reduced the time and energy spent on the above activities.
- iv. *Provision of Multiple Computer Storage Devices:* Through the use of computer storage devices like CDs, CD-Rom, USB and computer memory, library can store a large volume of information without covering much space in the library.

Information are now being transfer from one format to the other without much stress and can be recalled back easily.

- v. *Digitization of Information Resources:* Computer application in library has brought about the digitization of information resources. You can convert printed resources into digital or electronic format for easy access by many users at the same time. It has helped to solve the problem of acquiring multiple copies of a title and have reduce cost; giving an opportunity for other resources to be acquired and minimized space for storing printed resources.
- vi. *Use of Library 2.0:* Computers in libraries has brought about library 2.0 which has facilitated effective information dissemination and sharing of other library services among users and librarians. You can now do an online chat with users to find their information needs and provide solutions to them. The image of the library is felt everywhere through the use of library 2 .0 in marketing of library services to different users.
- vii. *Increased Resource Sharing:* It has increase resource sharing between libraries through inter-library loans and formation of library networks for the exchange of knowledge and information.
- viii. *Increase in Library Services:* The use of computer and internet services in the library have increased the number of services rendered to library users unlike when the services are provided manually. Examples are remote access to information (anytime and anywhere), online reference services, photocopying services and printing services. This has reduced the number of mutilated and stolen resources in the library.
- ix. *Attracts Fund to the Library:* It has introduced some fee-based library services that has generated money for the library. Such fee-based services are photocopying services, scanning of documents and paying for online training using webinar.
- x. *Availability of Current Information:* The use of the internet has enhanced the uploading of current information on the web. So, users can access current information from the library website and other databases on the area of their choice, unlike when computers were not used in the libraries.
- xi. *Remote Access to Information:* Application of computers in library and information services delivery have guaranteed increase access to information resources to users irrespective of

their geographical location and time. Information can be accessed or disseminated to users anytime anywhere.

3.2 Challenges associated with the utilization of computer technology in library and information services in Nigeria.

i. *Lack of Funds:* Inadequate monetary allocation to the library have affected the acquisition of computer technology in the libraries. Some of the funds allocated to the purchase of these technologies are diverted to other projects. In some organizations or establishments, libraries not have budget, and some of the libraries are managed by a non-professional who do not see the need to invest in the acquisition of resources and computerization of library services.

ii. *Inadequate Skilled Manpower:* Skilled manpower needed to implement the new technology is limited. Some librarians who are skilled to operate the computers can only carry out functions like typing documents, coding data and surfing of the internet for` information retrieval. However, they may lack the knowledge of installation and maintenance of the hardware, programming languages and lack knowledge on how to resolve problems when any arises from the use of the computer system.

iii. *Resistance to Change:* Age and literacy are barriers to the use of technology by librarians and library users. The younger people tend to embrace new technology faster and willingly. Some librarians and users are finding it difficult to embrace the new technology and some others believe that they are too old to start learning the use of a computer. Some librarians believe that it will lead to loss of a job. This negative attitude may lead to an unwillingness or inability to be trained and to learn the new technology.

iv. *Copyright Infringement:* Computer technology application in library service brought about reproducing or scanning of information resources which are still protected by copyright without permission from the owners of such works thereby infringing on the copyright protection.

v. *Inexperienced users:* Some of the library users lack information literacy skills making it difficult become in accessing information from the library websites, web pages and other databases. They do not know how to narrow their search and as such their time and energy are wasted browsing through irrelevant documents from the web.

vi. *Poor Maintenance Culture:* Some of these computer technologies are stored in a dusty environment instead of air-conditioned rooms. When these facilities develop fault, they are discarded instead of

repairing them. Hence, the library may not have the fund to replace them.

vii. *Unreliable Power Supply*: The erratic power supply is so common in Nigeria. This can cause serious damage to the computer hardware and access to the database when there is inadequate supply of power and where it is available, the voltage is either high or low. This has added the cost of maintaining computer-based library services in Nigeria.

viii. *Poor Bandwidth/Network Problems*: Whenever there is a break down and slow internet access, much time and energy are wasted. When the internet network fails to connect to the server to display the requested information, the library users leave the library or the website unsatisfied.

ix. *Lack of Knowledge on Choice of Hardware and Software*: The choice of hardware and especially software package to be used in library operations poses a big challenge to librarians. Many libraries have abandoned automation of the library because the library software they were using developed one fault or the other which cannot be rectified by their vendors. This has led to loss of information, waste of time, energy and money.

x. *Lack of Web Preservation*: Some of the electronic information on the internet vanishes from the web every minute. The actual “preservation” of electronic resources can be a risk at any moment due to a virus attack which can even attack the data backup leading to a total loss of such resources.

xi. *Frequent Changes in Computer Technology*: - Computer components change rapidly through the upgrading of the system hardware and software thereby creating a financial burden to the libraries and making the available ones to be obsolete. When you have an outdated computer system, it will affect the services you render to your users and it will affect the patronages of the services by users.

3.3 Some Possible Solutions to the Challenges Associated with the Use of Computer Technology in Library and Information Services in Nigeria.

There are indeed some challenges encountered in using computer technology in library and information service delivery in Nigeria, but the advantages outweigh the challenges. Also, the challenges can be reduced if the librarians, users and Nigeria government should contribute positively to these projects and embrace the changes in this digital era. The followings are some of the possible solutions to these challenges:

- a) Librarians and other library staff should accept and embrace the new technology since change is inevitable. They can do this by embarking on in-service training, attending workshop and seminars on basic computer and use of computers in information access, dissemination and transfer.
- b) The curriculum of study for training of new librarians should be upgraded to include basic computer skills such as operating systems, desktop environment, use of the internet, software design, database management and web 2.0.
- c) The government should ensure increased funding of the libraries in Nigeria irrespective of the type. Also, the library should source for fund from philanthropists around their community and introduced fee-based library services to attract fund to the library. Also, a certain percentage of the money provided for the library should be kept for the acquisition and maintenance of ICT appliances.
- d) Nigerian government should improve on the availability of power supply in the country. The library should provide alternative power supply through acquisition and use of solar energy and generators to supplement when there is no electricity.
- e) Library users should be encouraged to embark on personal computer training to master how to use the computer in information access and retrieval.
- f) The internet bandwidth should be increased in order to increase the speed in the network provided for the retrieval of information.

4.0 Conclusion

The benefits of using a computer in carrying out library operations cannot be overemphasised. It has made libraries and librarians to be relevant in this digital era. It has also reduced the work load of library staff, most of all the library routine services are performed faster using computer. Also, computer-based information services and resources can be accessed from any remote area with the help of internet. The world is now at the finger tip of the library users. Although there are some challenges that need to be addressed for effective use of computer in library services delivery.

5.0 Summary

In this unit, you learnt the benefits of utilising computer in carrying out library and information services to users. Also, the challenges associated with the utilisation of computer technology in library and information

services in Nigeria. Above all, some possible solutions were suggested to remedy or solve these challenges with reference to Nigeria

6.0 Tutor-Marked Assignment

1. Explain five benefits of using computer technology in library and information services in Nigeria?
2. Discuss five challenges facing the utilisation of computer technology in library and information services in Nigeria?
3. Suggest five ways through the librarians can use to solve these challenges?
4. Suggest ways through which libraries can source for fund to improve on the library allocation?

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