SOFTWARE APPLICATION SKILLS: CIT 102

NATIONAL OPEN UNIVERSITY OF NIGERIA

FACULTY OF SCIENCE

COURSE CODE: CIT 102

COURSE TITLE:

SOFTWARE APPLICATION SKILLS

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Published By:
National Open University of Nigeria

First Printed 2005
Second Printed 2020

ISBN: 978-058-852-3

Printed by:

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INSTRUCTIONS

ASSIGNMENT FILE

This consists of self-assessment Exercises and tutor-marked assignments which are in the assignment file; however, the two of them are also contained in the course manual. Make sure you solve the self-assessment exercises for you to better understand the course. However, four (4) out of the submitted supervised assignments will be marked in which three (3) of them will be graded. It carries 30% of the course marks. Please, make sure you submit the assignments before the deadline to avoid losing marks.

TUTOR MARKED ASSIGNMENT

You will be given 20 assignments in this course in which you will be required to submit four (4), out of which three (3) will be graded. The graded three (3) assignments will be 30% of the course marks.

There is a separate file called assignment file for this course. Answer the questions accordingly using your course manual and other textbooks that will enhance your understanding of the course. Submit your assignments on time and discuss with your tutor to iron out grey areas. If for any reason, you will not be able to submit your assignments before the deadline, always inform your course tutor ahead of time.

FINAL EXAMINATION

The final examination covers the whole course contents and will carry 70% of the course marks. Make sure you peruse all the manual, solve the self-assessment exercises and do all the assignments to enhance your chances of scoring high marks.

GRADING INSTRUCTIONS

This table shows how the actual course marking is broken down.

Assessment	**Marks**
Assignment 1-4	The grading will be based on the best three of the four assignments submitted, which will be 30% of the course marks
Final examination	The final examination will be 70% of the total mark
Total	The total mark is 100%

SELF-ASSESSMENT EXERCISES/ TUTOR MARKED ASSIGNMENT

Unit	Title of Work	Weeks Activity	Self-Assessment Exercise (End of Unit)	Tutor-Marked Assignment-TMA (End of Unit)
	Course Guide	Week 1		
	Module 1			
1	Brief description of a computer System	Week 1	**Self-Assessment Exercise 1.1**	**TMA 1**
2	Computer System Input and Output Units	Week 2	**Self-Assessment Exercise 1.2**	**TMA 2**
3	The Keyboard and The Mouse	Week 3	**Self-Assessment Exercise 2.1 & 3.1**	**TMA 3**
4	Operating System	Week 4	**Self-Assessment Exercise 4.1**	**TMA 4**
	Module 2			
1	Computer File Management	Week 5	**Self-Assessment Exercise 5.1 & 5.2**	**TMA 5**
2	Computer Software: An Overview	Week 6	**Self-Assessment Exercise 6.1**	**TMA 6**
3	Introduction to Application Software	Week 7	**Self-Assessment Exercise 6.2**	**TMA 7**
4	Common Application Software	Week 8		**TMA 8**
	Module 3			
1	Features of Word Processing Software	Week 9	**Self-Assessment Exercise 9.1**	**TMA 9**
2	Using Microsoft Word 2019	Week 10	**Self-Assessment Exercise 10.1**	**TMA 10**
3	Features of Electronic Spreadsheet	Week 11	**Self-Assessment Exercise 11.1**	**TMA 11**
4	Using Microsoft Excel	Week 12	**Self-Assessment Exercise 12.1**	**TMA 12**
	Module 4			

1	Plotting Graph Microsoft Excel	Week 13	**Self-Assessment Exercise 13.1**	**TMA 13**
2	Features of Database Applications and Microsoft Access	Week 14	**Self-Assessment Exercise 14.1**	**TMA 14**
3	Statistical Analysis Applications	Week 15	**Self-Assessment Exercise 15.1**	**TMA 15**
4	Using SPSS Software	Week 16		**TMA 16**
	Module 5			
1	Introduction to desktop publishing Applications	Week 17	**Self-Assessment Exercise 17.1**	**TMA 17**
2	Computer Applications in Nursing	Week 18	**Self-Assessment Exercise 18.1**	**TMA 18**
3	Computer Applications in Agriculture	Week 19	**Self-Assessment Exercise 19.1 & 19.2**	**TMA 19**
4	Managing your Computer Using the Control Panel	Week 20		**TMA 20**
	Revision	Week 21		
	Examination	Week 22		
	Total	**Week 22**		

UNIT 1: BRIEF DESCRIPTION OF A COMPUTER SYSTEM

CONTENTS

1.0 INTRODUCTION

Having just read through the Course guide, you are now to go through this first Unit of the course which is very fundamental to the understanding of how a computer works. Moreover, this unit is a foundation unit to the general knowledge of various applications of the computer system.

This unit simply takes you through a brief history of computers, various types of computers and some basic components of the computer system, some of which are hidden away from your physical view. Now, let us go through your study objectives for this unit.

2.0 OBJECTIVES

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

i. explain the brief history of evolution of computers
ii. categorise computers according to their designs
iii. identify the basic components of a computer system unit

iv. state the basic functions of the computer's central Processing unit (CPU).

3.0 MAIN CONTENTS

3.1 A Short History of Computers

Though Sir Charles Babbage, a British Mathematician has been credited as the first initiator in the evolution of today's computer system, however, the whole idea of the development of the computing machinery has been dated back by many to the time of *abacus.* Do you remember the history of *abacus? It* is as old as 3000 BC and was primarily used as a calculating device to aid memory.

The first computing machinery built in 1812 by Babbage was a model called the Difference Engine to compute logarithm tables and print the results. He later conceived in 1833 of building a better device capable of performing any calculation such as addition, subtraction, multiplication and division according to instructions coded on cards. This device was called the **Analytical Engine** which consisted of most features we have in our today's computers. For example, Babbage's Analytical engine could store intermediate results in a memory unit. Though Babbage died before the engine was finally constructed in 1871 by his son, he still has the honour of being called the **father of computers** till today. It should interest you to know that the first computer program was developed for Babbage's Analytical Engine by Ada Augusta Byron and she is today remembered as the first Computer programmer.

Now, the whole history of computers is very loaded and that cannot be covered by you in this unit. But you should know that the development of technology has been closely associated with the evolution of computers. While Babbage machines were **mechanical** in designs, another computer called the **Mark I** was one of the **first** world's **electrical** computers. Then, there was the **ENIAC** (Electronic Numerical Integrator And Calculator) which was the first **electronic** computer built in 1945. The first computer to perform arithmetic and logical operations using a stored-program within it was called the **EDSAC** (Electronic Delay Storage Automatic Computer). This was followed few months later by **EDVAC** (Electronic Discrete Automatic Computer). Today's computers are electronic in design.

You will now round up this very brief history of computers by knowing that the most early generation computers were developed for scientific and military purposes. The first commercial electronic computer was the UNIVAC I (Universal Automatic Computer). Finally, the historical development of the computer can be divided into four phases or generations as follows:

The 1st generation computers used vacuum tubes.

The 2nd generation computers used transistors.

The 3rd generation computers used Integrated Circuits (IC's). The 4th generation computers used Large Scale Integrated (LSI) circuits and Very Large Scale Integrated (VLSI) circuits.

The 4th generation of Computers used Large Scale Integrated (LSI) circuits and Very Large Integrated (VLSI) circuits to build microprocessors. The use of mouse, handheld devices and graphical user interfaces (GUIs) started with this generation of computers. The 5th generation of computer used man-made-knowledge called artificial intelligence. Voice recognition, parallel processing and supercomputing started with this generation of computers. The generation of computers can give reply to human spoken languages or natural language inputs and has the ability to learn and for self-management.

Man-made intelligence. The 5th generation of computer used artificial intelligence

Today's computers fall within the 4th generation group while the gradually evolving 5th generation computers are those expected to mimic human intelligence. Do you say, that would be great?. Good. You will now learn briefly about some common types of computers in the next section. The 6th generation of computer used nano technology and introduced voice recognition.

The 6th generation of computers introduced nanotechnology, molecular and quantum computing. This generation of Computers can take dictations and identify words using complex algorithms. The computers of this generation give more flexibility to students and allow the disables to interact more with computer systems. It also introduces advance smart devices.

3.2 Types of Computers

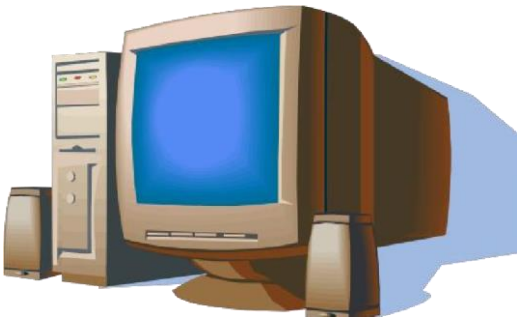
To categorise computers in terms of size and speed is not simple because of the fast growing technology associated with engineering computer. However, computers are usually classified as follows:

3.2.1 Mainframe Computers

This category of computers specially housed in big buildings are very large and majorly owned by large organizations in the past decades. Since today's technology has led to the reduction in size and cost of computers, mainframe computers have virtually become, especially in Nigeria, machines traceable to Museums.

3.2.2 Minicomputers

These are computers next down from mainframes. From the perspective of mainframe computers, they can be properly called medium-sized computers but can perform many of the tasks that mainframes can on a reduced scale.



3.2.3 Microcomputers or Personal Computers (PC)

The name microcomputer is coined from the fact that it is designed using the microprocessor. They are also called Personal Computers (PC's) because that are typically designed for single users unlike mainframes and minicomputers that often serve more than one user at a time. Most computers found around today are micros or PC's.

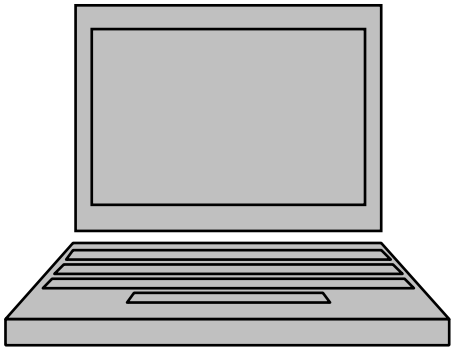
To further categorise PC's, you have possibly heard of the following:

i. Desktop Computers

These are the PC's designed to stay in one place, usually on desks or tables. However, you should have seen some types of computer cases being put on the floor, especially the tower style cases. Figure 1.1 is an example of a desktop computer

Figure 1.1: Desktop computer

ii. Notebook or Laptop Computers



These are portable computers about the size of a notebook and can be placed on your lap while travelling in a bus. Laptop computers are usually powered by rechargeable batteries and due to their great merit of being smaller in size, they are usually expensive. An example is shown in figure 1.2. Moreover, it is more expensive to produce Liquid Crystal Display (LCD) used by laptops than the conventional monitors used by desktops

Figure 1.2: Notebook or Laptop

iii. Palmtop Computers

These are the latest and smallest computers available in the market now. As their name implies, you can place them on your palm. Figure 1.3 depicts a Palmtop Computer.

Figure 1.3: Palmtop Computer.

3.3 The Computer System Unit

Instead of calling the computer case that houses the components such as the motherboard, hard disk and other items, the CPU, it is more appropriate to call it the System Unit because the CPU itself is located on the motherboard which is inside the case. You can now see that it is wrong to call a part a whole. As you can see in the figure for a desktop computer above, a computer system is made up physically of three main parts, namely:

i. The System Unit
ii. The Monitor
iii. The Keyboard

With these three parts, you have a complete computer system already to work with.

You are now introduced to two main groups of components inside the computer system unit below because of their vital roles.

3.3.1 The Main Board or the Motherboard

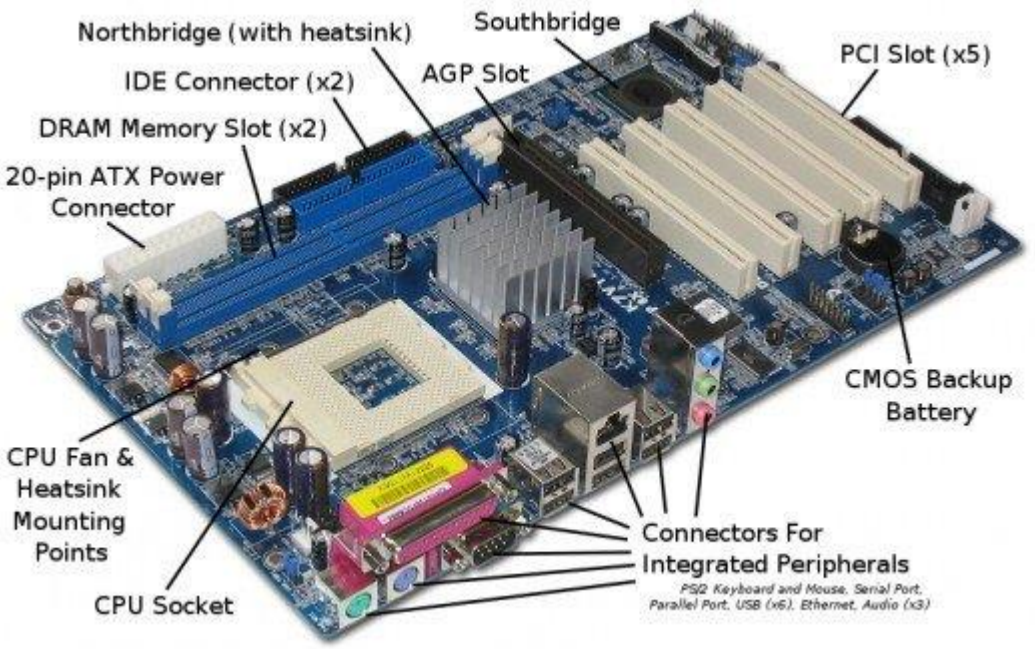


Figure 1.4: Motherboard: (https://turbofuture.com/computers/the-motherboard-components)

The motherboard as the name implies, provides the ability to interconnect directly or indirectly all the other computer devices, and every computer has a motherboard. The most common items on a motherboard are sockets while the remaining circuitry provides interconnections for the essential electronic items, such as the chips or the IC's.

The brain of the whole computer system, otherwise known as the CPU (Central Processing Unit), is mounted on the motherboard as seen in the figure 1.4. You will see this more clearly ahead.

3.3.2 The Drives

Common storage devices used by the computer are called DRIVES. A drive is simply a device that communicates with the computer and interprets the data on the storage media associated with the drive. The common drives on most computers are as follows:

i. Floppy or Diskette Drives
ii. Fixed or Hard Disk Drives
iii. CD and DVD Drives (for CD ROM)

The first two drives stated above should normally come with a computer while you need the third one in case you want to access your CD ROM's or play a video CD with your computer. It is good for you to know that some computers can also have Tape Drives.

The storage media are usually inserted into and removed from the drives as in floppy and CD drives, for example. They are therefore called

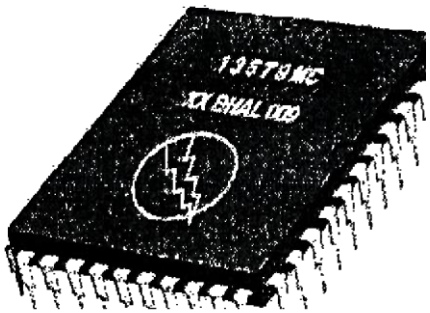
Removable Drives. But the Hard disks are permanently fixed in their drives, hence they are called Fixed Disks. You can see the picture of a Fixed disk below which is hidden from your physical view while working on your computer.

3.3.3 The Fixed Disk

The most common type of removable drive is the floppy disk drive and you will frequently have to work with this type of drive as you copy files in and out of your computer. The capacity of every drive is measured by the amount of memory space available on the associated storage device. You will learn of memory in section five of this unit. Floppy drive used to be the most common type of removable drive, though it is fast becoming obsolete. Figure 1.5 displays an example of fixed disk.

Figure 1.5: Fixed Disk

3.4 The Central Processing Unit



The Central Processing Unit (CPU) whose picture is figure 1.6 on the left, is also simply called the Processor and it is the most important component of the computer system. Hence it is usually referred to as the Brain or heart of the computer system. The general main function of the CPU is to process instructions.

Figure 1.6: Central Processing Unit

3.4.1: Functions of the CPU

The operations of the CPU can be further expanded into the following specific functions:

i. Arithmetic operations
ii. Logical operations
iii. Input and Output (I/O) operations
iv. Data movements
v. Data manipulations
vi. Jumping of instructions

You will now learn of the main components of the CPU itself as illustrated in the following figure.

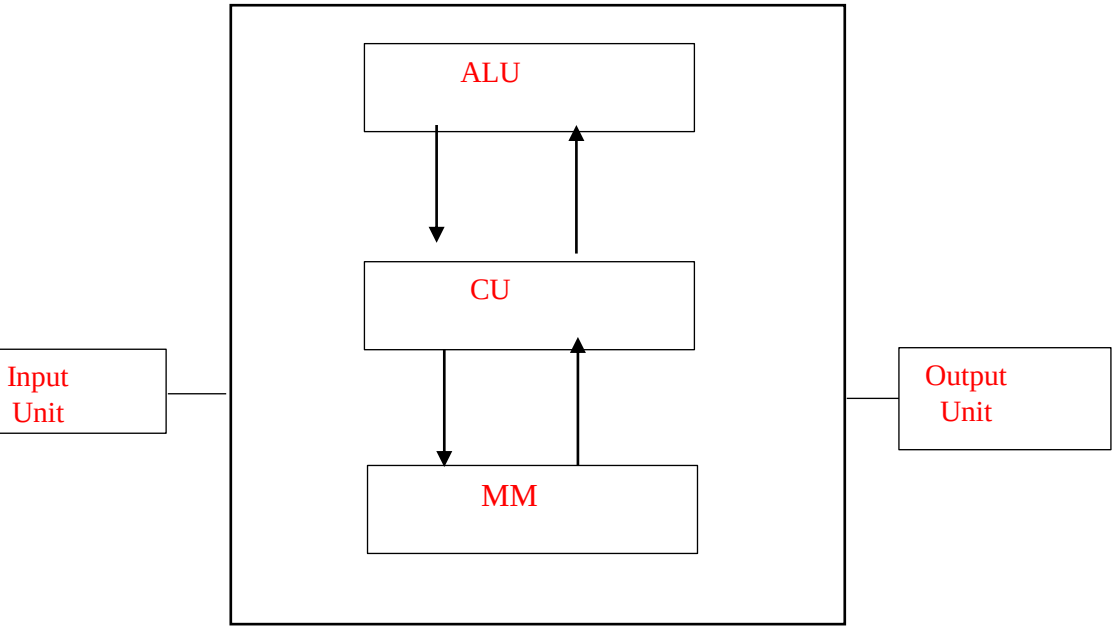


Figure 1.7: Processing Unit

3.4.2 The Arithmetic Logic and the Control Units

In the figure 1.7,

ALU = Arithmetic Logic Unit
CU = Control Unit
MM = Main Memory

Central Processing Unit = CU + ALU

and these three components add up to constitute the CPU. As you can see in the above stated functions of the CPU, the ALU is the component of the CPU that carries out all the calculations. It is therefore called the **workhorse** of the CPU.

The CU part of the CPU operates in what is called "fetch-execute" cycle. This means that instructions are fetched from memory and executed one after the other. The CU mainly oversees the data movement between the ALU and the MM and also between the ALU and other devices of the computer system. You will learn more about the MM ahead.

SELF-ASSESSMENT EXERCISE 1.1

From what you have learned about the CPU, what component of the Processor is concerned with comparison of data?

ANSWER TO SELF-ASSESSMENT EXERCISE

The answer to the above question is the ALU, the reason is that comparison is a logical operation.

3.5 Computer Memory Units

The processor cannot generally store all the data it needs while running a program, that is, executing a set of instructions without the aid of memory. Now, you can visualize memory as a series of cells, with each cell having a size for storing a piece of data or information. As you will later discover in your understanding of how memories are designed, for the processor to have access to memory, the memory cells must have what we call addresses similar to what we have in the post offices.

The smallest unit measurement in the computer memory is the BYTE and

1 BYTE = 8 BITS

where a bit is either 0 or 1. The word BIT is obtained from the two words Binary digit, which is either 0 or I. You should remember that binary system simply means base two counting system. The computer machine was designed based on this counting system, hence your computer does not understand anything else than 0 or I. Programs written for execution on the counter have to be translated into O's and 1 's before they can be executed. Now you should remember the following memory units of measurement:

1 Kilobyte (KB) = 2^{10} = 1024 bytes
1 Megabyte (MB) = 2^{20} = 1,048,576 bytes
1 Gigabyte (GB) = 2^{30} = I, 073, 741,824 bytes

From the above memory equations, you can see that the prefix "Kilo" as used in computer memory is an approximation and greater than 1000 as used in other units of measurement such as length where 1000 metres = 1 Kilometer. You can also see that "Mega" in computer memory measurement is greater than a Million as used in other measurements.

SELF-ASSESSMENT EXERCISE 1.2

i. How many bytes make up 4.2 KB memory?
ii. What is the memory size of your 3.5" (HD) floppy disk? The HD label you see on your diskette simply stands for High Density. The memory size of such a floppy disk is twice that of a 720KB memory which has virtually disappeared from the market. I guess you want to ask me why the floppy disk is called 3.5" disk. Simply put, 3.5 inches is the diameter of the circular magnetic material inside the plastic case. You can now look at the answers.

ANSWERS TO SELF-ASSESSMENT EXERCISE

The following are the answers to the questions in your exercise above:

i. 4300.8MB
ii. 1.44MB

Did you get them right? If Yes, that is great!

Now according to how data are accessed in memory, the memory units are classified as RAM and ROM as you will learn in the next section now.

3.5.1 RAM and ROM

RAM stands for Random Access Memory. RAM simply means that the cells are organised so that the access time for any cell is the same for any other cell and this is accomplished by arranging the cells in a 2- dimensional array like a spreadsheet. The RAM is volatile, meaning that when the computer is switched off, the contents are lost. The RAM is the work pad of the Computer and the computer Main Memory (MM) is actually your RAM.

ROM stands for Read Only Memory and unlike RAM, ROM is non- volatile, meaning that its contents cannot be changed. When the computer is switched of the contents of ROM still remain

intact. For example, the first information you see on your computer screen anytime you switch on the machine is stored in ROM.

There are some variations of RAM and ROM which you may not bother to know about now since they are not common in today's computers.

3.5.2 Secondary or Auxiliary Memory

The secondary memory is simply the memory used for permanent storage as opposed to the Main Memory. Examples of secondary memory devices are your hard disks, floppy disks and the CD ROM's. Today, you can have a hard disk that is as large as 20GB. You should know that your floppy and hard disks are made of magnetic materials. Hence, you should keep them away from magnets and also water so as not to lose the data saved in them.

Today too, you can purchase what we call Zip drive disks. These are high capacity secondary storage media and can have memory size as large as 70 floppy disks put together.

4.0 CONCLUSION

In this unit you have been introduced to the brief history of computers and also have learned a number of basic features of the computer system. You have learnt for example, the basic components of your computer system you are going to be working with as you regularly interact with the machine. Some of these components are not directly visible to you since they are inside the system unit, but some are also being faced out such as the floppy disk.

You have equally learned in this unit about the various types of memory the computer uses. For example you have to remember to save your work always since what you see on the screen are temporarily kept in RAM and the moment you switch off the computer, they are gone!

5.0 SUMMARY

Since you are going to be interacting with the computer machine regularly during this course, you have been introduced to the fundamental features of the wonderful machine after knowing the history behind its development. Such devices you have learnt about in this unit like the disks, are associated with a larger class of devices called the I/O units which you will learn in the next unit. In fact, there are more basic devices of the computer machine you are going to learn ahead. The

keyboard for example is one of those devices. The units that follow will build on these important features of the computer machine and its various applications.

6.0 TUTOR-MARKED ASSIGNMENTS (TMA) 1

You are to do the following assignments and submit your answers to your Tutor for this course. Here we go:

i. Which among the following is the first to be designed in the history of computers?:
   (a) UNIVAC I
   (b) Difference Engine
   (c) EDSAC
   (d) Analytical Engine

ii. What is the difference between the CPU and the System Unit?
iii. If two computer document files have sizes 340KB and 750KB, how many bytes would be remaining on your new 3.5" floppy disk after copying those files into the diskette?

7.0 REFERENCES/FURTHER READING

Academy of Learning (Computer & Business Career College), Introduction to Personal Computers, 1992.

Brightman, R. W. and Dimsdale, J. M., Using Computers in an Information Age, Delmar Publishers Inc., 1986.

Clements, A., The Principles of Computer Hardware, Oxford University Press, 1999.

Mandell, S. L, Computers and data Processing (Concepts and Applications), Third Edition, West Publishing Company, 1985.

Computer fundamentals: Tutorial Points (2017); https://www.tutorialspoint.com/computer_fundamentals/computer_fundamentals_tutorial.pdf

ANSWERS TO TMA

i. Difference Engine
ii. The CPU is the Central Processing Unit which is mounted on the motherboard while the system unit is the computer case that houses the motherboard and other devices.
iii. A 3.5: floppy disk has I.44MB memory space.

The two document files have total memory of 340KB + 750KB = 1090KB
The remaining space is 1.44MB - 1090KB = I.44MB - 1.090MB = 0.35MB = 350KB

UNIT 2: COMPUTER SYSTEM INPUT AND OUTPUT UNITS

CONTENTS

1.0 INTRODUCTION

You have gone through the first unit which introduces you to some basic features of the Computer system. This unit will take you through the general knowledge of various devices called the Peripherals, used with the computer system. Later in subsequent units we will learn specifically about typical examples of these I/O units. So, you are gradually learning many things but in more details as you progress through the units.

2.0 OBJECTIVES

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

i. classify the Input and Output units for the computer system
ii. identify most of the common I/O devices used with the computer.

3.0 MAIN CONTENTS

3.1 Computer Peripherals

A Peripheral is any device, including I/O devices and backup storage devices, that is connected to a computer. There are many types of devices or peripherals that can be connected to a computer to make the computer system a very powerful and useful machine.

In general, computer peripherals can be categorised into the following classes:

Input Devices
Storage Devices
Output Devices
Communication Devices

A terminology used for the combination of the Input and Output devices is called the Transport Devices by some authors. But the common terminology you will frequently see in literature is the **I/O** (Input/Output) devices.

From the above list you can see that the computer is more than a processing tool, but it can be used as a communication tool also, using appropriate devices connected to it with some associated software. Now you will be introduced to some of the input devices.

3.2 Common Computer Input Units

Generally, the input units or devices are used to get commands and data into the computer. These commands or data are sent to the CPU for onward execution or processing respectively. More specifically, Commands are the instructions given to the computer to execute while the data are the raw materials you are working on being sent to the computer to process for you as dictated by your requests to the computer.

Now, the most common input devices you will see with most computers around you are:

i. Keyboards
ii. Mouse (or Mice when more than one)
iii. Joysticks iv. Scanners
iv. Digital Cameras
v. Microphones

Now, you will learn of these devices one after the other.

3.2.1 Keyboards

The keyboard is generally called the Standard Input Unit. This is because, it is the input device that must necessarily come with every computer system. You can hardly do without the keyboard despite the development of many input devices today. For example, you need the keyboard to type your document which a mouse for example cannot do for you. Today, though there are Voice recognition

software to use by just speaking into a microphone to see your voice translated into letters on the screen, the key board still remains the standard input device. You can locate the keyboard among the computer system parts itemized in figure 2.1.

You will learn in detail the main features of the Keyboard in the next unit. However, before you learn more about the Keyboard, it is good to know that the keyboard is said to be "typematic", meaning that if you keep your any key pressed beyond a single stroke, the key will keep on repeating itself such as what follows "MMMMMMMMM", for pressing M key for some seconds. So you need to be smart, soft and brief when pressing your keyboard keys!

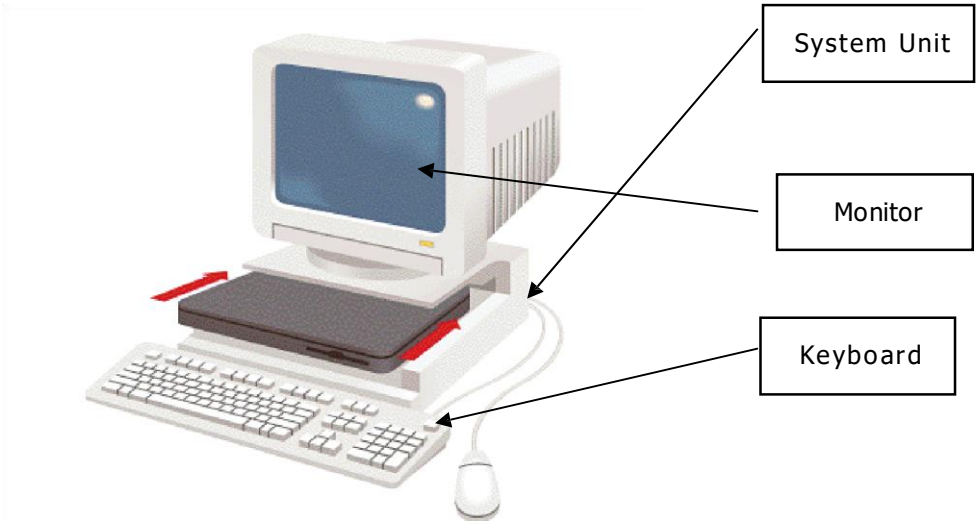


Figure 2.1: A computer System

The Primary Key shown in figure 2.4 is similar to the ENTER key on the keyboard. The key can be configured for left-handed users so that the primary and Secondary keys are reversed. The Secondary key gives you access to some menus that are related to what you may want to do with what you currently have on your screen or the item you have currently selected on the screen. You will learn more of this in the next unit.

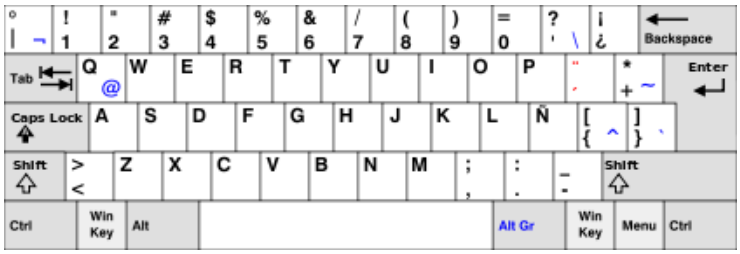


Figure 2.4: A Keyboard

Another member of the Pointing Devices group shown in figure 2.5 is the Touch Pad, used by some laptops. You move your finger around the pad to move the pointer instead of moving the whole mouse in the case of a mouse.

Figure 2.5: Touch Pad

3.2.2 The Mouse

What a funny name for the device!. The name has not changed though technology has changed its design from the old mouse-like look of many decades ago. Now, look at the picture in figure 2.2 to identify some important features of the mouse though you will learn more on how to use the mouse later in the next unit.

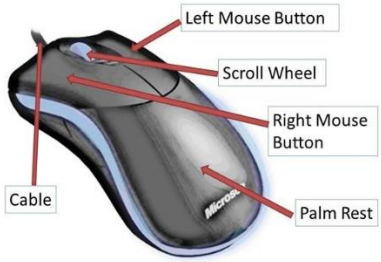


Figure 2.2: A Mouse

At the bottom of the Mouse as seen in figure 2.3 is a ball which should be kept clean always, hence, you need to use a Mouse Pad to prevent it from gathering dust.

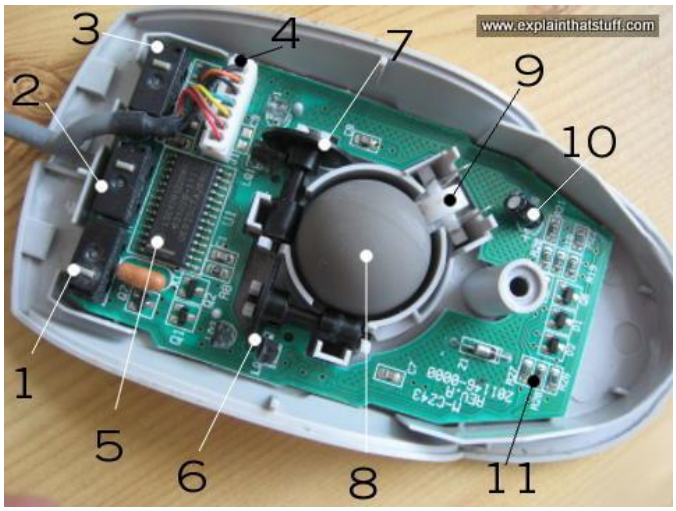


Figure 2.3: The bottom of the Mouse
(https://www.explainthatstuff.com/computermouse.html)

The Labels are explained as follows:

1. Switch detects clicks of left mouse button.
2. Switch for middle button.
3. Switch for right button.
4. Old-style connection to PS/2 socket on computer.
5. Chip turns back-and-forth (analog) mouse movements into numeric (digital) signals computer can understand.
6. X-axis wheel turns when you move mouse left and right.
7. Y-axis wheel turns when you move mouse up and down.
8. Heavy rubber wheel.
9. Spring presses rubber ball firmly against X- and Y-axis wheels so they register movements properly.
10. Electrolytic capacitor

The mouse is a member of the group called Pointing Devices. They are called Pointing devices because they are used to move pointers on the computer screen to desired positions. They are therefore Positioning devices. The pointers can have various shapes depending on your environment. As you are going to see later, the pointer can be a vertical **I** symbol on your Word Processing window.

SELF-ASSESSMENT EXERCISE 2.1

What is the device you learnt?

ANSWER TO SELF-ASSESSMENT EXERCISE

The devices learnt are keyboard and mouse

3.2.3 Joysticks

Joysticks are also input devices specifically used for some computer games. They are of different designs and colours.

Figure 2.6: Joystick

3.2.4 Scanners

The pictures you see in this course material were imported into this document with the aid of a scanner. While do you think we have to classify a scanner as an input device? This is simply because the scanner has to transfer the scanned image to your computer screen for you to see before saving the image or printing it out. Example is shown in figure 2.7. For example, below is a scanned image screen being captured while scanning an image with an HP Office Jet 710 machine (which has a scanner as one of the components)? However, most scanners are Flatbed scanners, having a photocopier design.

Figure 2.7: A Scanner

As you can see in the picture below, every scanner has an accompanied software to convert and transfer the image to your screen. Most scanners have the ability to convert your text image into actual text, so that you don't have to type all over again a page of document. This special feature is called Optical Character Recognition (OCR). However, you may not have 100% conversion of the characters for some scanners. That means that you have to do some editing of the scanned text.

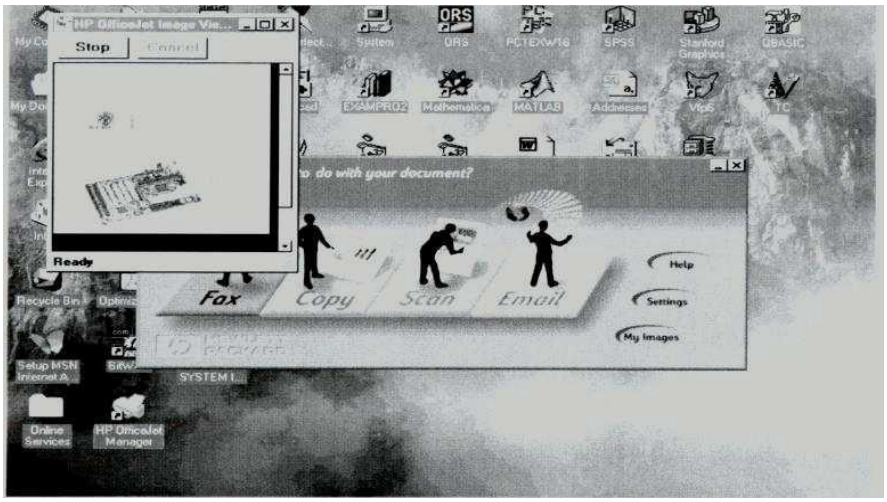


Figure 2.8: Scanning in process

3.2.5 Digital Cameras

Technology has made life so easy for keeping records of your memorable events on the computer using a digital camera. The digital camera doesn't use films as in conventional camera. The camera simply digitizes the image captured (i.e. converting them to dots with the appropriate colours) and them keeps the image in its memory until you transfer it to your computer via a cable. An example is shown in Figure 2.9.

Figure 2.9: Digital Cameras

3.2.6 Microphones

This is also an input device that records your voice data to the computer. It can also be used to record songs if you like with an appropriate software to do the recording and play it back when you so wish. Today, you can send your voice message as a computer file through a computer to a distant friend. The receiver can then play it on his own computer. For example, a voice message can be

attached to an email to be sent to a friend in a far away country instead of paying so much to talk to him on phone.

Moreover, there are many Voice Recognition software today that can record your voice and translate it into characters on the screen. The device that helps you to do all these is a Microphone connected to the appropriate socket on your computer system. Examples of Voice recognition software are: Google cloud speech API, Google Docs voice typing, Amazon Lex and Google Now. Figure 2.10 displayed Google doc voice typing window. The percentage of the quality of voice typing is very high.

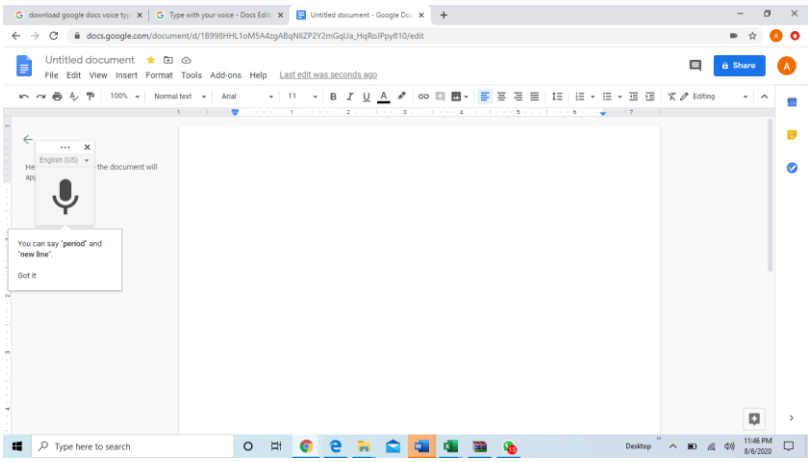


Fig. 2.10: Google Doc Voice Typing window.

You need to train your voice to be able to receive the best results in Voice Recognition dictation. You also need to configure the device appropriately and be in an environment without noise because the computer can translate the noise as part of your voice! Have you heard of Video Conferencing?. This is using your computer to participate in discussion with a group of people in a distant place. You need a microphone to transmit your voice across to the members of the "Invisible Conference", where you only see your fellow conference members on your computer screen. Example of video conferencing software are; Zoom, Skype, Microsoft Team, Cisco WebEx, GotoMeeting, Cyberlink, Umeeting, Joinmeeting and Google Hangout. Figure 2.10 displayed AITP International Conference that took place on July, 2020 with the Zoom platform.

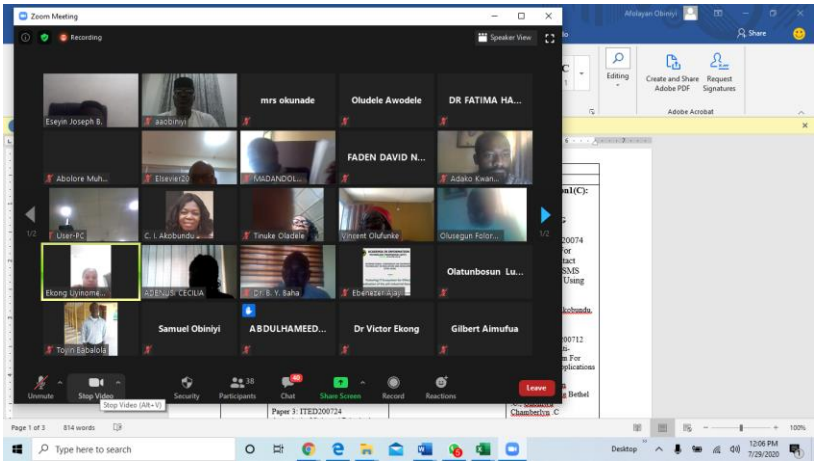


Fig. 2.11: AITP international Conference with Zoom platform

Now, you can learn about the Output devices in the next section.

3.3 Some Types of Output Units

The Output devices are used to convey the results of computer processing. They simply convert computer digital information into what you can understand. The most common output devices can be grouped as follows:

i. Display Devices
ii. Printers
iii. Sound Devices

3.3.1 Display Devices

Examples of display devices are: monitor, Liquid Crystal Display (LCD), Cathode Ray Tube, Organic Liquid Crystal Display (OLCD), Quantum dot Display, Plasma Display and Field Emission Display. Three of them will be discussed.

Monitor

The most common display device is the MONITOR. In fact you should know that the Monitor is called the Standard Output Unit just as the Keyboard is the Standard Input Unit. This is because it provides the immediate output you need from a computer processing unit. The monitor uses the same Cathode Ray Tube (CRT) like the television set. Maybe you have heard of 14" Monitor. the CRT are

usually manufactured in different sizes. This gives the size of a monitor and it is the measurement of the diagonal across the picture tube for example from the top left to the bottom right or from the top right to the bottom left.

Figure 2.12: Monitor

LCD Display Panels

These are the commonly used display devices you see with laptop computers. Remember, LCD stands for Liquid Crystal Display and this type of display emit no radiation unlike monitors. This makes it very advantageous. Moreover, LCD panels are flat in shape and thereby reducing desk space when used with desktop computers.

Figure 2.13: LCD Display

Plasma Display

This is a type of computer video display with the picture element (pixel) on the screen presentation by a very small component of plasma or charged gas. It can output either analog video signals or output node's digital computer input. The displays are very bright. Plasma displays comes in high definition television (HDTV) and in different sizes. The sizes can be up to 152.4cm for home theater.

3.3.2 Printers

Printers are used for getting hard copies of output of computer processing. These modern days printers are:

i. Toner Based Printers
ii. Liquid Inkjet Printers
iii. Solid Ink Printers
iv. Dye-Sublimation Printers
v. Thermal Printers
vi. Dot Matrix Printers

3.3.2 Printers

i. Toner-Based printer

This is also known as laser printer. Laser Jet Printers are Non-Impact printers. They print almost noiselessly, because of their design to use toner. Laser Jet and Ink Jet printers have better Resolution than Dot Matrix printers. Resolution is the number of dots per inch (dpi). Printing with a Laser Jet printer is like having your final printed outputs look exactly as if they were produced from a printing house. A Laser Jet printer uses the same process like that of the Photocopiers. It prints out high standard text and graphics. Laser printers use xerographic process by sensitizing the image area of the real graphic with a charge of electricity in such a way that the portion of the paper that coincide with the powder of the toner conveying opposite charge retain the toner which is then permanently glued to the paper.
The xerographic process is also used in photocopiers and multifunction printers (MFPs). Light-emitting diode (LED) printers are also laser printers. LED printers use collections of LEDs in place of laser to allow toner to gum to the print drum. Figure 2.14 displayed a toner-based printer.

Figure 2.14: Toner-Based printer

ii. Liquid Inkjet Printers

This work by spraying little drops of ink on any given size of paper. Most people in Nigeria use this type of printers because of the availability and cost. Figure 2.15 depicts a liquid inkjet printer.

Figure 2.15: Liquid Inkjet Printers

Inkjet Printers are Non-Impact printers. They print almost noiselessly, because of their design to use ink. Ink Jet printers have better Resolution than Dot Matrix printers. Resolution is the number of dots per inch (dpi). Printing with an ink Jet printer is like having your final printed outputs look exactly as if they were produced from a printing house. An ink Jet printer uses the same process like that of the Photocopiers.

An Ink Jet Printer output can produce some blots if you rub your hand on the paper the moment it comes out of the printer. You allow some seconds to allow you get the printed materials from an Ink Jet Printer to dry up. They are today the most expensive types of printers in the market. They can print your outputs in colours as they appear on the screen. There are Colour Laser Jet Printers too, but very expensive.

iii. Solid ink printer

Another name for this type of printer is phase in charge printer. The printer melts a coat of ribbon so that it sticks to the paper which is being printed. This kind of printing is called thermal transfer printer. The printer is shown in figure 2.16.

Figure 2.16: Solid ink printer

iv. Dye-Sublimation printer

This is also known as dye-sub printer. It uses heat to pass dye to a channel such as plastic card, paper or canvas. It is used mostly for printing colour photographs. The printer is illustrated in Figure 2.17

Figure 2.17: Dye-Sublimation printer

Thermal printers

This operates by cautiously heating area of the important heat receptive paper. An example is displayed in Figure 2 18.

Figure 2.18: Thermal printers

vi. Dot Matrix printers

Dot Matrix printers are fast disappearing from the market because of the advancement of technology that has given rise to Inkjet and Laser Jet printers. Dot Matrix printers belong to the group of Impact Printers because the Print head has to hit the paper and make some impact on the ribbon before the printing process is complete can appear on the paper. Hence they are useful when you have to print on cyclostyling stencils to produce large quantities of your printouts. Many organizations in Nigeria for example still use this type of printers to print their monthly staff Pay Slips, because of the high cost of printing so many of them using other types of printers. Example is shown in Figure 2.19.

Figure 2.19: Dot Matrix printer (https://wiki.ezvid.com/best-dot-matrix-printers)

vii. Multifunction printer

Today, we have what have been called Multifunction Devices as shown in figure 2.20. They are usually special types or all-in-one printers that combine scanners, copiers and fax into the same machine. They are commonly called Office Jet printers or all-in-one

Figure 2 .20: HP colour Laserjet-pro M479fnw multifunction printer

There are other types of printers which are either obsolete or are becoming obsolete. These are; impact printers, typewriter-derived printers, daisy wheel printers, line printers, Liquid Ink Electrostatic Printers, Plotters, Digital Minitab, Electrolytic printers, spark printer, Barcode printer, Billboard, Sign Paint Printers and Laser Etching Industrial Printers.

3.3.3 Sound Devices (Speakers)

These are simply the Speakers that come with your multimedia pack so as to get sound or voice output out of your computer system. You need speakers to play an audio file for example. Many electronic tutorials today include sound components and speakers are essential to fully go through such tutorials with full understanding. You can receive Radio and Television channel signals on your computer by having an appropriate communication device installed. But you need speakers connected to output the sound effects. The Multimedia speakers are usually similar to some types of desk speakers used by some stereo sets. However, there is a small speaker that is usually fixed inside the system unit to give some error alarms such as when a wrong key is pressed on a keyboard.

3.3.4 Input / Output Devices

We have discussed devices that are used for inputting data into a computer system and the devices that are used for outputting data/information from a computer system. However, there are devices that are used for either inputting or outputting data from a computer system. Examples of these devices are: Modems, Network cards, Touch screen, Headsets (consist of speakers and microphones), facsimile (FAX) and audio cards/sound cards. This shall be discussed briefly.

Modems

Modem stands for a modulator-demodulator. It is a mechanism that transmit and receive data over a phone line, cable or satellite connection. It was originally developed to convert data from analog to digital signal and vice versa. An example of a Modem is shown in Figure 2 18.

Figure 2.18: Modems

ii. Network card

Network card which is also known as Network Interface card (NIC) is a device that links a computer system to a computer network. It is usually used in Local Area Network (LAN), and in some cases embedded on the motherboard. It can also come in form of a circuit board, chip or card as the name implies which can be installed on a system. Network cards allow signals to move to and from a computer system. Figure 2. 19 displayed the picture of a Network card.

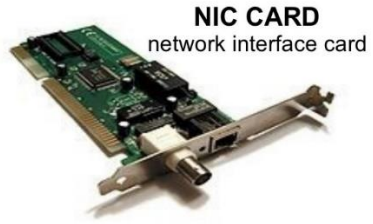


Figure 2.19: Network card

iii. Touch screen

This is a device which gives room to the user to interact with the computer device by touching areas on the screen as shown in Figure 2. 20. Most touch screen devices are LCD or OLCD display and the computers in most cases are laptops, tablets or smartphones.

Figure 2.20: Touch screen

iv. Headsets

These are small speakers in different shapes and sizes that can be put on or in the crus region of your ears. Headsets are also called headphones. They contain devices that can turn audio signals to sound waves. The mechanism that can change audio to sound waves and vice versa is called *transducers*.

Figure 2.21: Headsets

v. Facsimile

This is an electronic method of sending document or image from one place to another. Facsimile or Fax is a combination of scanner and transmitter which is used to transit scanned document over a telephone or Internet connection. An example of Facsimile is displayed in Figure 2 .22.

Figure 2.22: Facsimile

. **Audio card/sound card**

This is an inner expansion card that make available input and output audio signals from and to a system device with the aid of a step by step written instruction.

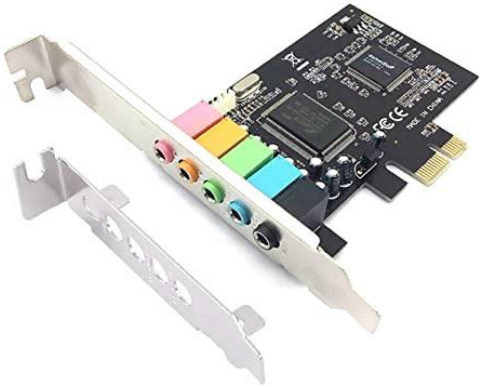


Figure 2.23: Audio card/sound card

Important Comment

Already you have learnt about storage devices in unit 1. They are also called Secondary or Auxiliary Memory devices. You don't need to have all that were said about them repeated over again here. However, it is good to let you know that Secondary Memory can also serve as an output device in the

sense that you can decide to send the output of a computer to a disk for storage before printing it out. On the other hand, the secondary memory unit can also serve as an input device in the sense that data needed for a computer to be processed can be made to reside on a disk and be fetched from there directly when needed instead of being supplied from the keyboard operation.

The place of the Secondary Memory Unit is seen in the following modified figure.

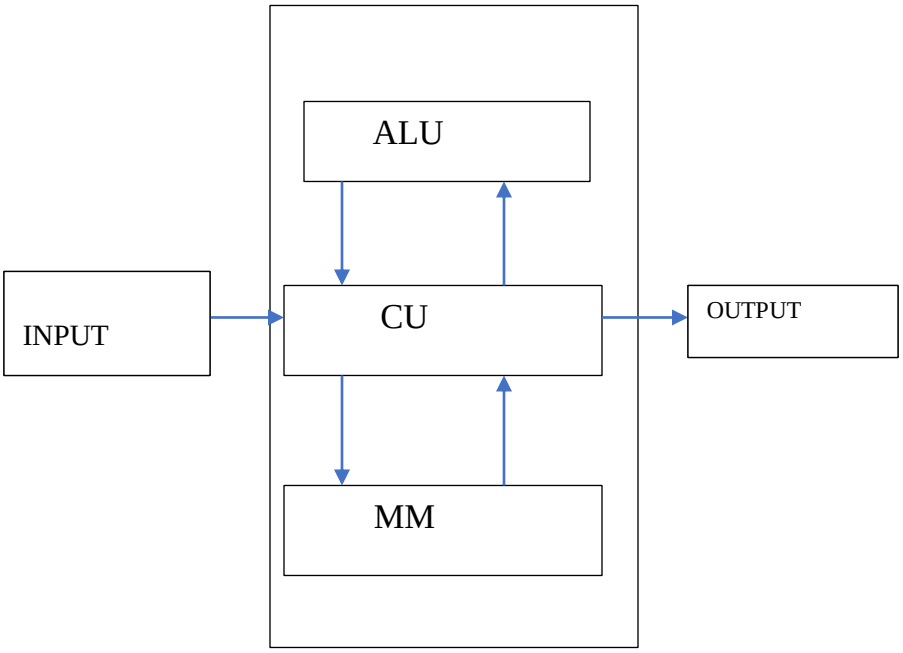


Figure 2 19: Processing Unit

Note that:

ALU = Arithmetic Logic Unit
CU = Control Unit
MM = Main Memory
Central Processing Unit = CU + ALU

Remember you came across this processing unit in unit 1 of this study, however you have not learnt about Communication Devices regarding PC peripherals. We shall take a look at it in a subsequent unit ahead.

Let us now round up this unit.

4.0 CONCLUSION

In this unit, you have learnt about the Computer peripherals and that they are classified as Input, Output, Storage and Communication devices. These are the common devices that make the computer a complete useful tool. You will be using most of these devices in your frequent use of the computer machine to perform one task or the other.

5.0 SUMMARY

This unit has introduced you to what look like essential components that you cannot do without to make the computer system very useful. For example, you cannot fully enjoy computing without the monitor which gives you immediate results of process, just as you frequently need the use of your eyes an important part of the body to perform their fundamental task of seeing for the body. Hence peripheral devices are to a large extent what parts of the computer are to the whole computer system. The units ahead will teach you more about the features of some of these devices. For example, the next unit is expected to take you through the specific features of the Keyboard and how you can make the best use of it.

6.0 TUTOR-MARKED ASSIGNMENTS 2

You are to do the following assignments and submit your answers to your Tutor for this course.

i. Name the Standard I/O units and state why they are called standard.
ii. Why is the Secondary Memory Unit having bi-directional arrows from the CPU as in a figure in this unit?
iii. What are the differences between Printers and Multifunction devices?

7.0 REFERENCES/FURTHER READING

Academy of Learning (Computer & Business Career College), Introduction to Personal Computers, 1992.

Brightman, R. W. and Dimsdale, J. M., Using Computers in an Information Age, Delmar Publishers Inc., 1986.

Clements, A., The Principles of Computer Hardware, Oxford University Press, 1999.

Mandell, S. L., Computers and data Processing (Concepts and Applications), Third Edition, West Publishing Company, 1985.

ANSWERS TO TMA

1. The Standard Input Unit is the Keyboard and the Standard Output Unit is the Monitor. They are called 'Standard because every computer system comes with them.

2. Because it can both serve as an input and output device.

3. A Multifunction device combines more than one device in the same machine. For example, an Office jet machine combines fax, copier, printer and scanner in the same machine while a printer only prints without performing other functions.

UNIT 3: THE KEYBOARD AND THE MOUSE

CONTENTS

1.0 INTRODUCTION

In Unit 2, you learnt about the peripherals and you were specially introduced to the standard Input Unit, that is, the keyboard. This unit is expected to build on the previous unit by introducing to you the basic features of the keyboard. You need to get used to the keyboard in order to increase your efficient use of same and subsequently the use of the computer system.

The mouse has been designed specifically for computer applications that run on the windows operating system. Today, most of the computer programs which we obtain and you interact with are windows-based applications and you need to be conversant with the mouse sufficiently in order to be a good user. We shall now study your objectives for this unit itemized below.

2.0 OBJECTIVES

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

The types of Keyboards are:

i. categorize the keys on the computer keyboard
ii. use some combinations of keys to perform some tasks
iii. use the mouse to perform various tasks.

3.0 MAIN CONTENTS

3.1 The Keyboard and its Features

KEYBOARD FIGURE HERE

Types of Keyboard

There are four types of keyboard namely;

i. Qwerty keyboard

ii. Gaming keyboard

iii. Virtual keyboard

iv. Multimedia keyboard

3.1.1 Qwerty Keyboard

The name Qwerty keyboard emanated from the Organisation of keys on the standard English type-writer. Looking at the next six characters on the top of the alphabetic line of the keyboard to the right after the Tab key, you will get the name QWERTY. The US English Qwerty keyboard which is most common in Nigeria has 104 keys. Example of Qwerty keyboard is displayed in figure 3.1

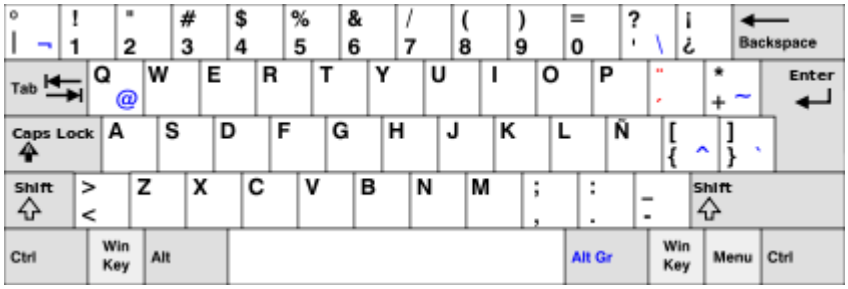


Figure 3.1: Qwerty Keyboard

3.1.2 Gaming Keyboard

This is the type of keyboard designed for playing games. The common keys used for gaming are “W, A, S, D”. A name was given to this key from the character and the name is WASD. The WASD layout contains extra functionality such as the ESC key and the F1-F12 keys. A computer game player used the mouse and the key to play game. A game keyboard is shown in figure 3.2.

Figure 3.2: Gaming Keyboard

3.1.3 Virtual Keyboard

This is a keyboard that is made of software instead of the physical keyboard. Input of characters through the virtual keyboard takes place by means of touch screen interface and other type of virtual reality. Figure 3.3. displays an example of a virtual keyboard.

Figure 3.3: Virtual keyboard

3.1.4. Multimedia Keyboard

This is a keyboard specifically created to access some multimedia functions such as the Internet, music and emails. The buttons give access to control the computer in diverse ways such as turning on and off the computer, allow the CPU to go to sleep and wake up, control music program such as iTunes and multimedia player. A typical multimedia keyboard is illustrated in figure 3.4. The features of these keyboard will be explained in section 3.2.

Figure 3.3 Multimedia Keyboard

The most common keyboard you will see today has 104 keys. As one exercise, please count the keys as seen in figure 3.4 of 104 key keyboard.

Figure 3.4: 104 keys Keyboard (https://www.informationq.com/computer-keyboard/)

If you didn't miss your count, there are 104 keys. Look above again. You will see from your close study of the keys that they seem to be "grouped". For your understanding, the keys can be grouped as follows:

i. Alphanumeric Keys
ii. Function Keys
iii. Navigation or Cursor Control Keys
iv. Numeric Keypad
v. Control Keys
vi. Windows Keys.

However, you may also refer to the first group stated (in alphabetic keys) as Editing Keys because there are some keys having symbols combined with numbers and some are punctuation keys. The grouping is just to help us understand the various tasks the keys can perform. You can now learn a few things about some of the keys as follows, as you start with a more general grouping: Meanwhile take a look at figure 3.5 to view the keyboard groupings

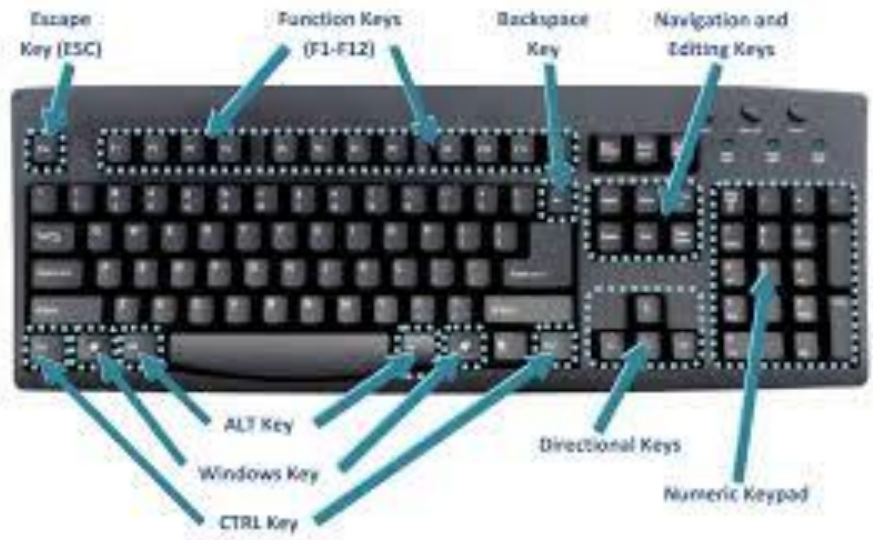


Figure 3.5: Keyboard grouping

EDITING KEYS

Due to the influence of the typewriter, the layout of most electronic keyboards closely follow that of the QWERTY keyboard. Remember that the word Qwerty is simply the order of characters on the back row of keys (from left to right) on a manual typewriter. This layout was used in the design of the English Language Computer Keyboard, possibly to avoid re-training our typists.
As you can see, the Editing Keys consist of the character keys, Numeric Keys on the second row and some keys associated with text inputs. Now, apart from the Numeric, Alphabetic and Punctuation Keys, let us study more closely some other keys associated with editing.

SHIFT KEYS

Can you locate these keys? They have an Up-Arrow symbol on them, one on your left and the other on your right. They are simply used to change the characters to uppercase or capital letters and the symbols appearing on the second row. You must hold down the key while you press the appropriate keys

SELF-ASSESSMENT EXERCISE 3.1

List two symbols on the second row and two elsewhere that you need Shift Key to obtain on your text screen.

ANSWER TO SELF-ASSESSMENT EXERCISE

On the second row, we have for examples {and + symbols. We also < and:

CAPS LOCK KEY

When you press the Caps Lock key, an indicator light is on at the top right corner of the keyboard and any character you type in this mode will be a capital letter.

ENTER KEY

This is an essential key you might use more frequently than any other key. On some keyboards, you can identify it with symbol. The Enter Key is also called the Return Key in the older design of electronic keyboards because it plays the role of the carriage Return of the manual typewriter.

Enter Key is used to end the current line of the text and start a new one when typing. However, the Enter Key can also be used to run a program whose icon is already selected or whose associated button is highlighted. You will get to know more of its uses in other environments ahead.

SPACEBAR KEY

This key creates a space character. However, watch out, it deletes a character to the right if the insert key is off. With Insert Key on, it simply creates space between two characters, that is, it **shifts** forward to the right of the next character. You can also use it to execute an action whose associated button is highlighted.

TAB KEY

This key is used to indent your text as used in paragraphing, when typing as you will see later, it is also used to change an object, especially text, in dialog boxes.

BACKSPACE

The backspace Key is identified on the keyboard by the Left-Arrow Key on some Keyboards. Is is used to delete a character to the left of the insertion point. This is to help you to correct possibly a wrongly typed character. Do you have this features on a manual typewriter? No.

FUNCTION KEYS

These are the keys labeled F1, F2, and F12 on the first row of your keyboard. The use of any of these keys depends on the software you are using. The keys are usually programmed to carry out a number of steps in one single step. However, programmers are united in programming F1 Key to open for you a help window, where available.

NAVIGATION KEYS

These are the cursor-control keys that help you to move around on the screen. They are four in number, identified by the Left, Right, up and Down arrows. A group of these keys are also on the Numeric Keypad but your Num Lock key must be in "off' mode to use them lest you see for example number "8" typed on your screen when you intend to move upward.

NUMERIC KEYPAD

As you can see, the Numeric Keypad appears like a simple calculator. It is mainly useful when you have to enter repeatedly numbers. You should normally press the Num Lock key with the Num Lock Indicator light on, when you want to use the number keys of the keypad.

CONTROL KEYS (Ctrl and Alt)

There are two keys labeled Ctrl and another two labeled Alt on the keyboard. These two types of keys are normally used in combination with other keys to perform a task. You can therefore see them as "Modifiers" i.e. they modify the default or the original function of another key. Their uses depend on different programs. For example, if you press Ctrl + S. that is Ctrl key with S key together in Microsoft Word environment, the action will amount to saving your current document.

However, it is a general fact that if you press the following combination of keys: Ctrl + Alt + Del, your computer system will reboot itself.

ESCAPE KEY (Esc)

This key is often used to go back one step or cancel the current command. Hence, its use is also dependent on different programs.

WINDOWS KEYS (Windows and Shortcut)

The windows key was introduced few years ago because of the influence of the windows operating system. You will learn more about windows Operating System in this course. The Windows key has

the window logo and it is used to activate or simulate the start button on the taskbar, instead of using the Mouse.

The shortcut key is also called the popup key. It is simply activated on the screen some menu items associated with your current activity window or selected object.

IMPORTANT REMARKS

If you look above the Cursor-Control keys, you have the Insert, Home, Page Up, Page Down, end and Delete Keys. These keys are also used mainly in editing environments.

In an editing environment, the Home and End keys are used to move the cursor to the beginning and the end of the current line respectively. The insert key allows you to insert characters between texts without overwriting. The Delete key or its equivalent Del key on the Numeric Keypad allows you to delete the character to the right. Nevertheless, take care! If you leave the Del (ete) key pressed, all characters to the right will be dragged to the point and deleted one after the other, and almost in quick succession.

The more you get used to the keyboard and varieties of computer software, the more you will get to know about various uses of keys on the keyboard.

Now, you will appreciate the usefulness of the Mouse as another input device.

3.2 Using the Mouse

Having introduced you to the Mouse in the previous unit, you are now to learn how to use the device. You remember, the Mouse has a primary button on the left and a secondary button on the right. If a Mouse has three buttons, the middle button is rarely used. However, there are some Mouse today that have a wheel between the buttons, called a scroll wheel. The wheel is used to scroll the contents of a window up and down like the scroll Lock key on the Keyboard.

Various operations that you can use the Mouse to perform are stated below:

i. Selecting
ii. Clicking
iii. Double clicking
iv. Dragging

Selecting

Selecting an item is also called Highlighting in some cases. This is done by moving the Mouse so that the Pointer is positioned on a specific icon on the screen or an item of menus.

i. **Clicking**

This is the pressing gently of either the Primary or the Secondary button. Except you configure your desktop to be like a Web page, a single click of the primary button is done to select an item. However, if you configure your desktop as a web page, a single click will perform a task as if you are double-clicking.

ii. **Double-Clicking**

This is the fast tapping of the primary button TWICE. It is usually done to run a program associated with a selected icon or to open a window. Remember that if your desktop is customized as a web page, a single click will do the job.

You need to know that Double-clicking a word in Microsoft Word will select the word while triple-clicking will select the whole paragraph.

iii. **Dragging**

Dragging is the use of the Mouse to move around a window object or a group of objects. To carry out dragging, you select the object and then hold down the Primary button while you move the object to your desired position.

Finally, you need to practice to become an effective user of the Mouse.

4.0 CONCLUSION

In this unit, you have learnt about the various groupings of the keyboard keys and the basic operation of the keys. Remember, the keyboard still remains the standard Input device and you need to get used to the keys.

The unit has also taken you through the use of the Mouse as a very important input device within windows environment.

5.0 SUMMARY

The more you get familiar with the keyboard and the use of the Mouse, the better you become as a Computer user. This is the focus of this unit in summary. Get friendly with these important input devices which have been itemized in this unit.

0 TUTOR-MARKED ASSIGNMENT

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UNIT 4: OPERATING SYSTEM

1.0 INTRODUCTION

In the last three units, you have been introduced to the physical components of the Computer System. Now, you are going to study the important features of what is called an Operating System in this unit. An Operating System is what provides the platform of interaction between you as the Computer user and all the components you have learnt in the previous units.

This unit will introduce you to the most common Operating System available on many computer system around you. So, the objectives of this unit will be as presented in section 2.0.

2.0 OBJECTIVES

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

i. Define operating system and state it's function
ii. describe the main features of the Windows operating System
iii. identify some common programs within the program groups of Windows OS.

3.0 MAIN CONTENT

3.1 Introduction to Operating System

An Operating System or simply called an OS is a collection of computer programs that helps you to run other programs and manage other devices on the computer system.
You can summarize the functions of an OS which are to:

i. To allow computer users to run application programs or software.

ii. To control the use of all the devices of the computer system.

For a better understanding of the role of an OS, look at the following illustrative diagram to see the place of the OS between you and the computer system itself.

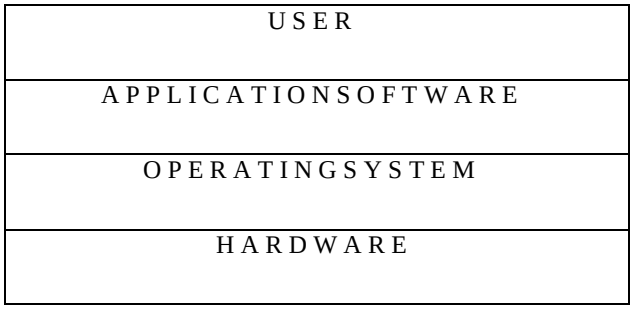


Figure 4.1: The place of OS

Looking at figure 4.1 diagram, you can see an OS as the Software Interface between you as a user and the computer machine. No user can therefore interact with the computer system without an OS.
To start your computer system, which is usually called Booting, you need an OS to do this. You can see how important an OS is. When you purchase a new computer system, the first software to install on it is the OS while the OS helps you to install other software you would need to perform one task or the other.

SELF-ASSESSMENT EXERCISE 4.1

From the figure above, can you remember one Application Software discussed in unit 3 that OS helps you to use to perform your editing job.

ANSWER TO SELF-ASSESSMENT EXERCISE

The Application Software is Microsoft Word. This course will introduce you to more Application Software in the units ahead.

TYPES OF OS

Before you are introduced to the most common OS around you, it is good to know that Operating Systems are broadly categorized as follows:

i. Single User OS

ii. Multi-user OS

Single User OS

This is an OS that allows you to run only one program in the Main Memory and processed at a time. A common example is the old Microsoft Disk Operating System (MS-DOS) which has disappeared from the market today.

Multi-user OS

A multi-user OS supports many users to share the same resources or devices of the computer system simultaneously. More specifically, Multi-user OS falls into the category of OS that supports Networking. You know that you will be introduced to an important type of OS.

3.2 Windows Operating System

Windows Operating System is a typical example of OS that runs programs and arranges them in window-forms. Windows OS allows you to open more than one program on your screen, hence, it supports the concept of Multiprogramming where you don't have to close one program to open another one.

Simply defined, a window is an enclosed frame within which your application program runs. For example, look at the following figure;

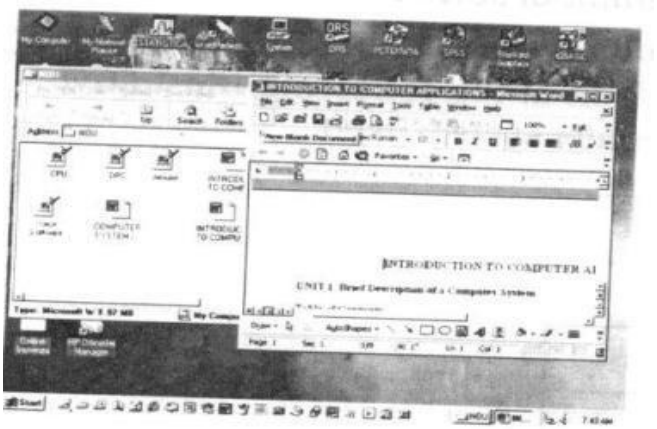


Figure 4.2: Windows O.S.

How many windows do you see? There are two windows, one for a MS Word document foe your unit I and the other behind it is a folder called NOU (National Open University) where some files are kept.

3.1.2 WINDOWS DESKTOP

Looking at the above figure once again, you will see that the two windows are on a background. That platform or background on which all programs are open is called the Desktop. The name connotes something like the top of your desk or table where you can do a number of things.

3.2.2 ICONS

Another important feature of windows OS is the ICON. It is a graphical representation of a program, a file or a program activity which you can just double-click to run or open a command / instruction. Looking at the figure 4.2 once more, you will discover that the icons are not the same. Many icons have been beautifully designed to represent different types of programs and file situation. These designs helps you to know what types of application software can be used to open them (in case of files).

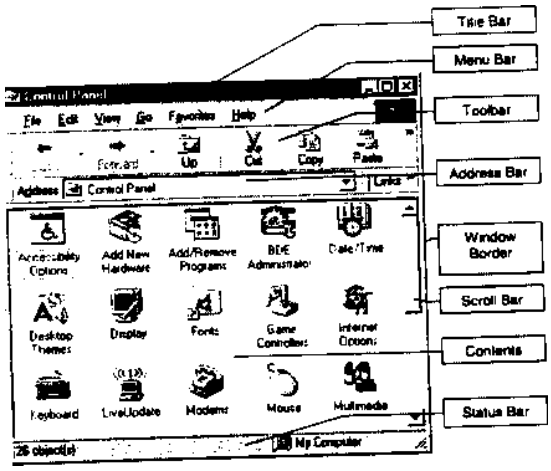


Figure 4.3: Windows in NOU folder

Figure 4.3 for example, shows within the NOU Folder same MS- Word documents and MS-Photo Editor files (which you can also open with "Paint" software).

Now look at the following figure to see the characteristics of a typical window of a program called the control panel.

3.2.3 WINDOWS OPERATING SYSTEM EDITIONS

Having introduced you to the windows Operating System, you will now specifically be taken through the basic features common to the windows OS editions.
Windows Operating System was developed by the Microsoft Corporation and the first in the series of editions was the Windows '95.
Please take note that there was an earlier series of Windows such as Windows 3.1 or Windows 3.11. These editions or versions were Graphic User Interface (GUI) Operating Systems. They have to be run only after your computer system has been booted with MS-DOS.

Various version or editions of windows Operating Systems are as follows, roughly in their chronological order

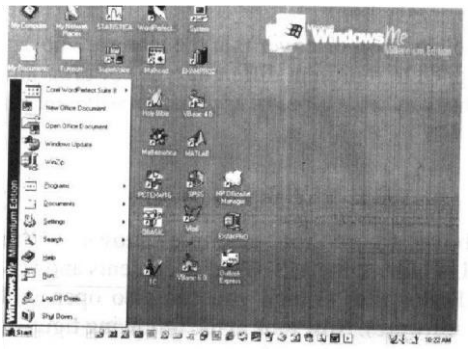
i. Windows 95
ii. Windows 98
iii. Windows 2000
iv. Windows Me
v. Windows NT
vi. Windows 2000
vii. Windows XP
viii. Windows Vista
ix. Windows 7
x. Windows 8
xi. Windows 8.1
xii. Windows 10

Presently in Nigeria, the most common versions of the above edition is the Windows 10, while some organizations that have Networks that use Windows NT or Windows 2016 servers for their computer.

3.2.4 SERVERS

Now, looking at the desktop done, you may not see any difference between Windows 98 and Windows Me (i.e. Millennium Edition) editions. Most of their features are very common, hence you will now discuss these common features below. However, there are differences between windows 8 and the earlier version and windows 10 is a little different from windows 8.

3.2.5 WINDOWS 98/ME DESKTOP

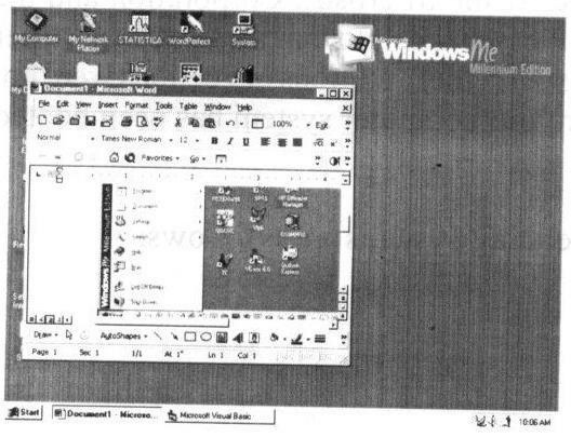


Here most of the times is your starting point as you click the Start button on the Task bar of your Desktop of windows 98 or Windows Me OS. You can see in the figure below that the start button is depressed.

Figure 4.4: windows 98 or Windows Me

Looking at the above figure, towards the right hand side of the task bar, is called the System Tray. The System Tray is where the icons of programs running in "Hidden Windows" window represented by the Time Indicator. Double-clicking any of the icons in the tray will open its hidden window.

Still looking at the figure 4.4, you can see a number of icons on the task bar to the right of the start button. These icons are put there when you activate a property of the task bar called "Quick Launch". By just clicking these icons once, the associated programs will be opened.



However, from the next figure 4.5, the Quick launch" property has been disabled and the only buttons left there are for two applications.

Figure 4.5: windows 98 Quick launch disabled

From your observation, you will see that the window for the Microsoft Visual Basic is not visible on the screen, the window has simply been "Minimized" to the task bar. To every application window, you can do the following:

i. Minimize
ii. Maximize or
iii. Close

The buttons meant for these are on the top right of every window. For example, the "close" button has the X symbol on it. Can you see that in the above figure. The first and second button to the left of the close button is for "Minimizing" and "Maximizing" the window.

You can also use your Mouse to drag the edge of a window to a desired size. The Mouse pointer changes to an arrow with the appropriate directions you can go to get the desired size.

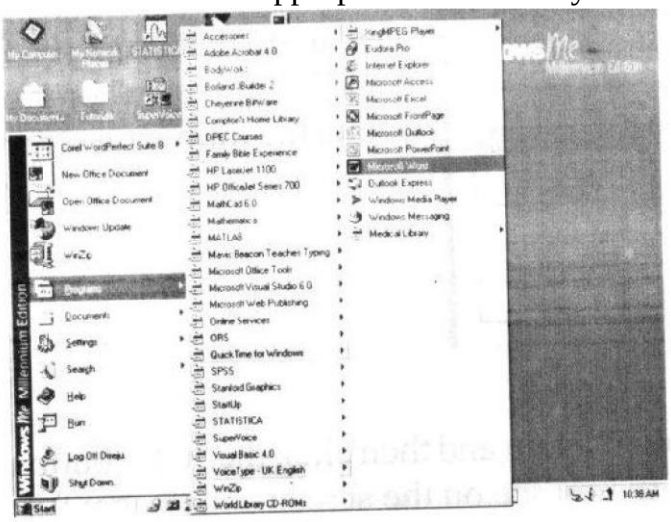


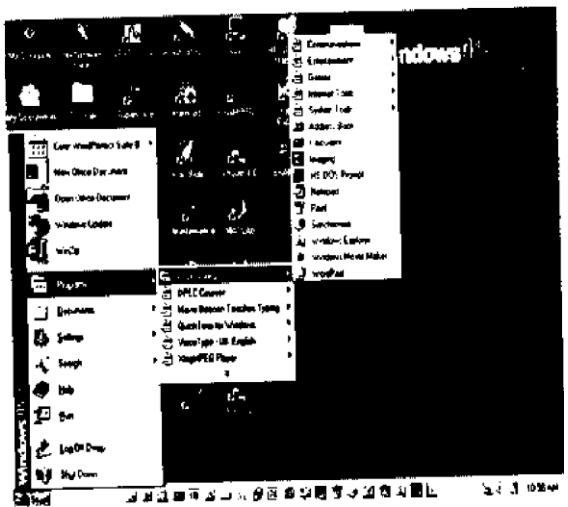
Figure 4.6: Excercise

Looking at figure 4.6 how do you get the screen on your desktop?

ANSWER TO SELF-ASSESSMENT EXERCISE

By following the steps below using the mouse:

i. Click the start button
ii. Select programs
iii. Select Microsoft Word



The second and third bar on your screen in the figure 4.7 is a single bar broken into two. It is called the Programs Bar.

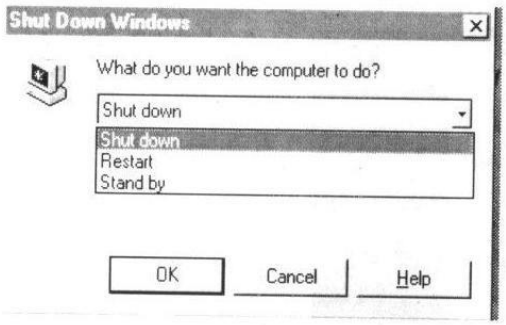
This is where all your applications are installed by Windows OS for easy access. An arrow in front of a program item shows that the

"Accessories" group is opened, you will have the following screen:

Figure 4.7: Program Bar

Now, one more important thing for you to observe from the figure 4.7. There are some icons on the Desktop with turning arrows on the bottom left corners. Those icons are called "Shortcuts" to their associated programs you will not see those arrows on the same icons if you are to run the programs from the programs bar. Shortcuts are put on the Desktop for easy access.

3.2.6 SHUTTING DOWN WINDOWS



To shut down your computer using windows OS, you need to do that properly. On pressing the start button, click "Shut Down" or press "U" on your keyboard to obtain the following screen:

Figure 4.8: Shutdown Window

Select "Shut Down" again and then click the "OK" button or press the "Enter" Key on your keyboard. Wait until you see on the screen a message: " it is now safe to turn off your computer". At this stage, you can now switch off your computer using the power switch on the system Unit. In case your computer has one of the latest technology CPU's it will switch off on its own after this message.

You cannot exhaust all the features of Windows OS in this unit. However, let us discuss the recent windows which are windows 7, 8 and 10

4.0 Windows 7, 8 and 10

Windows 7 was the next to be developed after windows Vista. It was produced in 2009 as segment of windows NT family to be used on Desktops, Laptops, Tablets and other

PCs. Windows 7 as an improved handwritten identification, advance multi-Core processor and provides for virtual hard disks among others.

Despite the advancement in windows 7, windows 8 was released in 2012 to replace windows 7 with advance features. The advancement in windows 8 now competes with mobile operating system such as Android and OS. It is now known as Windows shell on metro design language. There was also improvement on the start menu to show programs and automatically update content on an array of tiles. Windows store where you can purchase or download items online with new platform for creating apps that has touch screen input was added. There was an improvement on USB 3.0 and additional security features, apart from cloud computing and improved format hard drives among others.

Though, the successor of windows 8 was windows 8.1 which was released in 2013 but let us discuss the successor of windows 8.1 which is windows 10 since windows 10 has better features.

Free windows 10 was released in 2015 via download to update retail copies of windows 8 and windows RT through windows store. Subsequently windows 10 are upgraded with no extra charge to the users. Notable among the new features of windows 10 are improved universal apps, advanced memo-style apps, better interface, synchronization of data between windows and multifactor authentication mechanism among others. Figure 4.9 displays windows 10 windows.

Figure 4.9: Windows 10 Windows

4.0 Management of Files with Windows 10's File Employer

The essense of windows employer since its inception was better management of files, that is, to help handle files better, have a better perspective of the windows files and execute the collection of documents and other files joined together in a typical computer system. It is pertinent to note that the name "My Computer" changed in windows 7,8 and 8.1 and windows 10 to "This PC" but performing the same task with improvement.

With this introduction, let us look at a few functions of windows 10 O.S.

i. Quick Access View

This is displayed at the top left and top right panes. The most frequently used folders and files are also found on both the top left and right panes. Folders can be added to quick access sections as you like. Figure 5.7 shows quick access view.

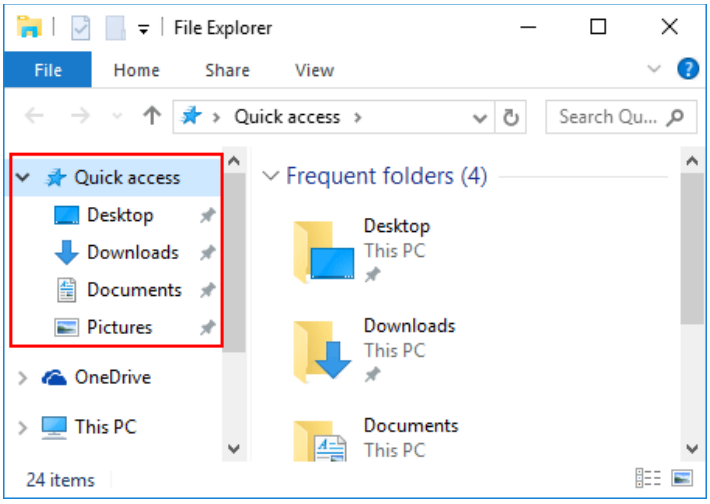


Figure 5.7 Quick Access View

ii. How to display "This PC" by default.

a. Click on view menu in files explorer

b. Choose the option icon on top of its down arrow as shown in Figure 5.8

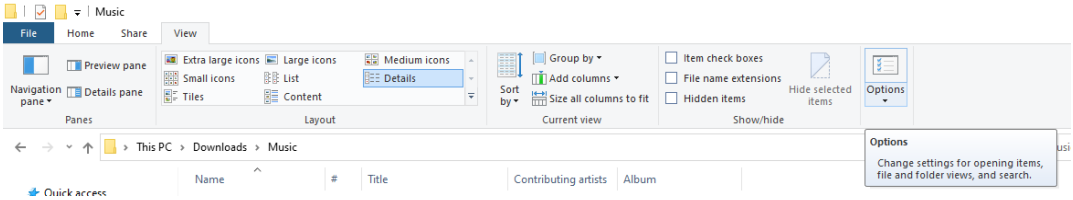


Figure 5.8: getting to Option icon on file explorer

c. Then choose open file explorer to make necessary setting, employ the pull-down menu to alter the setting from “Quick Access” to “This PC” as shown in Figure 5.9

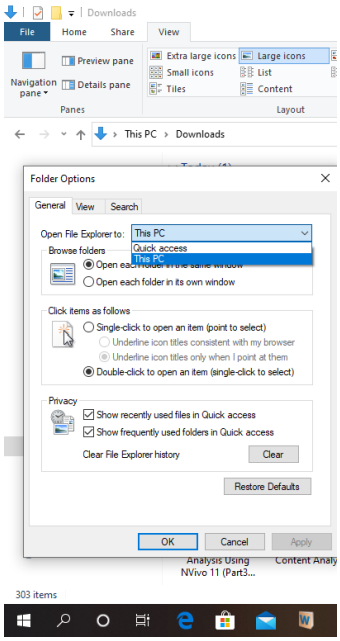


Figure 5.9: Setting your file explorer to show This “PC” or Quick Access

d. Select ok and choose file explorer. Subsequently the file explorer will display “This PC” when it is open.

iii. Turning the Ribbon On or Off

Ribbons are new ways of making a better and effective use of command with less number of clicks. Ribbon assists users find, have good knowledge of, and employ the use of commands in a straight forward manner without the need for help and trial-and-error technique. It is a command bar that arrange a program features into a series of tabs at the top of the windows and as the capability of replacing the traditional menu bar and tool bars. A typical ribbon is displayed in figure 5.10

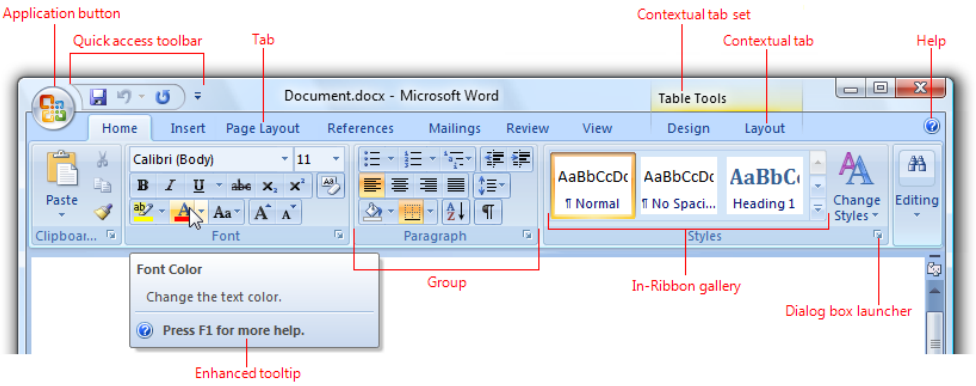


Fig. 5.10: A typical Ribbon

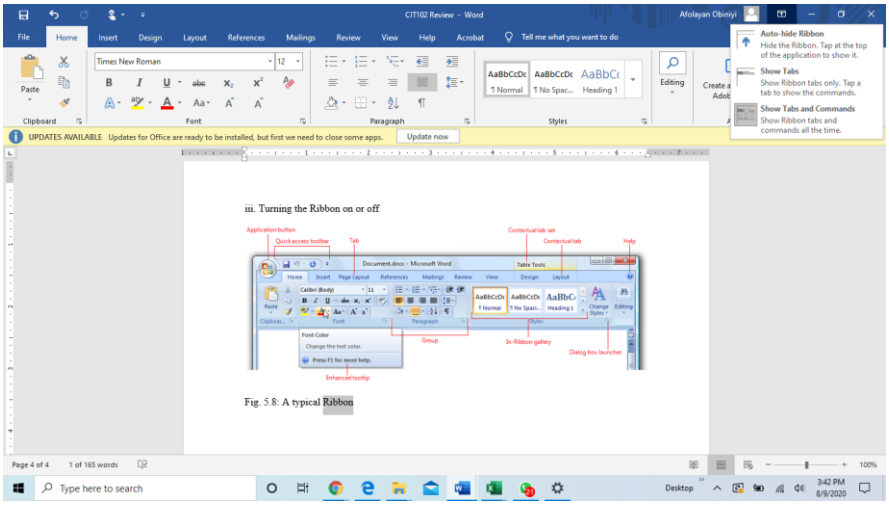


Fig 5.11: A Ribbon displayed at the Top right Corner

To display a ribbon as shown in figure 5.11, click on the top of the window. This reduce the use of space since it is clicked only when it is needed.

iv. Display or hide file extension

File extensions are major ways of showing the different types of files available in file explorer. Examples of file extensions are .DOCX extension which is a word document, .JPEG extension is a Joint Picture Expert Group image file and .WAV extension is a sound file by Microsoft. These extensions can be shown as displayed in figure 5.12 by:

i. clicking on view in the file explorer.

ii. Click on file name extension to display call the extension of the files in the explorer

iii. Unclick on the file name extensions to hide the extension

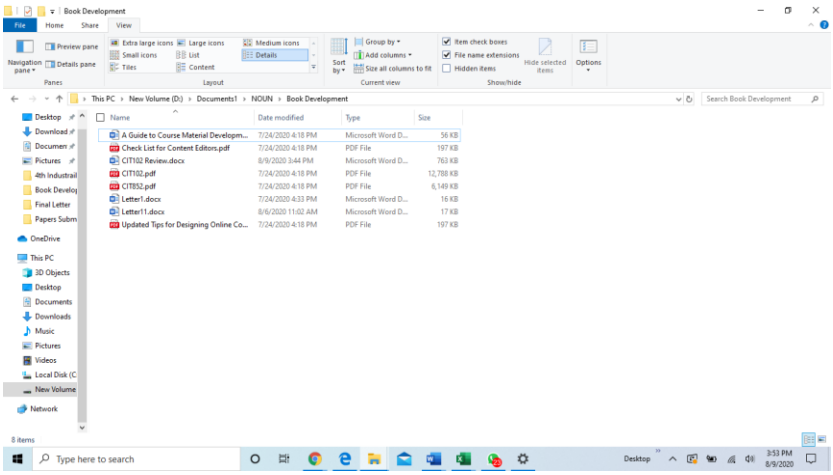


Fig.5.12: File Explorer Extension

v. How to view Libraries

It is important to house programs which you use frequently which are not displayed by windows 10 in a certain place. The place where you can house them is called *Libraries*. These Libraries feature can be set to show in file explorer. In order to set it to display in file explorer, follow these steps:

i. Select the view tab.

ii. Select the icon for “Navigation pane”

iii. From the menu, select “show Libraries”. Hence, the Libraries will be shown en-route the bottom of the left pane in file explorer as shown in figure 5.13

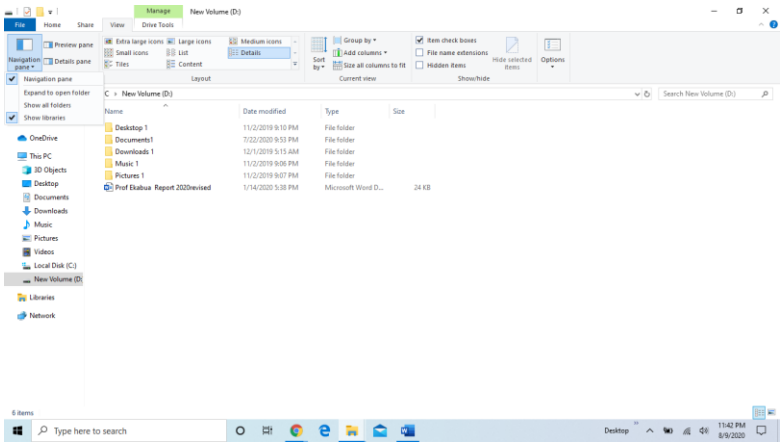


Fig. 5.13: View Libraries

There are many ways in which file can be managed in file explorer which will be left for study exercise. File explorer can be used to display diverse panes, split files with particular apps, transfer files to online storage (one drive), handle photos and images and look for files and documents. For personal study, visit URL

5.0 CONCLUSION

In this unit you have learned the basic functions of an OS and its position as a Software controller of the computer hardware. The unit has equally introduced you to the common features of the Windows OS in particular. To avoid some damages done to your machine, especially the hard Disk, you have learnt the proper way of shutting down your computer system. Finally, there are other Operating Systems apart from Windows which you didn't cover in this unit. Such examples are Unix, Linux OS to mention a few.

6.0 SUMMARY

Windows operating System is the most common OS which many Computer Systems in Nigeria and some other countries use. You have learnt that the OS must be installed first on your Computer system before you can install your application programs and effectively run them without any hitch. One important feature about the Windows OS is that you can open many program windows at the same time. More utilities available in Windows OS will be introduced to our subsequent units of this course.

7.0 TUTOR-MARKED ASSIGNMENTS 3

You should answer the following questions and submit your answer to your tutor for marking.

i. What are the major functions of an Operating System?
ii. Identify two main features of the windows OS common to all its editions?
iii. Define the system Tray in windows OS.
iv. List the steps to follow to open the MS Word program on your Windows OS machine.

8.0 REFERENCES/FURTHER READING

Academy of Learning (Computer and Business Career College), Introduction to Personal Computers, 1992.

Brightman, R. W. and Dimsdale, J. M. Using Computers in an Information Age, Delmar Publishers Inc, 1986. Microsoft

Corporation, Windows Millennium Edition, 2000.

Website: http:// www.microsoft.com

ANSWERS TO TMA

i. The functions are:

a. To control the use of all the device of the computer system
b. To allow computer users to run, applications.

ii. a. The desktop — which is the background upon which all program windows are open.

b. Program Windows. ,

iii. System Tray is the right portion of the taskbar where all running programs with hidden windows are.

iv. Click the start button on the taskbar
a. Select programs
b. Move down the programs bar to click or double click Microsoft Word

UNIT 5: COMPUTER FILE MANAGEMENT

CONTENTS

1.0 INTRODUCTION

In this unit, you are going to study how your data or information are stored in the computer secondary memory in a logical fashion. Hence, the unit will introduce you to how to locate your documents on the computer without unnecessary waste of computer time.
The unit will also specifically introduce you to a program within the Windows Operating System that allows you to manage your files on the secondary memory, especially your hard disks and floppy disks. You should now see your study objectives for this unit.

2.0 OBJECTIVES

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

i. identify the basic logical structure of file storage on secondary memory
ii. explain the main features of the Windows Explorer
iii. state some of the operations you can perform on files and folders.

3.0 FILE LOGICAL STRUCTURE

As you are going to discover later in this course when you will be going through units on applications, you are *going* to have much to do with FILES.

What is a file? You may ask. Physically, file *is* a source from which data can be obtained or any destination to which data information can be sent.

Generally, the instructions meant to run an application are stored in **Program Files** while the information created by using an application is stored in **Data Files**.

On your computer, there are four major features of identifying the location of your files. They are as follows:

i. The drive or secondary Memory Device Name. Simply call it the Drive Name.
ii. The Folder or Directory Name.
iii. The File Name
iv. An Optional Extension Name

Now look at figure 5.1 figure for an illustration:

Figure 5.1: folder

In front of the Field Name "Target", you have the following expression

C:Eudora\Eudora.exe

This simply defines the Address or Location of a File called Eudora.exe.
using the above four features, you should have the following for the file

Drive Name	=	C:
Folder Name	=	Eudora
File Name	=	Eudora
Extension Name	=	exe

By convention, the primary Hard disk on your computer is usually given “C” label. However, a drive is normally named with a colon (:) in front of the letter for the drive.

As you can see from the above, every file is stored in a folder or Directory in a drive. However, a folder can contain Subfolders or Sub- directories.
Every drive has what is called a Root Directory or folder and it is designated by a backslash as follows:

C: \ or A:\

Letter “A” is usually used by the OS to Identify your floppy drive while letter “D” is used for the CD-ROM drive if your hard disk is not partitioned. These are called Default Drive Names.

All that you have learnt about location of files can further be illustrated as follows:

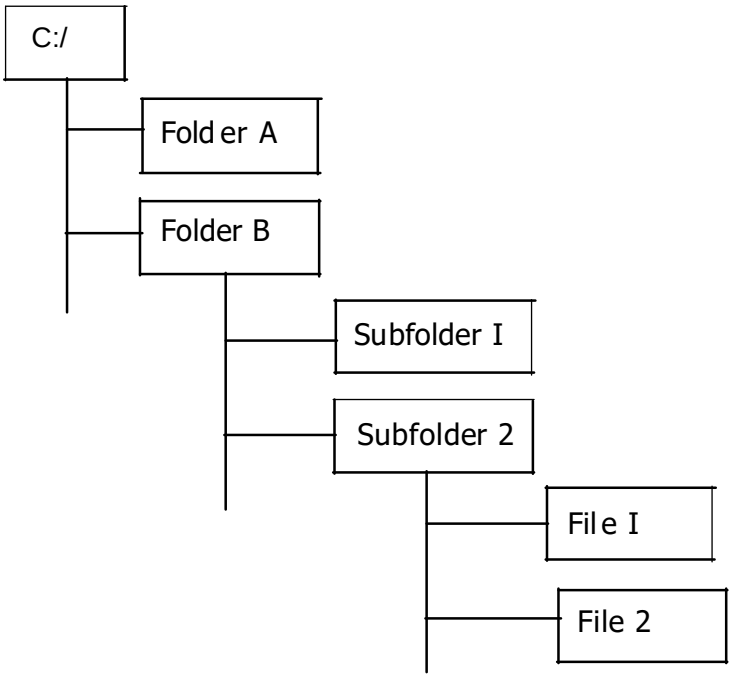


Figure 5.2: Tree Structure

Figure 5.2 is usually called a TREE structure with the Root i.e. C:/ at the top of the tree unlike natural trees whose roots are down.

Looking at the diagram in figure 5.1, the address or path for "File 1" can be written as:

C:\FolderB\Subfolder2\File 1

3.1 FILE NAMES

It is very essential for you to understand some simple rules guarding file naming. Windows OS has made life so easy for naming of files unlike some very rigid rules in file naming under the old OS, called DOS. However, yet in Windows, your file names can consist of alphanumeric characters with the exception of the following:

\ /: | < > * ? “

One major reason for these exceptions is that the above characters have some reserved meanings. For example, you have learnt that "V is used to identify the Root Directory or Folder.

SELF-ASSESSMENT EXERCISE 5.1

Why is colon (:) character not allowed in File Names?

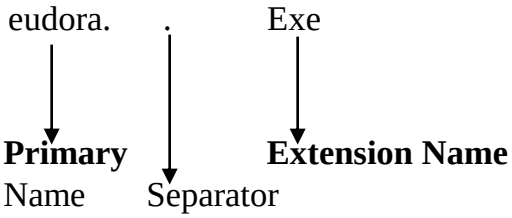
ANSWER TO SELF-ASSESSMENT EXERCISE

Because it has a reserved meaning of identity drives.

In general, a filename has three components as follows:

i. Primary Name
ii. Separator and
iii. Extension Name (Optional).

An example, using above components is:



As you have already learnt, an extension name is optional and once a filename has no extension, the separator (dot) is not necessary.
However, extensions are good for identifying files types and some applications have specific extensions for files created by them, common examples are as follows, apart from program files that usually have extensions exe or com (for executable" or "command", respectively). Tables 5.1 displayed the different types of extension for files

Table 5.1: File Extensions

Application	Extensions
Microsoft Word	.doc
Microsoft Excel	.xls
Microsoft Access	.mdb
Notepad (or text editor without formatting)	.txt

Bitmap or Graphic Image	.bmp
…	…

In Windows 98 or Windows Me, your address for a file may contain up to 255 characters. That means that you have almost unlimited number of characters for your file name. However, it is good to give names that can just identify your file contents, and that, as brief as possible.

3.2 IMPORTANT COMMENT

In Windows OS, every file or folder has what is called the Long Name and the Short Name. The Long Name refers to the name recognized by Windows OS while the Short Name refers to the name recognized by the older DOS Operating System.

In DOS, a file name cannot exceed 8 characters and its extension cannot exceed 3 characters. Hence, if you are to access your file in DOS environment, the Windows long name will be truncated and shortened to 8 characters.

For example, a file with the address:

C:\National Open Univ\Course Guide.doc

will become:

C:\Nation~1\Course~1 .doc

When Windows identifies it in DOS environment. This is usually called the "8dot3" restriction. Windows adds the character ~ (tilde) and number 1 to make the file unique. So one may have ~2, ~3 and so on, added to the first six common characters to differentiate the files.

You will now be introduced to a program within Windows that helps you to effectively manage your files on the computer.

3.3 USE OF WILDCARDS

When searching for files for example, you might be faced with the problem of remembering the file name. A way of helping your search is to use some characters that are used for groups of files. These characters are called **Wildcards** and there are two of them: *(asterisk) and ? (question mark).

Look at the figure 5.3

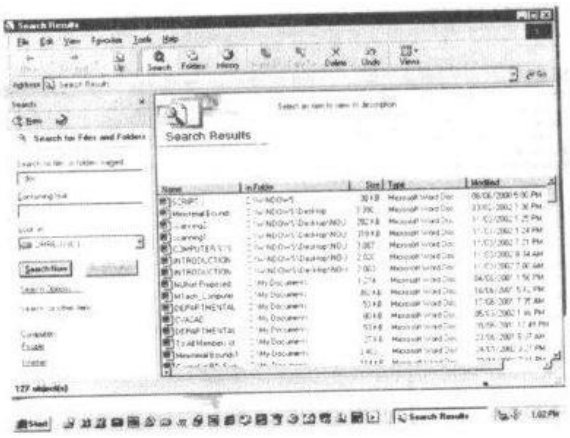


Figure 5.3: Illustration of Wildcard

By typing "*doc" in the dialog box for "search for files or folders named:", in figure 5.3, the files under Search Result on the right hand side are listed, with their locations.

Hence, *doc simply stands for ALL files with extension .doc. All files with ANY extension will be named as *.*.

The use of the second wildcard character ? is illustrated below:

da?st.doc — meaning all files with extension. Doc whose first, second, fourth and fifth characters are respectively d, a,s and t.

Thus examples of such files could be: datst.doc, dakt.doc, etc.

3.4 Windows Explore Features

Figure 5.4 below shows how the Windows Explorer of Windows Me OS, features are displayed. In Windows 98, and how it can locate it from the programs bar while in Windows Me, it is kept within the "Accessories" group of the program bar.

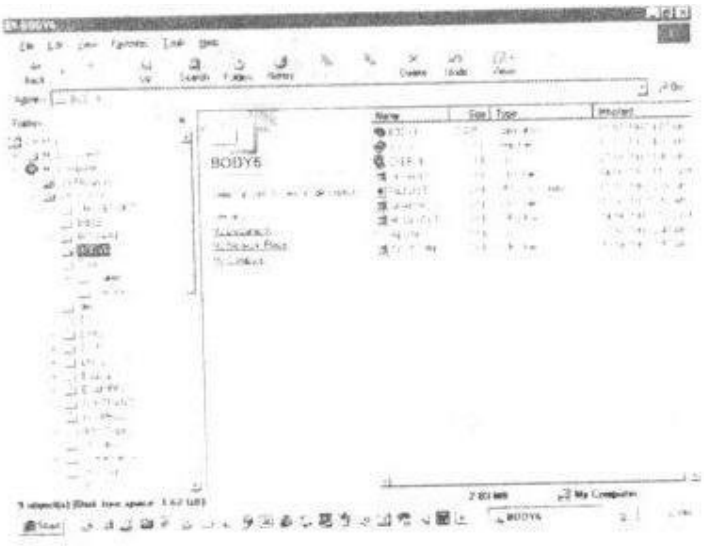


Figure 5.4: Windows Explorer Features

When you open a folder under "Folders" column or the Explorer bar, the contents are seen within the contents pane with the attributes or properties of the subfolders or files. The attributes are made up of the following:

i. Subfolder or File Name
ii. Size
iii. Type
iv. Date and Time Modified.

You can decide to modify the way the contents appear on the right hand side by using the "View" menu on the Menu Bar.

As you can see on the contents pane, the Operating System keeps track of the date and time changes are made to your files and folders. You also have the privilege of knowing how much space your file is taking in the secondary memory, i.e. your hard disk.

Your intention with the Menu Bar will show various operations one can carry out within the Windows Explorer environment. You will now go through the most common operations you will frequently carry out using the Windows Explorer in managing your files.

3.4 Folder and File Operations

Figure 5.5 displays folder and file operations.

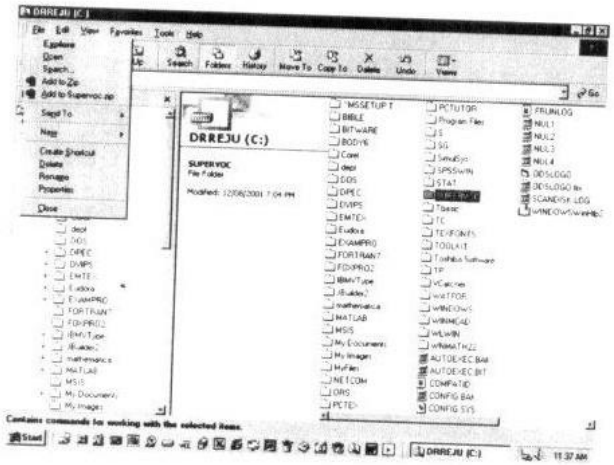


Figure 5.5: Folder and files

After selecting a folder as one can see from the above figure, one can select: File" from the Menu Bar to see various options of operations available to you.

Another way of doing this is to select your folder or file and then click the secondary button of your Mouse to see the different operations as shown in figure 5.6. See the following figure to view these options.

Figure 5.6: Options with folder and files

SELF-ASSESSMENT EXERCISE 5.2

i. What additional operations do you see in the above figure?
ii. What key on the keyboard you can use to obtain the above figure instead of using the secondary button of the Mouse?

ANSWERS TO SELF-ASSESSMENT EXERCISE

i. The operations are Cut and Copy operations
ii. The shortcut (Windows) Key.

Now, 1ooking at the above last two figures, the most common operations you ma y likely frequently have to perform using the Windows Explorer are the following:

i. Open
ii. Cut
iii. Copy
iv. Delete
v. Rename
vi. Create shortcut
vii. Close
viii. Move

However, looking at the Tool Bar, you can also see button to carry out some of the above operations. In fact, you have the option of creating the buttons for some of the above operations on the Tool Bar.

3.5 THE RECYCLE BIN

Windows OS provides you with a Recycle Bin where the deleted files or folders are kept until you finally decide to permanently remove it from your hard disk. In case one deletes a file in error, Recycle Bin gives an opportunity of Restoring the file to its original location or address.

Please note that the user cannot do to your file inside the Recycle Bin is that you cannot open it until it is restored back to its original folder where it can be opened.

WARNING!

Check your Recycle Bin whether you have some file you may wish to "Restore" before "Emptying" the Bin.

4.0 CONCLUSION

This unit has specifically taken you through the task of managing your files on the secondary memory. The unit introduces you to the subject of naming your files and how to locate them wherever they are stored on your disk.

Windows Explorer is an important component part of the Windows OS which this unit has introduced you to.

5.0 SUMMARY

In summary, this unit has successfully introduced the user to basic logical structure of file management on your computer. The Windows OS allows you to use any alphanumeric characters with the exception of \ / : | < > * ? " in naming your files. Your file or folder address can contain as many as 255 characters but no more.

The unit has also introduced you to the Windows Explorer with it's common features and available file and folder operations.

6.0 TUTOR-MARKED ASSIGNMENTS 4

You are to do the following assignments and submit your answers for marking.

i. Define a file and state its attributes available within Windows Explorer

ii. How do you represent files with the following characteristics:

(a) All files whose first character is b with any extension.

(b) All files with extension .bmp whose Primary Name is six characters long with last three being "aca".

iii. List at least 5 operations you can perform on files or folders using Windows Explorer.

7.0 REFERENCES/FURTHER READING

Academy of Learning (Computer and Business Career College), Introduction to Personal Computers, 1992.

Microsoft Corporation, Windows Millennium Edition, 2000.

ANSWERS TO TMA

i. A File is any source\from which data can be obtained or any destination to which information can be sent.

A file attribute s within Windows Explorer are: Name, Size, Type and date Modified and Time.

ii. (a) b*.*
(b) ???ac.bmp or *aca.b

iii. The operations are, Open, Copy, Rename and Move.

UNIT 6: COMPUTER SOFTWARE: AN OVERVIEW

CONTENTS

1.0 INTRODUCTION

In this unit, you will be introduced to the whole idea of Computer Programming or what is today broadly known as Software Development. In the field of Computer Science, this has been grouped under a wider area of discipline called Software Engineering, just as you have Hardware Engineering.

The unit will take you through the idea of problem solving and the application of Computer to solving problems. You will equally be introduced to some tools available to those involved in developing computer software. Your objectives for this unit are contained in section 2.0.

2.0 OBJECTIVES

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

i. explain the link between problem-solving and software development
ii. identify various computer programming languages and tools available to software developers.

3.0 MAIN CONTENT

3.1 Software and Problem Solving

You cannot completely understand the basic idea behind development of computer software without the concept of problem solving. In fact, what you can call computer programming today is simply the art of imagining a problem and conceiving its stepwise solution and then finally expressing the solution steps as instructions for a computer system to execute. See the following chart to illustrate the idea of computer programming as it relates to problem solving:

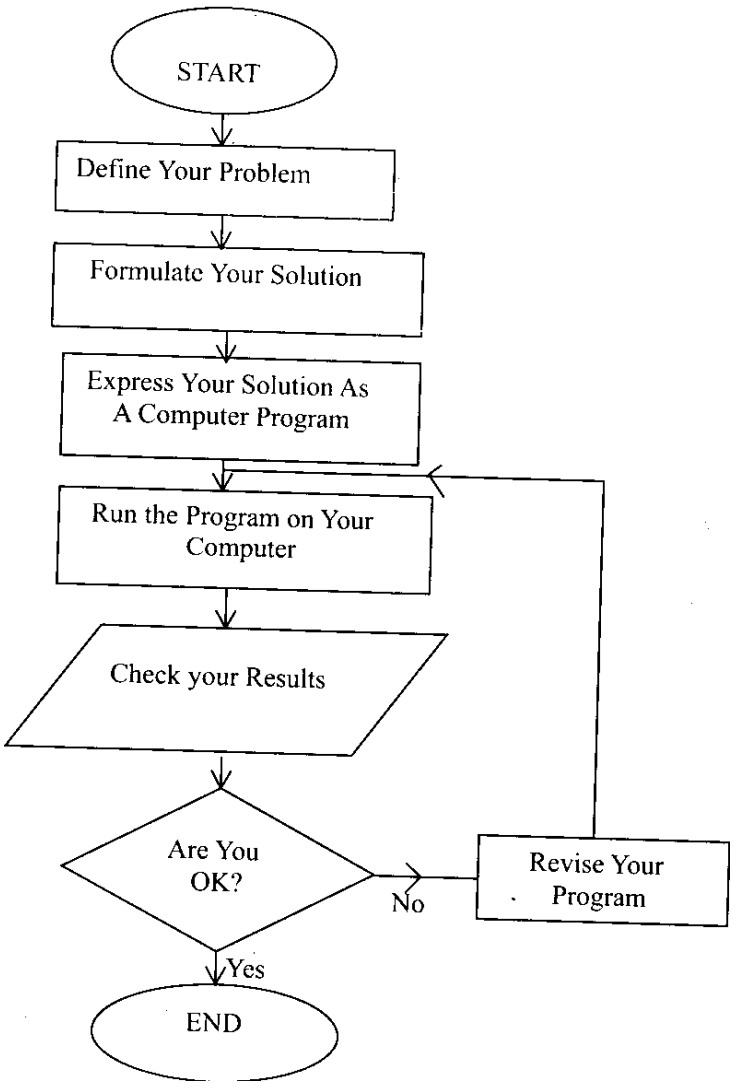


Figure 6.1: Problem solving flowchart

From the figure 6.1 chart, you can see that you have the choice of revising your program until the computer gives acceptable outputs or results.

There are six major phases that characterize the whole process of developing computer programs today. If you look back again at the above chart, it simply summarises the idea or job of programming the solution of a problem. Now, see below the complete phases of computer programming:

i. Defining the problem
ii. Formulating the solution
iii. Writing the program
iv. Debugging and testing the program
v. Documenting the program
vi. Evaluation of the program.

FIRST PHASE

During this phase, the problem is described and fully analysed.

SECOND PHASE

This second phase is also called the Design Stage where you as a programmer, plan the logic of the solution.

THIRD PHASE

This phase is also called the starting point of implementation, which involves writing or coding the program.

FOURTH PHASE

The fourth phase consists of debugging or removing the program errors and the program testing. This is still part of the so-called stage of implementation.

FIFTH PHASE

Documentation of the whole program is very essential in program development after the successful testing. This involves gathering together and organizing all the materials involved in its design.

SIXTH PHASE

Evaluation phase is always an on-going programming process which assures that the program continues to meet your need for example, as a user.

Now, it is interesting for you to know that all the computer applications you will go through in this course have the above phases behind their development, they were developed to solve some commonly defined problems. This you will discover as you go through each of the applications in this course. For example, a Word processing application such as Microsoft Word was developed to solve various editing or word processing problems.

SELF-ASSESSMENT EXERCISE 6.1

List the specific stages involved in the implementation phase of a program development.

ANSWER TO SELF-ASSESSMENT EXERCISE

Writing the program, debugging and testing, documenting and evaluating the program.

3.2 Software Development Tools

As you have learned in the previous units, a computer is not a useful tool by itself without the control of its software, starting with an Operating System (OS). Do you still remember the functions of an OS? You can recall these from your unit 4.

Software developers normally use what we call System Analysis and Design tools. From the general concept of System Analysis and Design, the phases involved are:

i. Analysis o Design
ii. Implementation
iii. Evaluation

Can you see the way the above phases are related to the six phases of computer programming in section 3.1 of this unit? Yes, they are related. After the definition of a problem and the design of its solution, the logic of the solution is usually communicated to the computer by using a Programming Language.

By definition, a Programming Language is a collection of commands that direct the control of a computer system. Just as human languages have a number of rules of expression, known as syntax, programming languages also have their syntax.

Computer programming languages can be categorised into many ways. For example, the Languages can be categorised by the following:

i. Level
ii. Purpose
iii. Structure
iv. Orientation
v. Translation

You can see the description of the above ways of categorising the languages briefly below.

LEVEL

Computer programming languages are classified by level as follows:

Low Level
High Level

A Low-Level language is the only language the computer actually understands. The two major language in this category are:

Machine Language — The lowest level
Assembly Language

For example, the machine language needs no translation because its instructions are made up of zeros and ones (O's and l's) which are the expression the computer understands. Low-level languages are machine- dependent.

Assembly language was developed to use symbolic names or mnemonics to alleviate some of the difficulties encountered using Machine language.

Now, High-Level languages are the machine-independent languages. They need no knowledge of specific computer machine on which they are used to develop programs. Examples of High-level languages are

i. Fortran
ii. Basic
iii. C++
iv. Pascal

You will now see other ways of categorizing computer programming languages.

PURPOSE

In this category, you have:

i. General-Purpose Language
ii. Special-Purpose Language

You should know that, the lower the level of a language, the more general-purpose the language.

STRUCTURE

Generally, a language is said to be structured if it is relatively easy to implement some structure mechanisms, which you may not bother about in this course. However, for example, early Languages like COBOL, Fortran and Basic were not actually designed for structured programming.

ORIENTATION

Languages can be categorised in terms of orientation as follows:

i. Procedure – Oriented
ii. Problem – Oriented

Procedure-oriented languages help programmers to solve a problem by indicating the procedures to be used by the computer. However, in Problem – Oriented languages, programmers specify what to be accomplished without the development of procedures, which is left to the language.

TRANSLATION

Languages can also be categorised in terms of their translation methods. Apart from the machine language, which needs no translation, other languages can be translated by any of the following:

iii. Compiler
iv. Interpreter
v. Assembler

A compiler translates the original program, called the **Source Program** into what is called the **Object Program** (which is the machine language version of the original program).

An interpreter simply translates the source program to machine language as the program is being executed. An interpreter doesn't create an Object Program, but translate program Code line by line.

An assembler doesn't compile or interprets a program but simply assembles it since an assembly language program is already close to machine language.

SELF-ASSESSMENT EXERCISE 6.2

i. Machine Language can only be run on the machine they were written. Yes or No.
ii. Do you remember the first computer programme?

ANSWERS TO SELF-ASSESSMENT EXERCISE

i. Yes
ii. Ada Augusta Byron.

Before you round up this unit, you will be introduced to more programming languages available today for software developers.

Apart from Fortran, Pascal, basic and C++ languages you have already seen examples, below are some other languages available for software developers today:

i. HTML-Hypertext Markup Language
ii. CSS-Cascading Style Sheet
iii. C++
iv. Java
v. Javascript
vi. Python
vii. Rubby
viii. SQL
ix. PHP
x. Bash/Sleu/powershell
xi. C#
xii. Laravel

In figure 6.2, for example, you have some programming tools environments which features will not be covered in this unit.

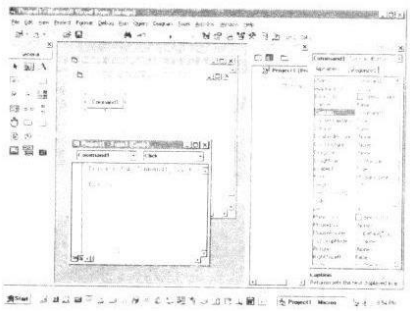


Figure 6.2: Programming tool environment

Figure 6.2 is the Visual Basic screen, an important tool for many software developers today. Beyond the programming languages already listed above, below are some other programming tools especially for database applications:

i. Visual FoxPro
ii. Microsoft Access
iii. MySQL
iv. MongoDB
v. PostgreSQL
vi. MariaDB
vii. Oracle

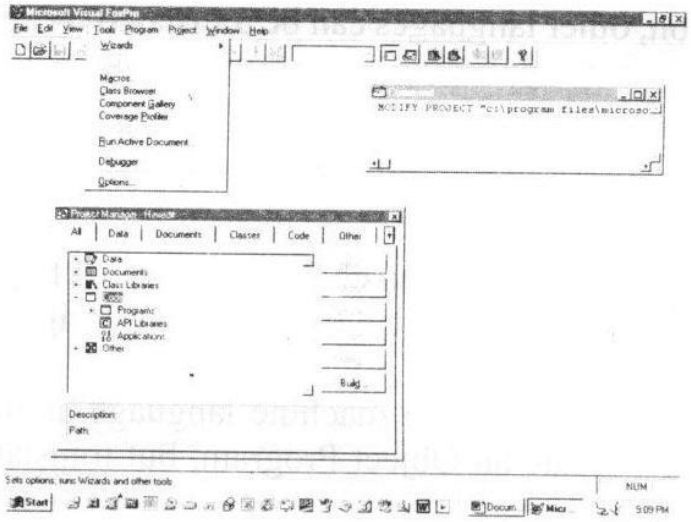


Figure 6.3: Microsoft Access Screen

Figure 6.3 is Microsoft Access Screen. You will learn more about Microsoft Access in this course. Figure 6.4 is a screen for the Visual Foxpro:

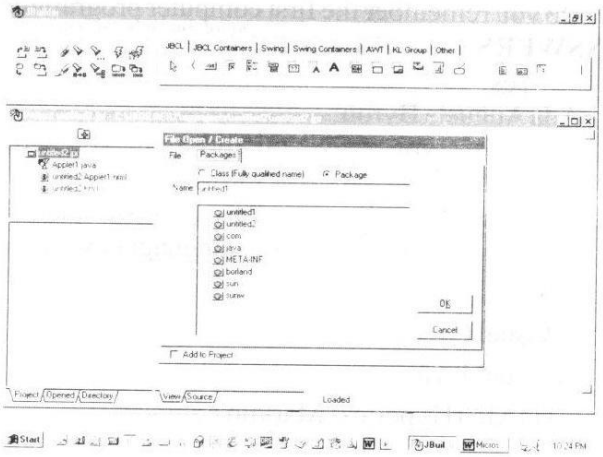


Figure 6.4: Visual Foxpro

4.0 CONCLUSION

In this unit, we have learnt the fundamental concept of problem-solving and computer programming. The unit has taken you through the six phases of program development.

The unit took you through the various ways of categorizing computer programming languages with some typical examples of languages available for software development.

5.0 SUMMARY

Having seen from unit 4, when you studied the Operating Systems, you have seen the roles of software in making the computer machine a useful tool. This unit has simply extended that unit to introduce you to the whole idea of computer programming and its relationship with problem solving. The unit has introduced you to various programming tools computer programmers have at their disposal today. From your observation, you will discover that programming as it is today has gone visual.

6.0 TUTOR-MARKED ASSIGNMENTS 5

You should do the following assignments and submit your answers to your Tutor:

i. Distinguish between a source program and an object program ii. Why is the machine language called the lowest level language?

iii. (a) List two of the common programming languages available for software developers today

(b) What is a problem-oriented Language?

7.0 REFERENCES/FURTHER READING

Brightman, R. W. and Dimsdale, J. M., Computer in an Informage Age, Delmar Publisher Inc; 1986.

Mandell, S. L., Computers and Data Processing (Concepts and Applications); Third Edition, West Publishing Company, 1985.

Microsoft Corporation, Microsoft Visual Basic 6.0, 1998.

Microsoft Visual Studio 2019 v16.8
https://visualstudiomagazine.com/articles/2020/08/27/blazor-updates.aspx

Website: http://www.microsoft.com

ANSWER TO TMA

i. A source program is the original program written in a High-Level language while an Object program is the translated version of the source program into a machine code.

ii. Because it is the language understood in O's and l's the only expressions understood by the computer. It also needs no translation by a compiler or an interpreter.

iii. (a) C++, java

(b) Problem-oriented language simply helps the programmer to specify what to do without emphasis on the procedures.

UNIT 7: INTRODUCTION TO APPLICATION SOFTWARE

CONTENTS

1.0 INTRODUCTION

In this unit, we shall study the general classifications of Application Software developed by software developers to solve your specific problem as a computer user. Already in the last unit, you have been introduced to how computer programming has its foundation in problem solving. This unit will build on the last unit by introducing us to the most common groups of applications and also some special ones that will help you to carry out both common tasks and special projects.

Our study objectives for this unit is stated in section 2.0.

2.0 OBJECTIVES

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

i. identify the broad classifications of computer applications
ii. explain the difference between common Application Software and some specialized tools.

3.0 MAIN CONTENT

3.1 Types of Application Software

There are several ways of classifying application software today. This is because, recently, the use of pre-written application software packages has dramatically increased. People are constantly discovering new areas where the computer can be used to solve real life problems more accurately , with ease and speedily too.

Before now, you might only have been told of three types of applications, namely, Word Processor, Spreadsheet and Database Management System. Increase in the number of applications has enlarged that group.

In brief, you can now classify application software packages into the following groups:

i. Word Processing
ii. Electronic Spreadsheet
iii. Database Management
iv. Desktop Publishing
v. Accounting
vi. Communication
vii. Web publishing
viii. Educational Software
ix. Graphic Tools.
x. Educational Software

The above groups are the most common classes that are readily available today. While some of the above groups will be treated in details in subsequent units of this course, however, their basic uses are itemized below.

3.1.1 WORD PROCESSING

This is definitely the most common and popular group of applications around you. According to Brightman and Dimsdale book the number while the reference should be specified, "Writing, whether it is technical exposition, business communications, news reporting, or creative writing, it is ten percent expressing ideas and ninety percent editing to make them readable and understandable".

Now, editing is simply defined as Text Manipulation and Word Processing is the manipulation of characters by a machine to serve communication purposes. You will discover that Word Processors have virtually outdated manual typewriters of today. We shall learn more about the common features of Word Processing applications later in this course material.

Let us discuss three of the alternative word processors to MS Word. This word processors are not as good as MSWord; however, they are good and are also free.

i. WPS office free writer

The word processor works with cloud storage and takes care of all text files. It goes along with windows, MacOS and Linux. The interface is almost the same as word, very good file format assistance, the cloud support given without payment and consists of some ads. A typical WPS office writer interface is displayed in figure 8.4. WPS office works with all text files and with the O.S. be it windows, MacOS or Linux.

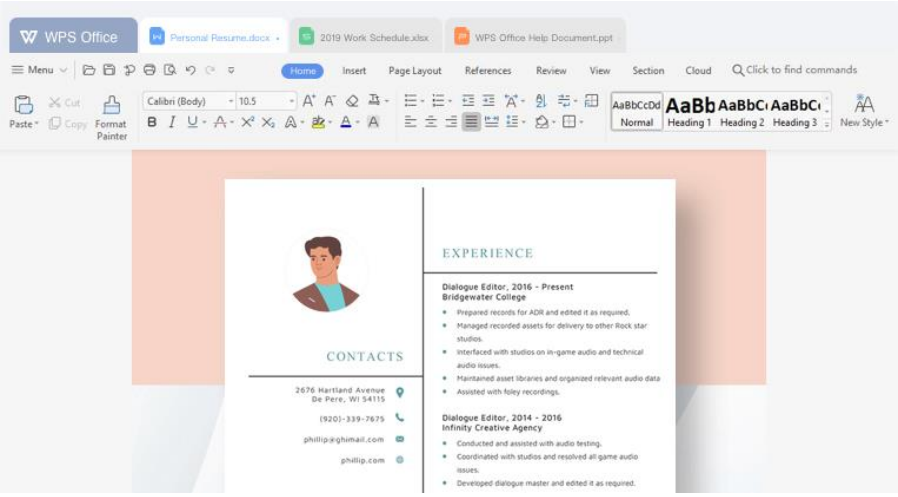


Figure 8.4: WPS office

ii. LibreOffice writer

This gives support to any text files and with operating system be it Windows, MacOS or Linux. It is generally compatible, has general template galleries, work with plugins and there is no ads or paywalls. LibreOffice writer is frequently updated and user-base biased.

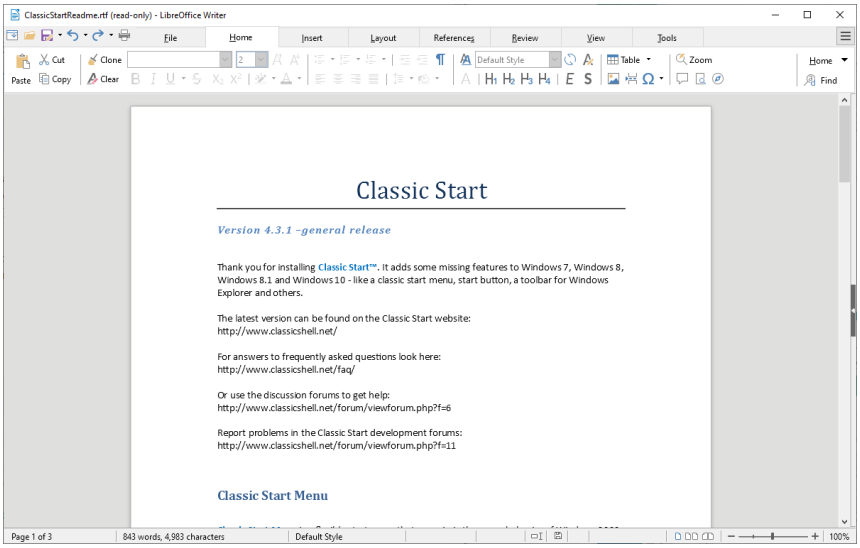


Figure 8.5: LibreOffice writer

iii. FocusWriter

This makes use of hidden interface accessible through the movement of mouse in the direction of the border of the screen. It gives a writing environment that is simple and totally involving. The OS for FocusWriter is Linux, Windows and MacOS X. Figure 8.6 displays an interface of the FocusWriter.

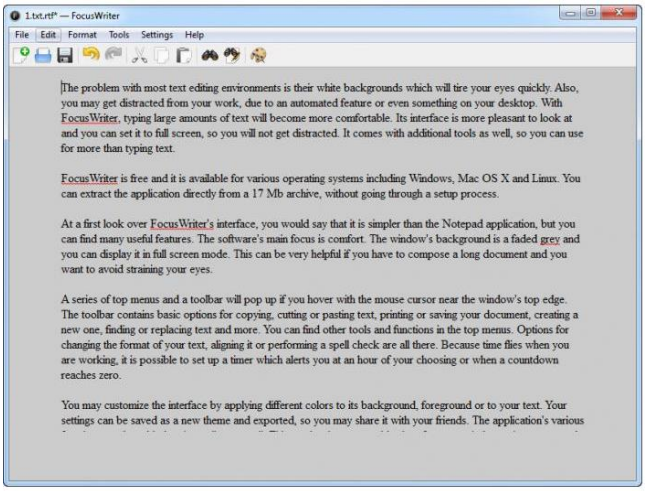


Figure 8.6: FocusWriter Main Window

3.1.2 ELECTRONIC SPREADSHEETS

Electronic Spreadsheet applications fall under another larger class of what you call Modeling Software. By definition, a model is mathematical representation of real word situation, in our context, a model means something else for example to an Architect.

A modeling software simply uses the power and speed of a computer machine to perform some mathematical calculations or simulate some real life situations.

Now, an Electronic Spreadsheet application is majorly used in business by accounting professionals to perform financial calculations and recording of transactions. However, as you will see later in this unit, it is also used to carry out many types of analysis of data. The electronic spreadsheet interface is simply a table of rows and columns used to store and manipulate any type of numerical data.

Figure 7.1 is an example of a spreadsheet screen:

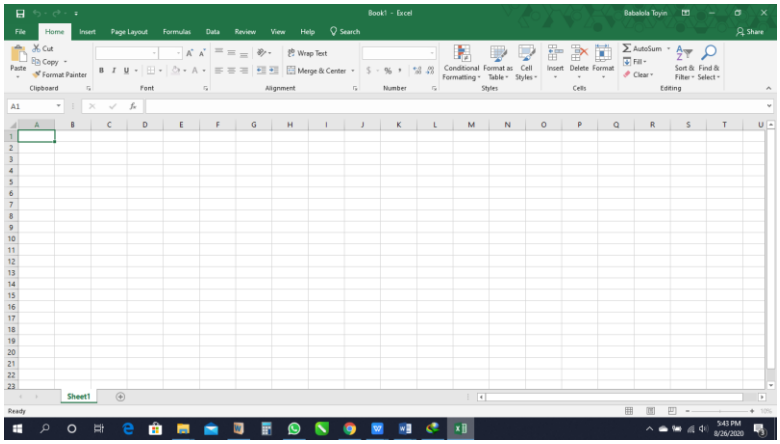


Figure 7.1: Spreadsheet Screen

3.1.3 DATABASE APPLICATIONS

Database Management packages are the applications that programs the routine tasks of recording and filing of information. A typical example of Database application will be treated in the course of this exposition, namely, Microsoft Access.

3.1.4 DESKTOP PUBLISHING

Desktop Publishing packages are used for creating published materials such as Newsletters, Brochures and Flyers normal day-to-day office word processing. They are enhanced categories of Word Processing tools with special layout and clip art items that make professional publications beautifully done. By clip art, we mean pictures that have been professionally drawn by artists that you can insert into your documents.

A very good example of Desktop Publishing packages is the Microsoft Publisher, which will be introduced to later in this exposition. Other examples are Corel draw and PageMaker.

3.1.5 ACCOUNTING

Apart from Electronic Spreadsheet that you have learned in section 3.1.2 that helps accountants to prepare their financial documents, there are special application packages with special layout already developed for accounting processes. It will interest you to know that Accounting applications were among the first commercial uses of digital computers.

A typical example of Accounting Applications is the Peachtree and others which package whose payroll screen is shown in figure 7.2:

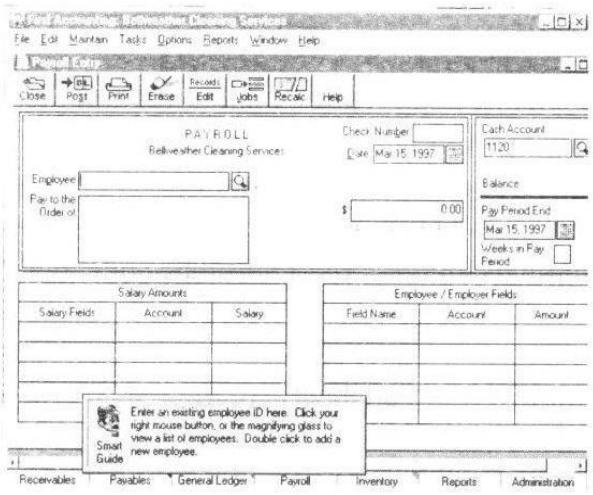


figure 7.2: Payroll Screen

3.1.6 COMMUNICATION

Communication applications are vital for sharing information between one user and other at a distant location between the users. However, communication requires certain hardware devices properly installed on your computer system. A typical device for communication is the MODEM which stands for Modulation DEModulation and it is used for converting analog signals received by your computer into digital forms via the telephone line connection.

Below are some examples of communication Software that are usually slipped with your Modems:

i. Supervoice
ii. Bitware

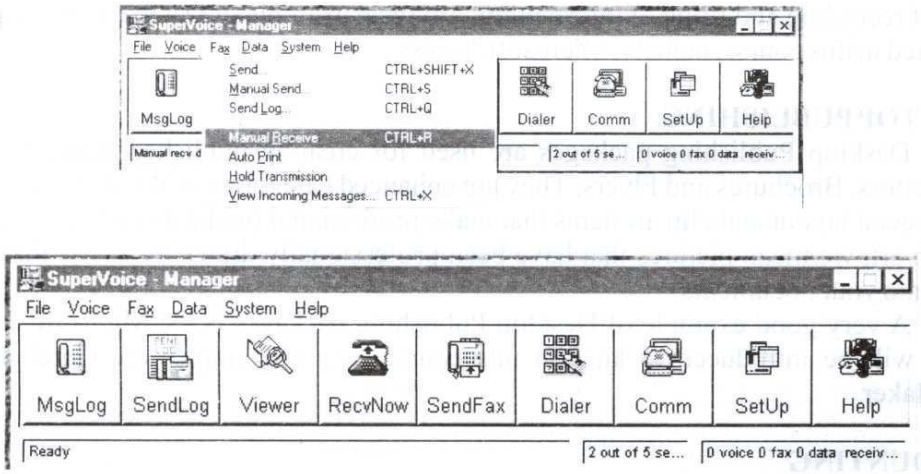


figure 7.3: Super voice Screen

As you can see from the above screens, you can send both fax and files using the communication software.

figure 7.4 displays also the Bitware screen showing the "Waiting for Call" status.

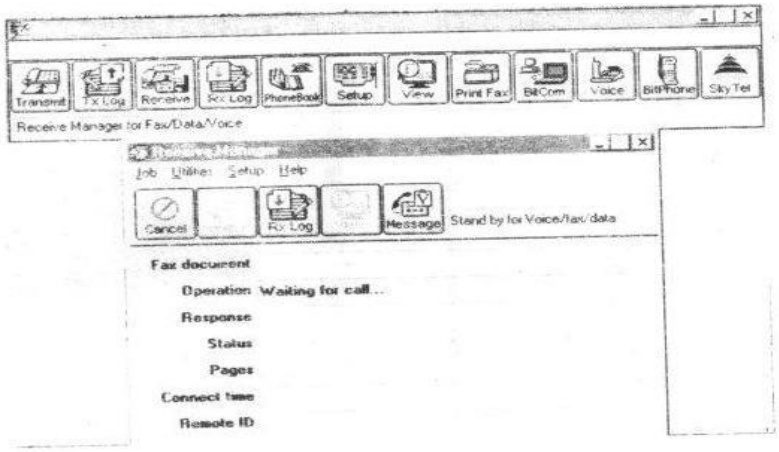


figure 7.4: Bitware screen

In fact, a communication application as seen in figure 7.3 &7.4 can record your voice call in your absence for example an Answering Machine which can be played back later.

Other communication applications are E-mail software used for sending Electronic Mail messages across the Internet. An example is the Outlook Express which screen is shown in figure 7.5.

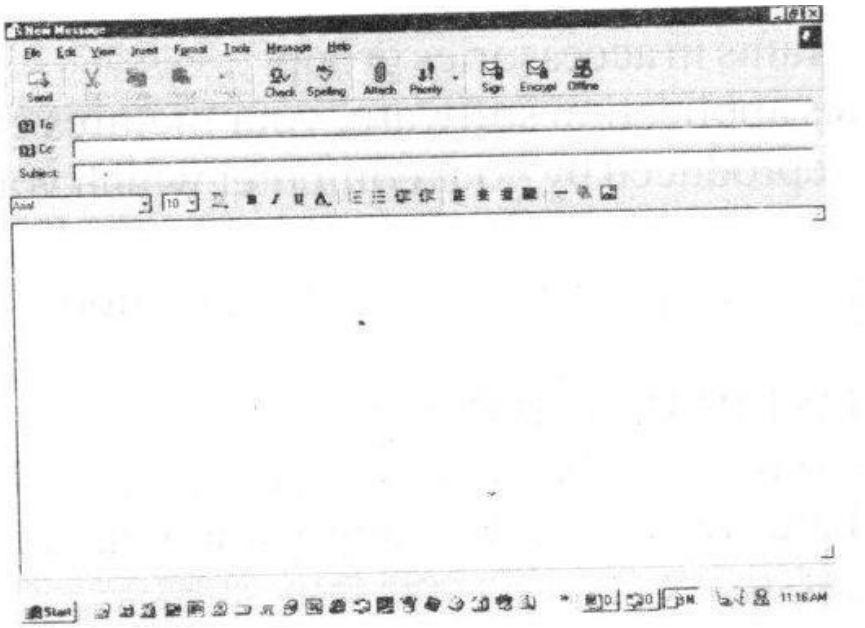


Figure 7.5: Outlook Screen

3.1.7 WEB PUBLISHING

Web publishing tools are the applications developed to create Web Pages on the Internet. They are different from Word Processors because they consist of special features that help you to maintain and organise a number of small documentation. A typical example of web Design tools is the Microsoft FrontPage.

3.1.8 GRAPHIC TOOLS

To meaningfully send your data processing results or to add illustrative charts and pictures to your document, Graphic Packages are for developed purposes. Examples of application software are:

i. Microsoft Photo Editor
ii. Microsoft Paint

Their screens are seen in figure 7.6 and 7.7

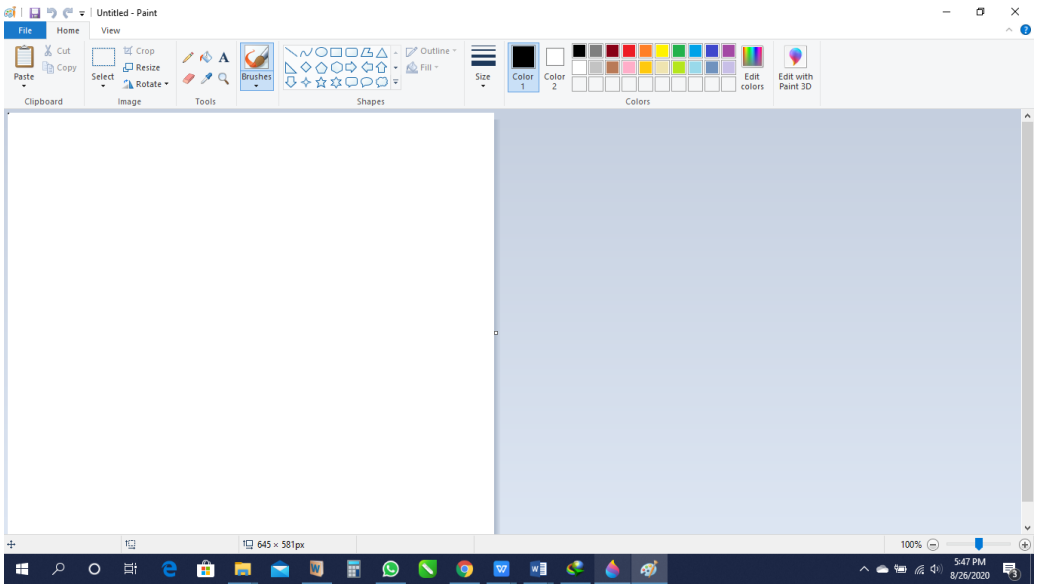


FIGURE 7.6 Microsoft Paint

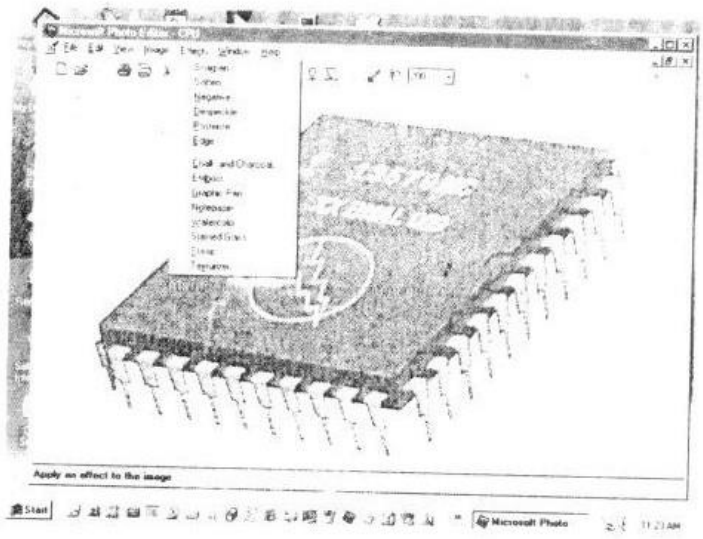


FIGURE 7.7 Microsoft Photo Editor

SELF-ASSESSMENT EXERCISE 7.1

How do you locate the Paint program in Windows?

ANSWER TO SELF-ASSESSMENT EXERCISE

i. Click Start button

ii. Select Programs
iii. Select accessories

It is one of the programs in accessories group.

Using the Graphic application software, pictures can be scanned and stored in appropriate formats which can be reproduced by your computer which you can print or make a part of existing document.

You can now see more of application in the next section.

3.2 Some Special Applications

In the last section, you have been introduced to a number of applications in their broad groups. However, there are other special applications itemized as seen below:

i. Presentation Applications
ii. Statistical Applications
iii. Project Management Tools
iv. Personal Information Tools
v. Mathematical Applications
vi. Engineering design Tools

3.2.1 PRESENTATION APPLICATIONS

Presentation tools are applications used majorly to prepare multimedia presentations as slides some of which you can animated to add some sound effects. A major typical example is the Microsoft Power Point as you observe in figure 7.8:

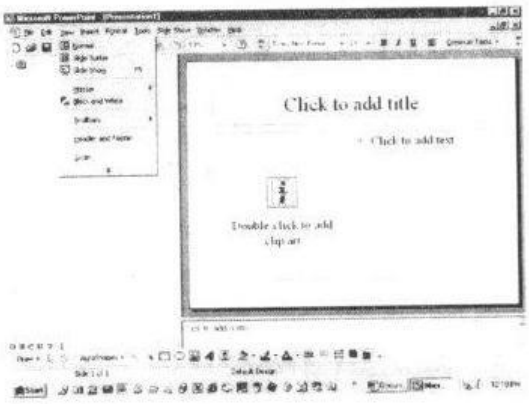


Figure 7.8: Microsoft PowerPoint

3.2.2 STATISTICAL APPLICATION

Statistical applications are developed to handle various analysis of statistical data. You will be introduced to one of these applications in this exposition, especially SPSS (Statistical Package for the Social Sciences), for example, figure 7.9 is a screen for a more sophisticated statistical application, called statistica.

7.10

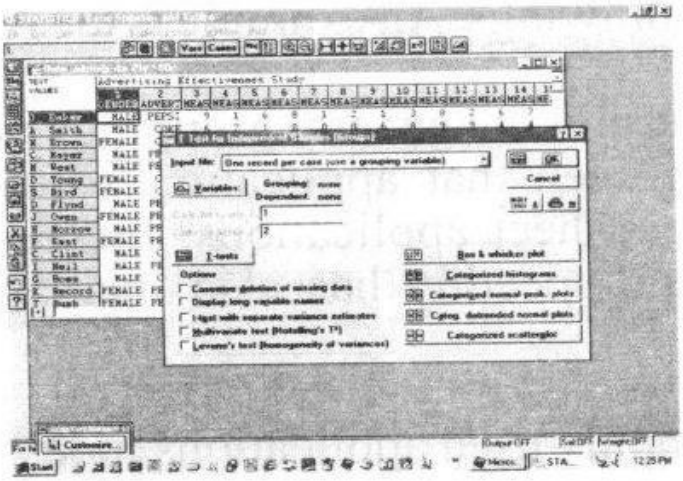


figure 7.9: Statistica Screen

3.2.3 PROJECT MANAGEMENT TOOLS

The Project Management tools are specialized application software meant to help Managers or Decision-Makers to control their projects. By definition, a project is a group of related activities with a specific start and end. Examples of project Management tools are packages used in Operations Research activities.

3.2.4 PERSONAL INFORMATION TOOLS

Personal Information Tools are also called Personal Information Managers (NM's) or Electronic Diary applications. They are useful in keeping records of Appointments, Contacts, Schedules and so on. An example is Microsoft Outlook, which also includes an e-mail component.

3.2.5 MATHEMATICAL APPLICATIONS

Mathematical Applications are specialized software packages developed for Mathematical modeling problems. Few examples are:

i. Mathematica
ii. MathCad
iii. MatLab

For example, figure 7.10 and figure 7.11 are some screens for two of the above applications

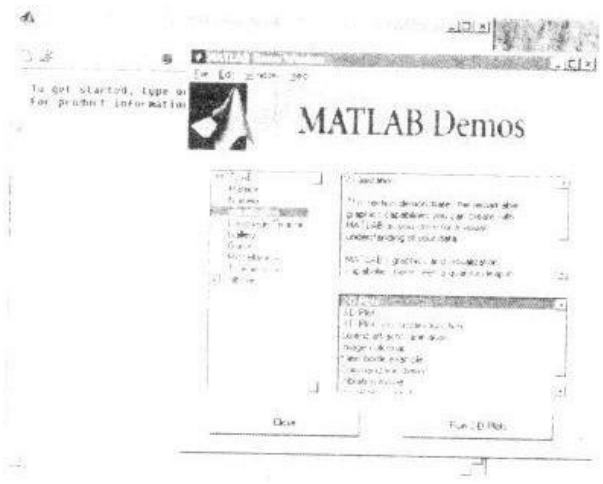


Figure 7.10: Matlab Screen

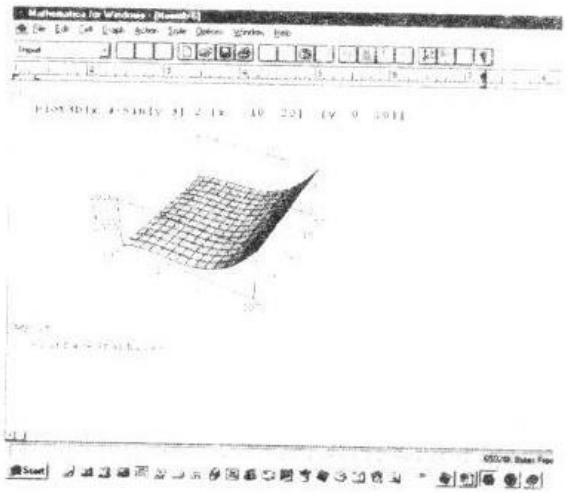


Figure 7.10: Matcad Screen

3.2.6 ENGINEERING DESIGN TOOLS

Traditional manual drawing has been taken over by many Electronic design tools today. These are specialized applications used for technical drawings such as Architectural designs and other Engineering drawings. An example is the AutoCAD Software.

4.0 CONCLUSION

You have learned in this unit the general groupings of application software and their common functions. You have observed that application software are more than just Word Processing, database and spreadsheet applications. Increasing need for solving real life problems accurately, easily and speedily has also increased the number of application software available today.

5.0 SUMMARY

Apart from commonly used applications today, this unit has also introduced you to some specialized packages meant to solve problems that are outside Word processing, Financial and Database operations. Later in this course, you will study in detail the features of the most common types of applications introduced in this unit.

6.0 TUTOR-MARKED ASSIGNMENTS 6

You should do the following assignments and submit your answers to your Tutor.

i. Classify application Packages and Identify the most common group_____

ii. Assuming you have the following tasks to perform , state the types of applications which may be employed to assist you

(a) Sending a fax message

(b) Designing a new bridge over River Niger at Lokoja, Nigeria.

(c) Preparing a Newsletter for a company

(d) Designing a Wedding Invitation Card iii. What is a Project Management Software?

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The MathWorks, Inc., MATLAB, R2020a; https://www.mathworks.com/downloads/.

Wolfram Research, Inc. Wolfram Language 12.1.1, 2020

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ANSWERS TO TMA

i. The classes are:

i. Word Processing

ii. Electronic Spreadsheet

iii. Database Management

iv. Desktop Publishing
v. Accounting
vi. Communication
vii. Graphic Tools
viii. Web publishing

The most common group is the Word Processing.

ii.

a. Communication So are
b. Engineering Design Software
c. Desktop Publishing Software
d. Desktop Publishing or Graphics Tool

iii. This is the Software used by \Managers to control/monitor project activities.

UNIT 8: COMMON APPLICATION SOFTWARE

CONTENTS

1.0 INTRODUCTION

This is primarily meant to consolidate your knowledge of various application groups studied in the last unit and to bring you closer to some commonly used application which you can find around you.

The unit will also introduce you to what is called an Application Suite or Integrated Software. This is simply a combination of common business packages integrated into one group.

Your study objectives for this unit are section 2.0:

2.0 OBJECTIVES

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

i. differentiate between Stand-Alone applications and Application Suites
ii. identify the common features of Integrated packages.

3.0 MAIN CONTENT

3.1 Stand-Alone Applications

In the last unit, you were introduced to a some application software under different groups. In this unit we shall concentrate on the common ones, you will therefore be privileged to learn about a few varieties of each group.

Though it is very common today to always have some applications being sold together as parts of an Integrated Package, however, you have the choice of purchasing them as separate or Stand-Alone applications. You will now observe below a few varieties of examples of such applications.

3.1.1 WORD PROCESSING

Under Word Processing group, below are some examples of Stand- Alone applications (Though purchasable as parts of their respective suites).

i. Microsoft Word
ii. Corel Word Perfect
iii. Lotus Word Pro.

However, word processors do not have stand-alone applications these days. Nevertheless, there are alternative word processors to MS word which are free. Some of them are:

i. WPS Office free writer
ii. Libreoffice writer
iii. Focuswriter
iv. Softmaker Freeoffice Text Maker
v. Write Monkey

Figure 8.1 displays the editing screen of Microsoft word 2016

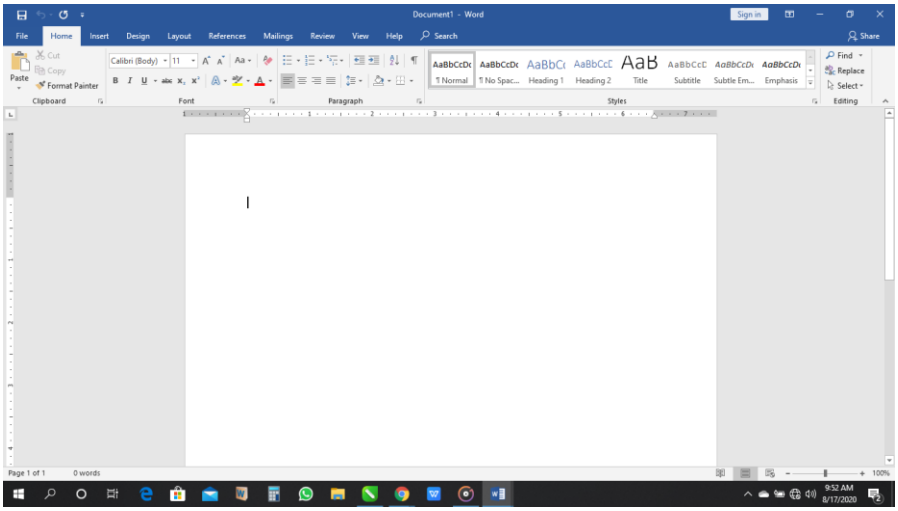


Figure 8.1: Editing Screen of MS word 2016

Specific features of this very common application will yet be treated in details in units 9 and 10. In Nigeria for example, most organizations and individuals appear to be more comfortable Microsoft Word application than any other Word Processor. You are likely going to interact with this package than any other one as well.

Now, look at the next screen:

Figure 8.2: Corel WordPerfect Editing Environment

Figure 8.2 shows the Corel WordPerfect editing environment. It is Word Processing Software developed by another company different from Microsoft Corporation. It is a matter of your choice as you cannot specifically determine which one is the Word Processing Software.

Now you can have a look at Word Pro screen in figure 8.3.

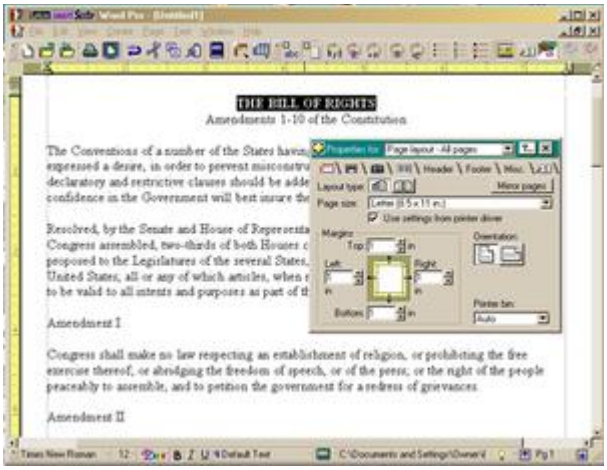


Figure 8.3: Word pro screen

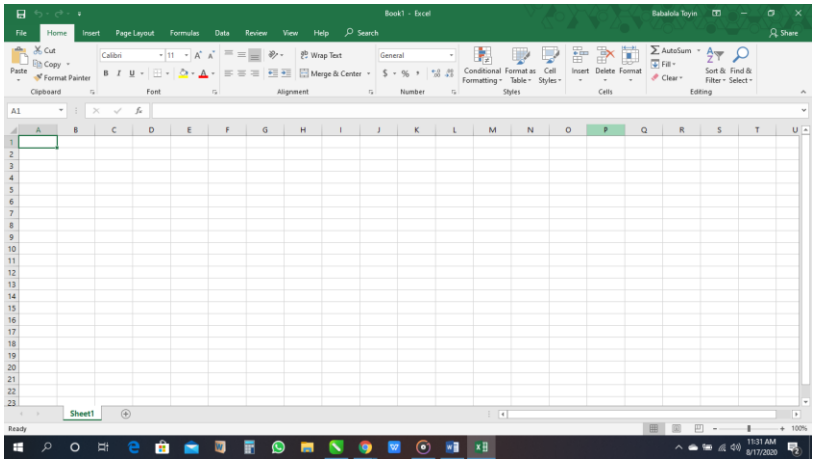
Looking at the Figure 8.1- 8.3, you can see some special features of Word Pro by Corel Corporation. The first screen shows various types of document that can be selected from before editing. However, you are free to select the "default" blank format. The second figure above is a screen when a memo format or style is selected. Once this is selected, Word Pro automatically inserts your earlier Personal Information supplied during its installation.

3.1.2 ELECTRONIC SPREADSHEET

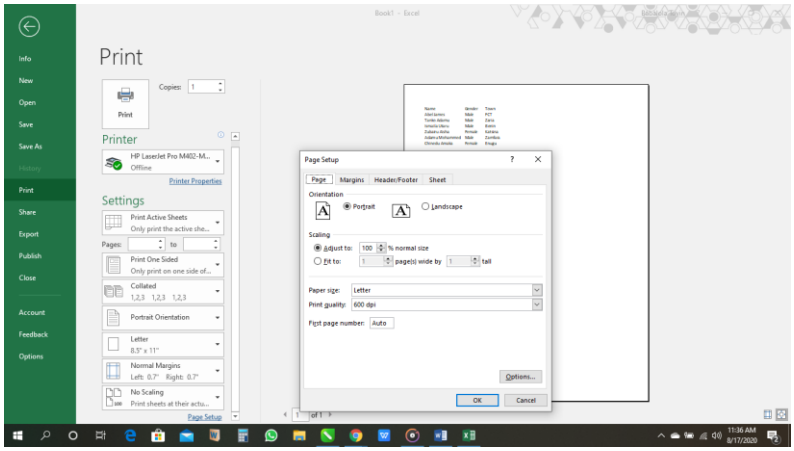
This is an array of date, organized in rows and columns of a grid and can be used in calculations. The most common spreadsheet today are:

i. Microsoft Excel
ii. Google Sheet
iii. LibreOffice
iv. Smart Sheet
v. Onip
vi. Zoho sheet
vii. Either Cal
viii. Aritable
ix. Corel spreadsheet

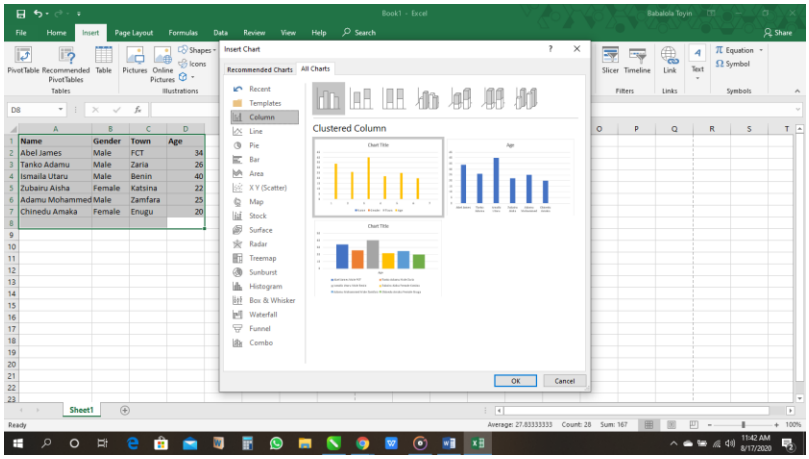
Spreadsheet is a computer package used for management, evaluation and repository of data in a tabular form. It can be used for statistical analysis arithmetic and mathematical operations. Spreadsheet has built-in functions for general financial and processing. Spreadsheet interface examples are given from figures 8.3 to figures 8.7.



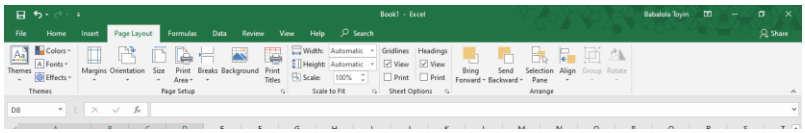
Figures 8.4: MS Excel Spreadsheet Interface



Figures 8.5: MS Excel Print Setting Dialogue box



Figures 8.6: MS Excel Chart dialogue box



Figures 8.7: MS Excel Menu pane

On a general note, spreadsheet gives you the choice of what is called a “template”. This is simply a specified format that you can as a basis for solving your problem.

However, as in Microsoft Excel (whose features) you will study more in detail ahead, a blank template is just the usual table of rows and columns.

If you choose for example, “Calculate Loan Payments” template, you will obtain the following screen which you can modify by entering your own data.

3.1.3 DATABASE APPLICATION

This is the process keeping and retrieving data or information from a computer database. It makes querying and updating of data from different or many users easy at the same time.

As you already know, common database are;

i. Microsoft Access
ii. Oracle Relational Database
iii. Facebook Database
iv. Google Database
v. Youtube

As usual, these can be purchased as Stand-Alone packages though they are usually sold with their respective suites.

Figure 8.8 displays the typical Menu of Access Database Application Interface

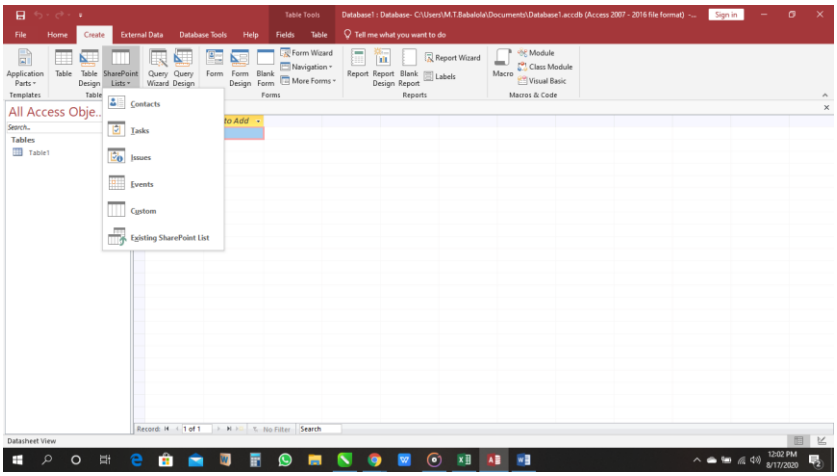


Figure 8.8: Typical Access Database Interface

You are going to see in details the features of Microsoft Access in Unit 14 of this course.

As you can possibly observe from the figure 8.8 screens, common features of Database Applications are the facilities to create Tables, Forms and Reports.

Now, it is good to know that most common applications have been integrated into what is called a suite by many software developers, for easy marketing of other components.

3.2 Integrated Application Suites

As a way of reminder, this is a software that join together functions that are used often in many productivities programed into one application. You will find below the most common suites in the market today:

i. Microsoft Office
ii. Apples iwork
iii. Linux-based LibreOffice
iv. G.Office

Every Application suite has some common types of component applications. These are:

i. Word Processing
ii. Electronic Spreadsheet
iii. Database Tool

Apart from the above most common components in Application Suites, different manufacturers have different additional components added to their suites. For example in Microsoft Office, there is additional components for:

i. Presentation (PowerPoint)
ii. Web Publishing (Front Page)
iii. Personal Information Manager (Outlook)

The MS-Outlook also contains E-mail programs. Among all the Application Suites, Microsoft Office is the most common and the leading Suite in the market. Over the years, many organizations both in Nigeria and other countries, have standardized operations around Microsoft Application Suite.

Microsoft Office suite contains word, excel, PowerPoint, Access, OneNote, outlooks and Publisher. Apple iWork contains keynote, presentation program, word processing and desktop publishing package. Linux-based office has word processing, spreadsheet (calc), presentation (impress), vector graphic and flowchart (Draw), database (base) and formula editing math white G-suit contains Gmail, Hangouts, calendar, currents for communication, drive for storage, Doc sheets, slides, keep, sites for productivity and collaboration hinging on the plan, an admin panel and vault for handling users and the devices.

In Application Suites, the following features are very notable.

i. Integration
ii. Consistency

INTEGRATION

In Application Suite, two or more applications are designed to work together. A major merit of integration is the ability to exchange data between applications. For example, in Microsoft Office, you can export your Worksheet into Excel to Word without any problem of formatting.

CONSISTENCY

In Application Suites, it is also common to see the same operation cutting across the component applications. For example, to save a document in Microsoft Office, the same combination of Keyboard keys (Ctrl + S) can be used across the suite.

4.0 CONCLUSION

In this unit, you have been introduced to various products from some leading Software development manufacturers. The unit has also taken you through some examples of application Suites.

5.0 SUMMARY

As seen in this unit, application suites have some common components, namely, Word Processor, Electronic Spreadsheet and Database Application. However, additional components vary from one software vendor to another.

6.0 TUTOR-MARKED ASSIGNMENTS 7

You should do the following assignments and submit your answers to your Tutor.

i. Mention the most common Application Suites in the market and identify the leading one.
ii. What is a Template and its advantage when using an application?
iii. Discuss the merits of integration in application Suites.

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G Suite, 2020

Microsoft Corporation, Microsoft Access 2016.

ANSWERS TO TMA

i. They are
   a. Microsoft Office
   b. Apples iwork

c. Linux-based LibreOffice
d. G-Office

ii. A temple is a Ready-made format you can modify to meet your need.

a. Ability to exchange data between the components
b. Use of some common operations to perform the same task across the Suite's components.

UNIT 9: FEATURES OF WORD PROCESSING SOFTWARE

CONTENTS

1.0 INTRODUCTION

In this unit, you will be introduced to the general features of Word Processing Software. These features will show you the essential function of any Word Processing package, be it Microsoft Word or Corel Word Perfect.

Most Word Processors today have additional tools that make them as good as Desktop Publishing software. This unit will show you some of these additional features too.

Section 2.0 gives you the study objectives for his unit.

2.0 OBJECTIVES

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

i. explain the main features of any Word Processing software
ii. identify some design tools available in such Word Processing Software.

3.0 MAIN CONTENT

3.1 Basic Characteristics of Word Processing

Word Processing software are generally designed to make text preparation very easy. They facilitate editing, correcting, revising and other modification procedures without typing.

In general, the following features characterize every Word Processing package and hence define its basic functions:

i. Editing
ii. Formatting
iii. Printing

You will see the characteristics within each of the following functions seriation.

3.1.1 EDITING

Editing is the term for changing of a document. Generally, the task of editing consists of the following:

i. Cursor control
ii. Deletion
iii. Insertion
iv. Spelling Checking
v. Grammar Checking

In Word Processing environment, the cursor is very similar to the tip or point of a pen and it indicates where text will appear next when it is entered from the keyboard. Editing is accomplished within a Word Processor when you move the cursor anywhere on the text screen to perform your necessary tasks. This is called Full-Screen Editing as against Line Editing where a line is edited one at a time. Cursor movement is accomplished by using the cursor control keys.

SELF-ASSESSMENT EXERCISE 9.1

Can you remember the Cursor control keys?

ANSWER TO SELF-ASSESSMENT EXERCISE

The keys are: Home, End, Arrow keys.

Deletion is possible within a Word Processing environment by using either the Backspace or Delete key on the keyboard.

SELF-ASSESSMENT EXERCISE 9.2

What is the other possibility of effecting a deletion operation on the screen?

ANSWER TO SELF-ASSESSMENT EXERCISE

By using the spacebar in an overwrite mode, i.e. when the Insert key is in Off mode.

You should know that deletion is only possible at the "Insertion Point" The Insertion Point is the blinking vertical bar shown in figure 9.1.

Figure 9.1: Insertion Point

In the figure 9.1, the Insertion Point is directly behind word "of'. Using Backspace key, you can delete the space character between "university" and "of' while using Delete key deletes letter "0" in a single press.

Now, Insertion as an editing operation is one of the essential operation that makes a difference between Word Processor and manual typewriter. Insertion can be made in two modes:

i. Insert Mode
ii. Overwrite or Overtype Mode (OVR)

Look again at figure 9.1 and the one in figure 9.2.

Figure 9.2: Overwrite or over type Mode

You will see that the "OVR" status on the Status bar was disabled in figure 9.1. Insert mode was on in the figure 9.1 while the Overtype mode is on in figure 9.2. In the Insert mode, any new character appears at the insertion point while all the remaining text is pushed to the right. However, in the overtype mode, each character you insert replaces or overwrites an existing one.

Now as already stated earlier on, checking of spelling and grammar are part of editing operations of most Word Processing packages today.

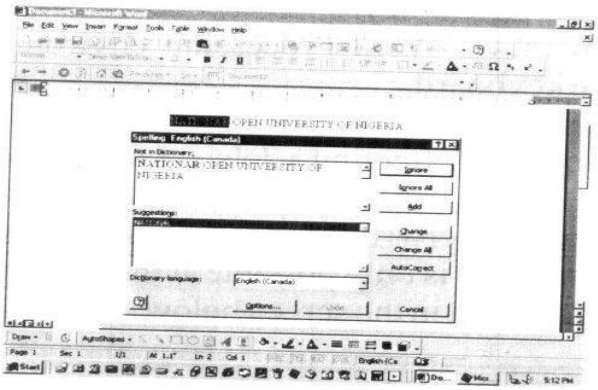


Figure 9.3: editorial Screen

For example, figure 9.3 shows a checking editorial session. You can configure your Word Processor to underline a word wrongly spelt for easy identification. To a certain extent, most Word Processing software today provide the user with some grammar checking features.

Figure 9.4 is a screen showing Microsoft Word Grammar settings' windows.

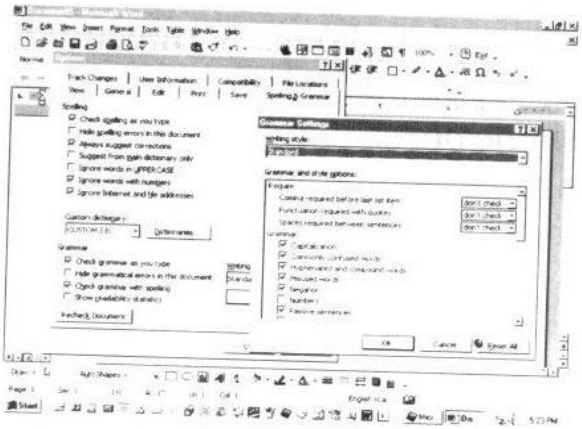


Figure 9.4: Microsoft word Grammar settings window

Before you see the formatting functions of a Word Processing software, there are two features common with every Word Processor:

i. Type-Ahead Buffer
ii. Word Wrap

Type-Ahead buffer simply permits you to type as quickly as possible without being impeded by the machine. The machine, specifically the Monitor doesn't have to show you what you have just typed before you type the next characters. The machine catches up when it can without losing characters.

Word Wrapping is a method of forming text line on the screen automatically without breaking words into two. The Word Processing software wraps the whole words that extend beyond the right margin onto the next line of text. This is called Word Wrapping.

3.1.2 FORMATTING

Just as editing with a Word Processing software involves changing the content of a document, formatting on the other hand involves changing the appearance.
While most of the formatting features will be introduced to you in unit 10 when taking the case study of Microsoft Word 2000, you should however look at the following to enable you understand the formatting toolbar better:

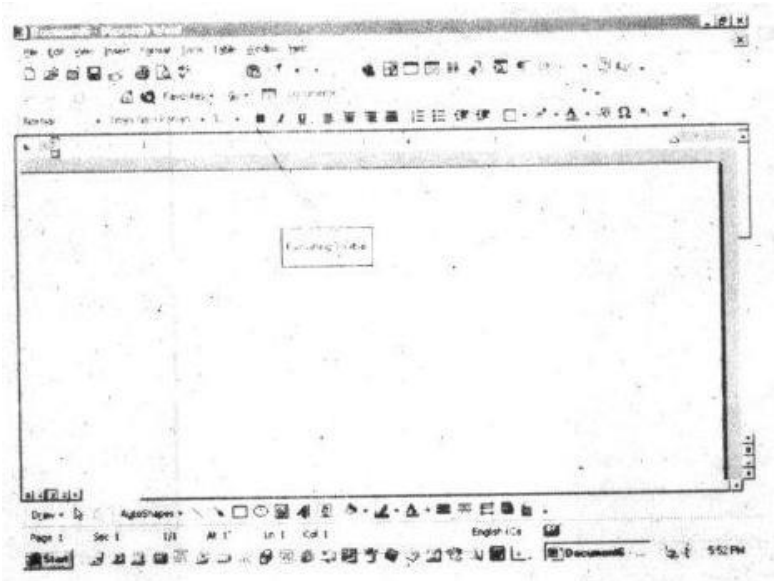


Figure 9.5: formatting toolbar

As seen in figure 9.5, you can customize your formatting toolbar by adding to or removing items from it.

Formatting operations can be divided into two:

i. Character Formatting
ii. Page Formatting

The details of section 3.1.1 to section 3.1.3 functions will be treated full detailed in the next unit.

3.1.3 Voice Typing and Editing

If you put on a good microphone speaker without fault, it is possible to type using your voice or voice command. Voice typing can be done through Google Doc with a Chrome browser. Select tools, then voice typing and a microphone voice will appear to allow you type using voice by clicking the microphone icon. When you have finished speaking select the microphone again. In case of a mistake, transfer your cursor to the exact error spot and correct it without turning off the microphone. Figure 9.6. shows the voice typing editing screen.

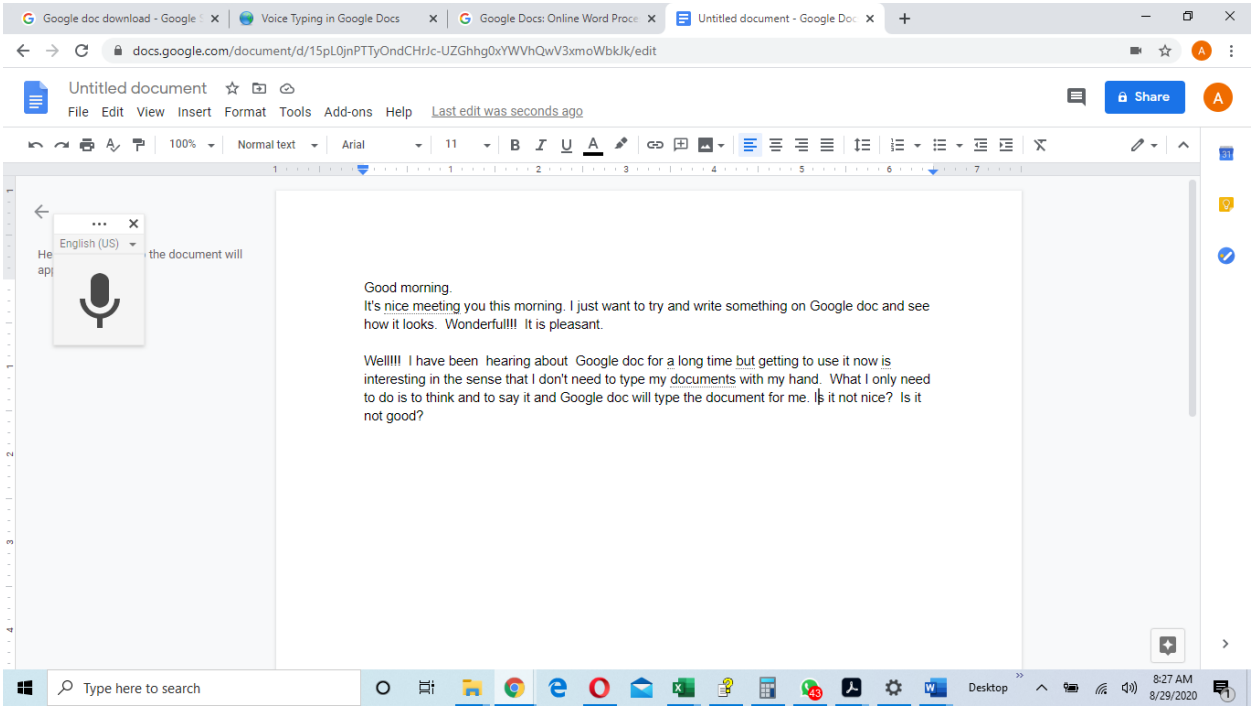


Figure 9.6: Voice typing and Editing Screen

3.1.4 IMPORTANT REMARK (THESAURUS)

Before we leave the subject of formatting, it is good to introduce you to these important features in Word Processing that can help your editing operation. Most Word Processing software provide what is called "Thesaurus". This simply means Treasury of Synonym and Antonyms where you can select alternative word for same word. Figure 9.7 displays is an example of Thesaurus screen providing alternative words for "Open" after giving you the meanings.

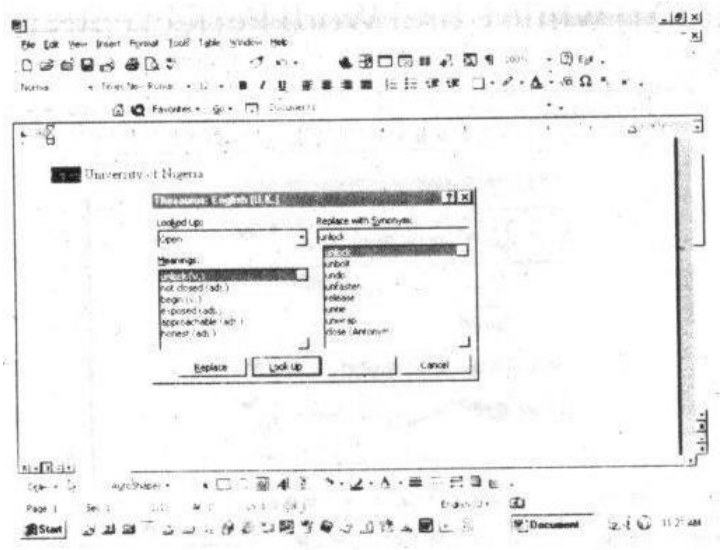


Figure 9.7: Thesaurus Screen

3.1.4 Printing

Every Word Processor provides you with the possibility of printing your document. In fact, there is no point in using a Word Processing software if your completed document cannot be printed.

However, most Word Processor today provides what is called a preview screen. the preview screen allows you to see how your document will appear on paper before printing it.

Figure 9.8 is an example of a Preview screen.

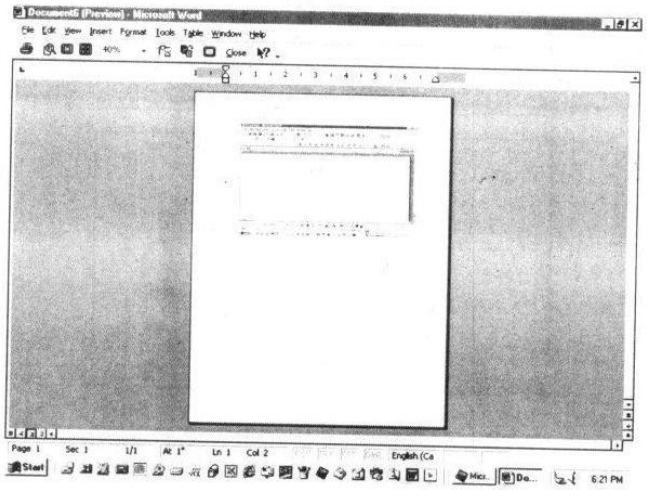


Figure 9.8: Preview Screen

You will now be introduced to some design tools available in Word Processing software to add some necessary items to your document.

3.2 Some Design Tools

Though a Word Processing software has the fundamental function of text manipulation, however, most Word Processor today have additional tools to meet the needs of users who have more than editing job to do to make their document complete.

Below are some common tools available on some Word Processing packages today.

i. Word Art
ii. Clip Art
iii. Drawing Tools
iv. Equation Editor

3.2.1 WORDART OR TEXT ART

Microsoft Word calls it WordArt while Corel Word Perfect calls it Text Art. Figure 9.9 displays text art

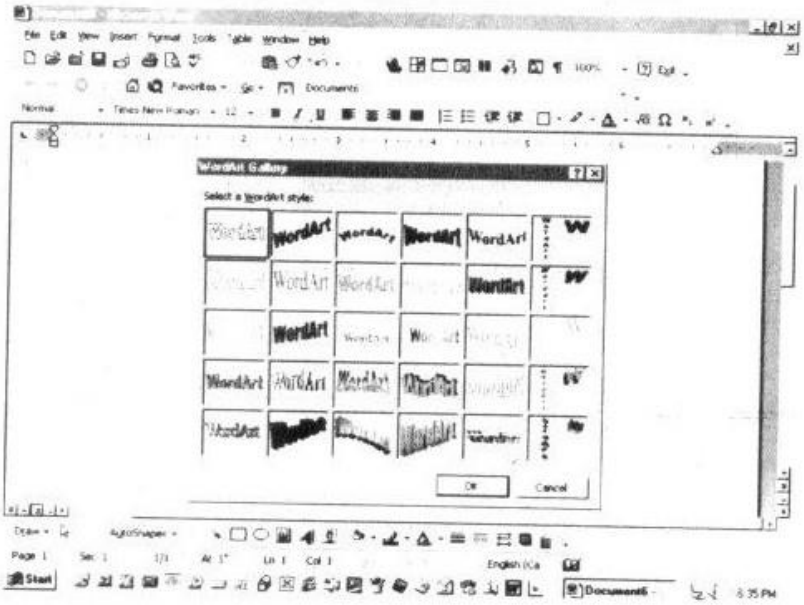


Figure 9.9: Text Art

As you can see in Figure 9.9, WordArt feature provides you with varieties of specially designed text formats that you can use to add beauty to your document or publication.

3.2.2 CLIP ART

Today, every Word Processor software comes with artistically designed pictures that you can add to your document. Figure 9.10 is an example of a screen that gives you some pictures that you can insert into your document.

Figure 9.10: Screen with Pictures

3.2.3 DRAWING TOOLS

Gone are the days when you had to draw your flowcharts, for example, either by hand or by using another software. Most Word Processor today include as seen in figure 9.11 below drawing tools to prepare you flowcharts, organizational charts and so on.

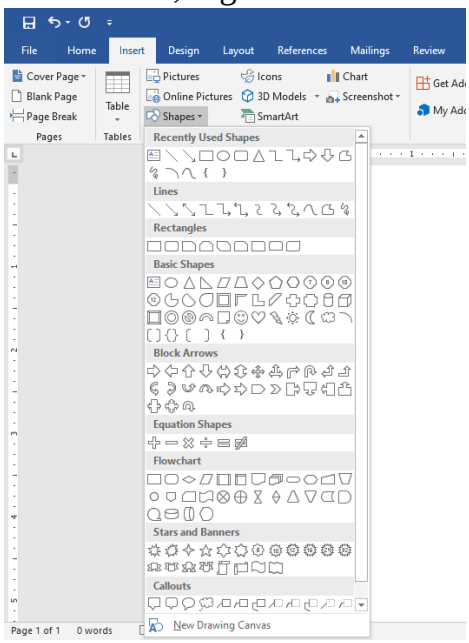


Figure 9.11: drawing tools

3.2.3 EQUATION EDITOR

Many symbols such as Mathematical symbols used in equations are not directly available on your keyboard. Presently, there are software that provide the needed mathematical symbols called equation editor as seen in figure 9.12.

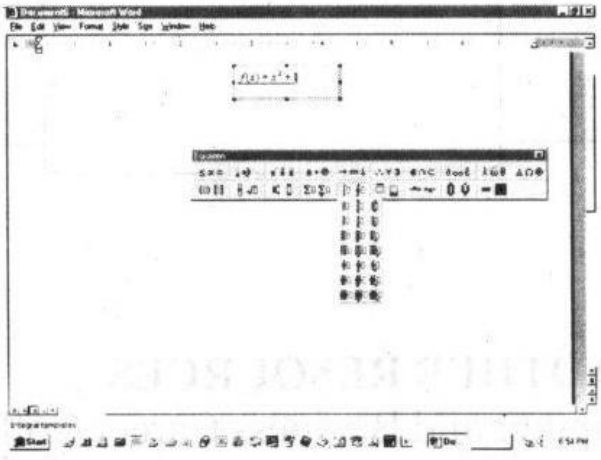


Figure 9.12: Equation in Editor

An Equation Editor is a special editing environment that you can more through your Word Processor to edit your Mathematical equations and beautifully printed when completed. On closing the Equation Editor, your equation simply appears at the insert point exactly as it would appear on paper when printed.

4.0 CONCLUSION

In this unit, you have studied some common features that are available in most Word Processing software today. As you have already learned, Word Processing software functions can be broadly divided into three, namely, editing, formatting and printing. The unit has also introduced you to some tools you can use to add more beauty or items to your document.

5.0 SUMMARY

From what you have learned in this unit, Word Processing software has more than enough features to meet your editing need. Apart from text manipulation, spelling and grammar checking tools are special features on Word Processors to make your editing easy.

The unit has also shown you how your document can become a beautiful publication when appropriate clip art pictures and charts are added, using the tools available to perform these on your Word Processor.

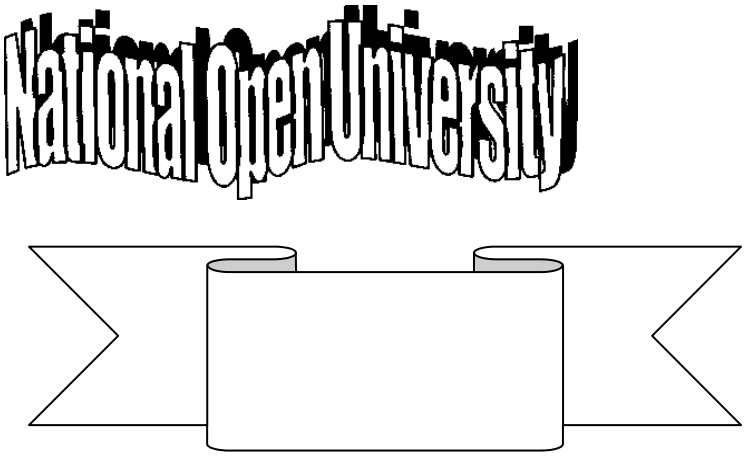
In the next unit, you will be introduced to how to use Microsoft Word, being the most common Word Processing package today.

6.0 TUTOR-MARKED ASSIGNMENTS 8

You should do the following assignments and submit your answers to your Tutor;

i. What are the tasks involved in editing function of a Word Processing Software?
ii. Define the following:
   a. Word Wrapping
   b. Type-Ahead Buffer

iii. What tool within your Word Processor to use to produce the following:



7.0 REFERENCES/FURTHER READING

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G Suite, 2020
.https://docs.google.com/document/d/15pL0jnPTTyOndCHrJc-UZGhhg0xYWVhQwV3xmoWbkJk/edit

ANSWER TO TMA

i. They are:

a. Cursor Control
b. Deletion
c. Insertion
d. Spelling Checking
e. Grammar Checking

ii.

a. Word Wrapping is the continuation of a word on the next line of the screen instead of breaking it when the right margin is reached
b. This is the feature provided for fast typing where the machine catches up with the fast typist without losing already typed text.

iii.

a. WordArt Tool
b. Drawing Tool.

UNIT 10: USING MICROSOFT WORD 2016

CONTENTS

1.0 INTRODUCTION

In this unit, Microsoft Word 2016 is taken as a case study of Word Processing software's for you to explore. Definitely, you have seen some features of Microsoft Word 2016 in the illustrations of some of the concepts in the previous units.

This unit will take you through the common options from the Microsoft Word Menu and what you can do with some buttons on the Toolbars. Now, look at your study objectives for this unit in section 2.0

2.0 OBJECTIVES

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

explain the functions of most of the common menu options of MS-Word 2016
use the tools the Toolbar of MS-Word 2016.

3.0 MAIN CONTENT

3.1 Common Menu Options

As you should have seen in most of the sample screens in the previous units, the first item on the menu bar of the Microsoft Word 2016 is the "File" menu. See the Pull-Down options of the menu in figure 10.1:

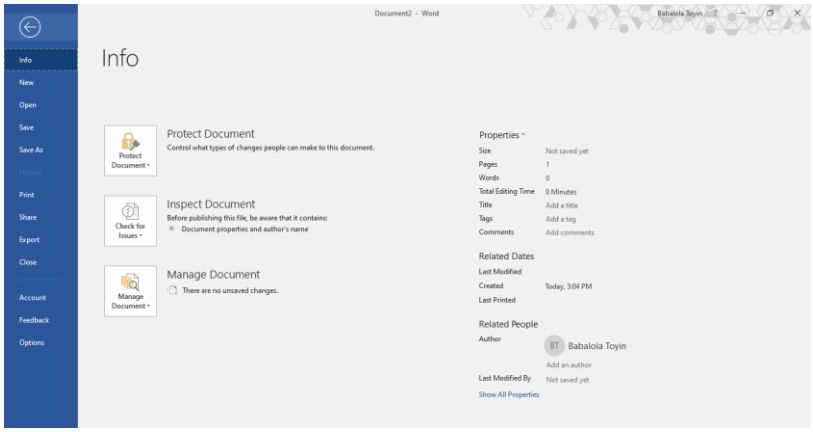

Figure 10.1: file menu

In the File Menu as seen in Figure 10.1, and we have various operations you can perform with respect to your document files. Some examples are:

i. New
ii. Open
iii. Close
iv. Save
v. Save As
vi. Print Preview
vii. Print
viii. Properties
ix. Page Setup

The above is likely going to be the common options you will frequently use as you use the word processor.

Selecting "**New**" simply opens a blank screen for you to create a new document. Temporarily, Word will give your new document a filename Document1 or Document2, ... Depending on how many times you select New. This name can be changed when you want to save your document, using "Save As" option.

Selecting "Open" option gives you for example, a screen as below in figure 10.2

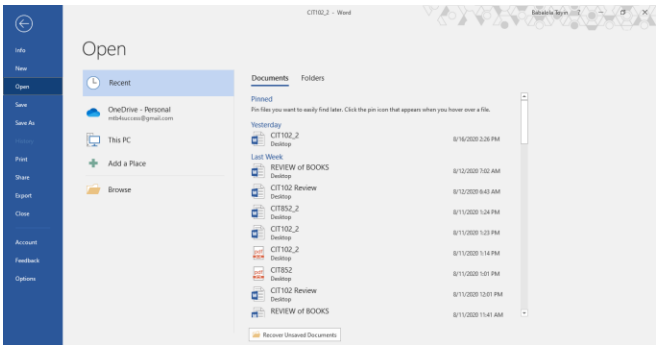

Figure 10.2: Open Menu

As you can see in Figure 10.2, you have the choice of selecting your file type if you want to narrow the group of files to identify the files you want to open

SELF-ASSESSMENT EXERCISE 10.1

i. What is the Folder Word opens to search for your files when you select "Open" from the File Menu?

ANSWER TO SELF-ASSESSMENT EXERCISE

The Folder is "My Documents"

"My Documents" Folder is the default folder where Microsoft Office keeps or saves your documents. The "close" option closes your document but will prompt you as seen in figure 10.3 in case you have not saved your document:

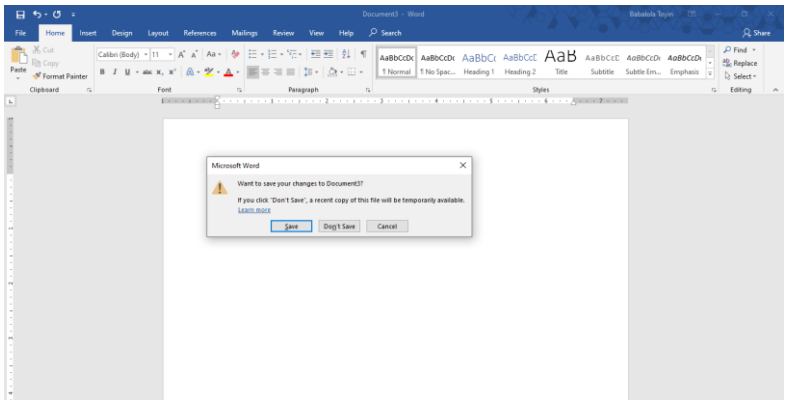

Figure 10.3: Close Dialogue Box

"Save" option saves your document, using the current filename or the one given to it by Microsoft Word. Selecting "Save As" allows you to change the filename, the file type and the folder to keep the file.

As you have already seen in the last unit, you have the opportunity to see a preview of your document as it would appear on paper, before you actually print it. That is what "Print Preview" does if selected. If you select the "Print" option, you have the screen fig 10.4.

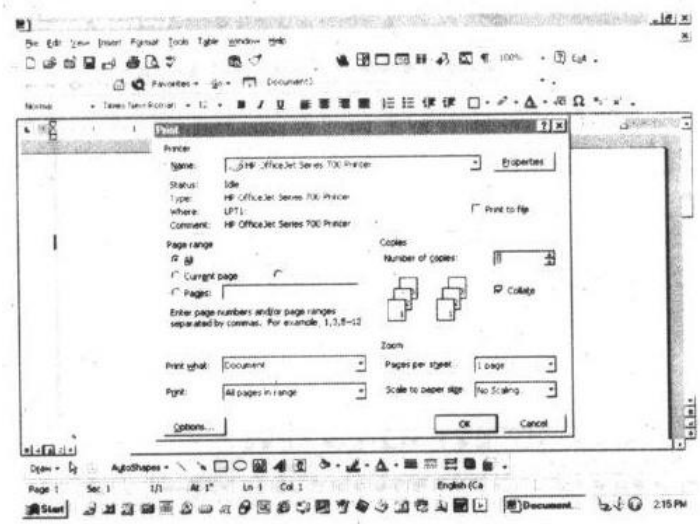

Figure 10.4: Print Option

As you can see on the screen, you have the choice of selecting out of many settings of your "Print" option before selecting the "OK" button to send your document to the printer. "Properties" option gives you figure 10.5 screen:

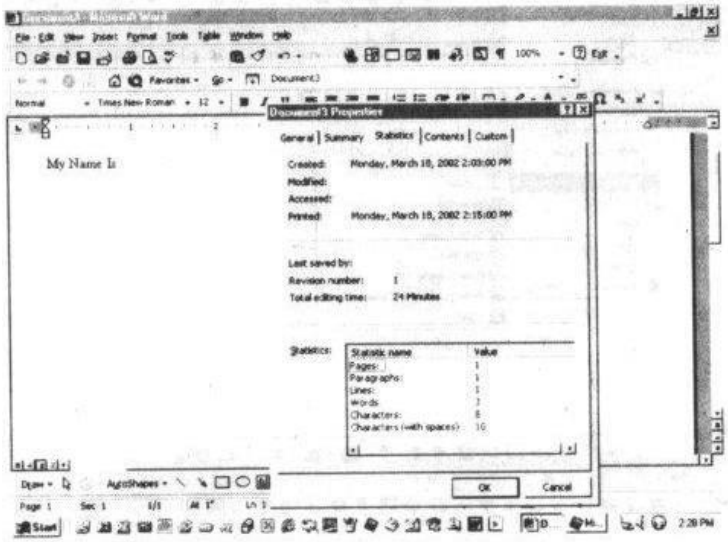

Figure 10.5: properties options

It will interest you to know that Microsoft Word keeps records of your document as you can see in the statistics screen figure 10.5. You can confirm the figures listed in the same figure 10.5. For example, there are 8 characters (excluding spaces) for the text:

"My Name Is"

that appears on the document shown in the same figure 10.5.

"Page Setup" is a very essential option from the File menu as seen in figure 10.6.

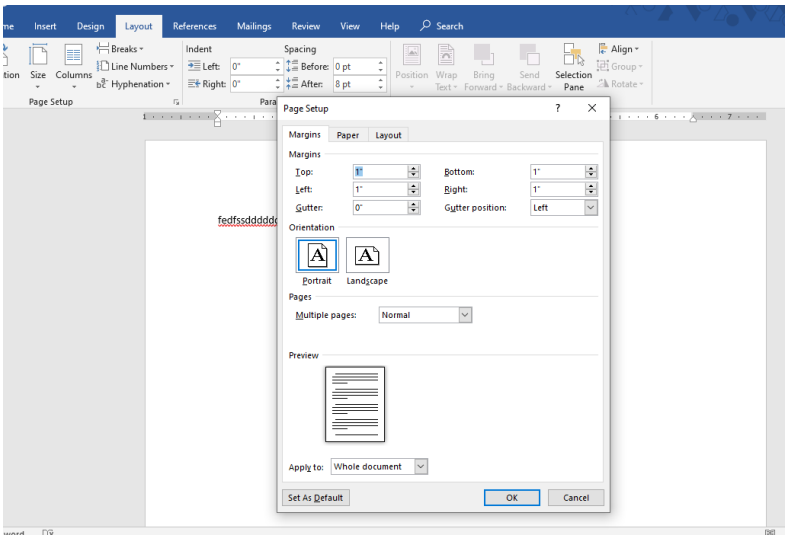

figure 10.6: Page Setup

The option allows you to set the values for the margins of your document, the type of paper to print the document, the orientation of the paper, and so on.

The "Exit" option closes Microsoft Word, when selected Now. Figure 10.7 is a Pull-Down Menu for other menus from the Menu bar:

For the "Edit" option, you have in home menu in figure 10.7:

figure 10.7: pull-down menu with exit option screen

For "Insert", you have the screen in figure 10.8

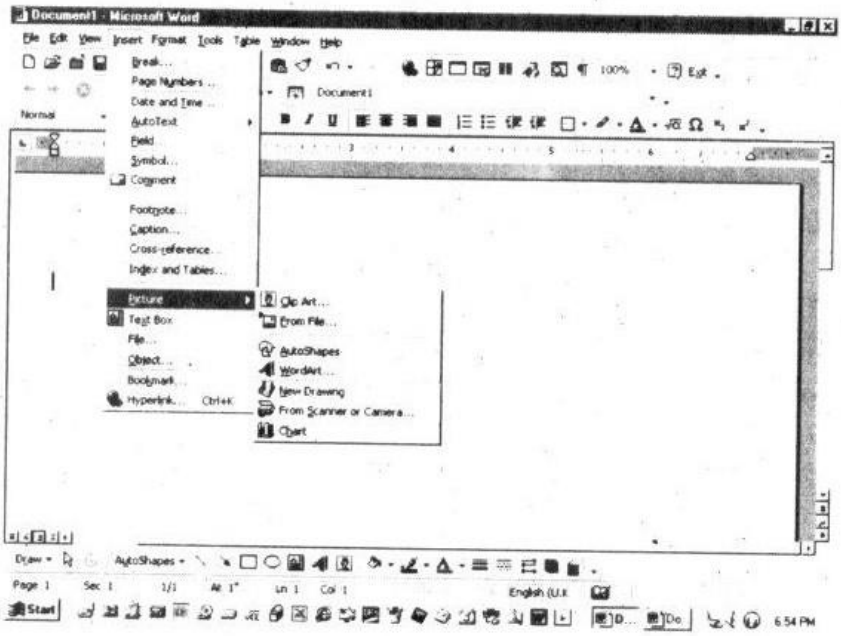

figure 10.8: Insert Option

The "Format" menu shows when an image is selected as seen in figure 10.9
Alternatively, the format menu in MS word 2007, 2010, 2013, 2016 and 2019 update is as shown in figure 10.10 (this is the file shown to you).

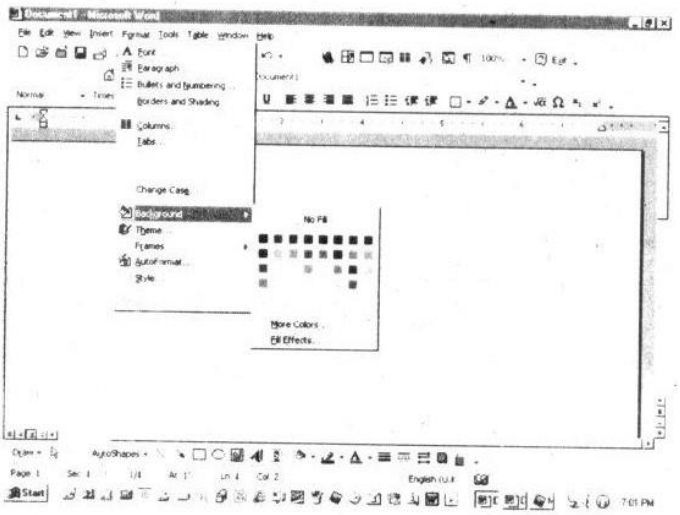

Figure 10.9: format menu

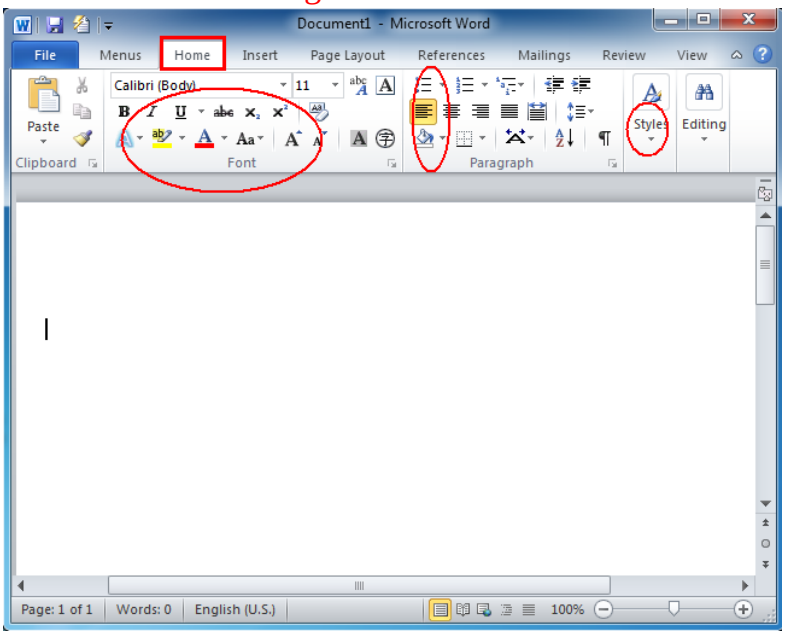

Figure 10.10: Format Menu

The "Tools" menu selection is shown in figure 10.11:

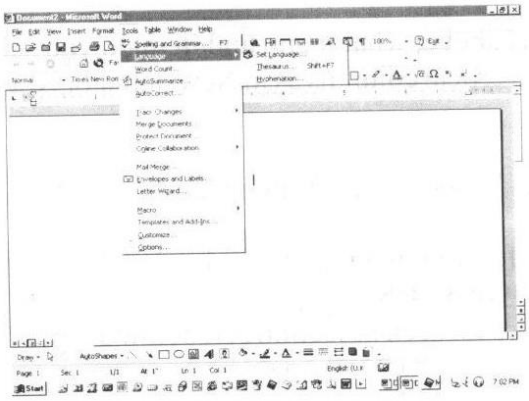

Figure 10.12: Tools Menu

Selecting "Table" menu, you have figure 10.11

Figure 10.13: Table Menu

Going back to the "Insert" menu, if you select "AutoText" and then "Closing", you have various alternatives of text to close your letter. The text will automatically appear on your screen at the insertion point. See figure 10.14:

Figure 10.14: Auto Text

The remaining menu selections will give you ideas of what you can do when they are selected.

SELF-ASSESSMENT EXERCISE 10.2

From figure 10.14 Screens, what menu and item do you select to have your document split into: two or three vertical columns as in Newsletter or Newspaper publications?

ANSWER TO SELF-ASSESSMENT EXERCISE

You are to select "Format" from either after selecting an image or working with table.

You will now see few things about the tools available on the Toolbars.

3.2 Tool Bar

This is a bit of graphical user interface (GUI) icons that can be selected to carry out some functions

3.2.1 Customize Quick Access Toolbar

In the MS Word 2016 and 2019 update, click on the Ribbon on the left-hand side on top of the menu bar as seen in figure 10.15 to pull down the customize Quick Access Toolbar. Any of the items needed in the customize Quick Access toolbar can be chosen as necessary.

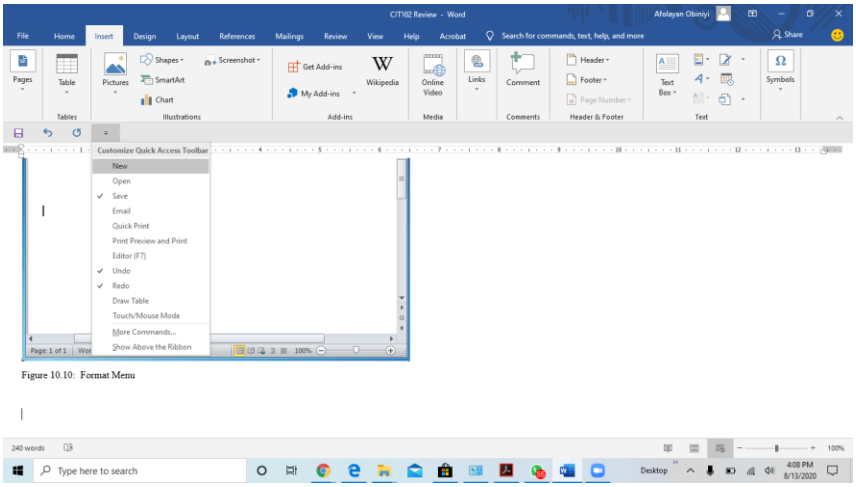

Figure 10.10: Format Menu

Figure 10.15: Customize Quick Access Toolbar

3.2.2. Drawing Toolbar

This is a set of icon that gives you rom to draw shapes and images in documents. This can be performed in MS Word 2016 and above thus:

x. Click on insert

xi. Click on shapes

xii. Choose any shape that suits what you want to draw as seen in figure 10.16

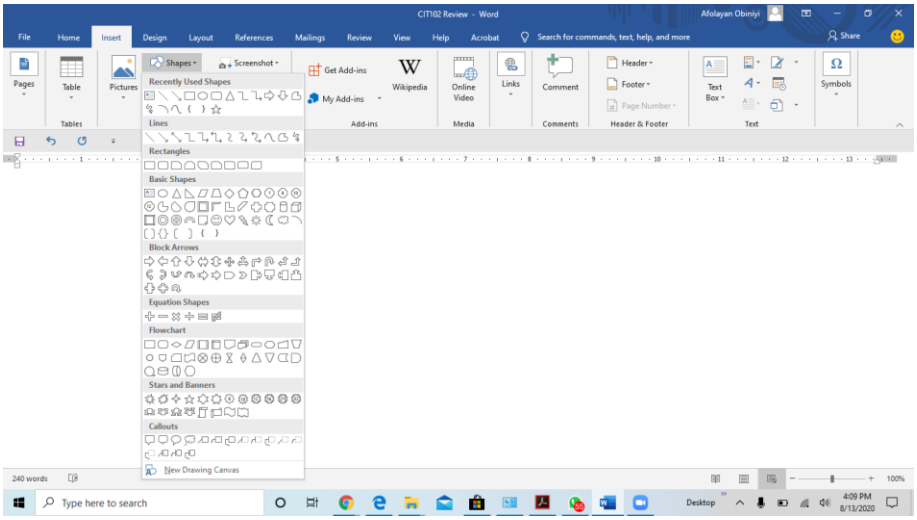

Figure 10.16: Draw tools

The word "University" has been formatted using two tools from the Formatting toolbar.

SELF-ASSESSMENT EXERCISE 10.3

What are the Tools?
Tools are set of icons that give you room to draw shapes and images in documents

3.3 PRINTING

To print in MS Word 2019, do the following:

i. Click on file
ii. Click on print
iii. Click on printer and select the type you have with you.
iv. Perform the appropriate setting to suite what you want to print
v. Click on print to print the document as seen in figure 10.17

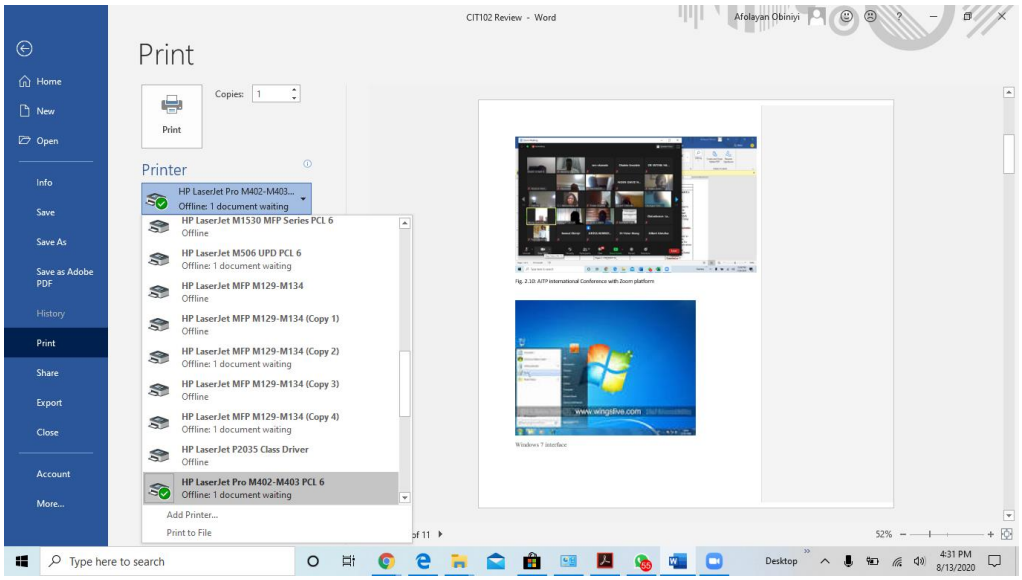

Figure 10.17: Print Menu

4.0 New Features of MS Word 2016 and above

The following are enhancement of MS word 2016 and above. The advancements are in digital pen, book-like page cruising, learning tools and translation. MS word 2016 and above also goes along with Latex Syntax. They improved on ads icons and scalable vector graphics (SVGs), receive all the angles with 3D images, accessibility enhancement and improved sound effect among others.

5.0 CONCLUSION

In this unit, you have learned some common menu options which we have in Microsoft Word 2016. Most of these menu options simply define various operations you can perform during your editing session.

We have also learned from The various toolbars that we can have on your screen to have quick access to editing or formatting operations.

6.0 SUMMARY

The unit has taken Microsoft Word 2016 as a case study of Word Processing software and has introduced you to the most common operations you can perform within the editing environment. The unit has also shown you how you can finally print your document when completed.

7.0 TUTOR-MARKED ASSIGNMENTS 9

You should do the following assignments and submit your answers to your Tutor.

i. What is the difference between "Save" and Save As" options in Microsoft Word?
ii. If you were given an assignment of preparing a 250-word document, what menu item will you use to check the number of words in your completed document?
iii. Identify two menu options that can help you to prepare your letter using MS-Word quickly.

8.0 REFERENCE/FURTHER READING

Microsoft Corporation, Microsoft Word 2013, 2016 and 2019

ANSWERS TO TMA.

i. “save” option will save your document using the current file name while “save As” option allow you to change the filename. File type and the folder where to save the document
ii. “properties” from the “file” menu.
iii. “letter wizard “from the “tools” menu and Auto Text “from the” Insert Menu

UNIT 11: FEATURES OF ELECTRONIC SPREADSHEET

CONTENTS

1.0 INTRODUCTION

Just as you were taken through the general features of Word Processing software in Unit 9, this unit is also expected to introduce you to the features common to every Electronic Spreadsheet software. Later in the next unit, you will be taken through the common operations you can perform with Microsoft Excel which is the most common Spreadsheet software around you.

You will now see the study objectives for this unit in section 2.0:

2.0 OBJECTIVES

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

i. explain the basic concepts of Electronic spreadsheet application
ii. identify the various types of the data you can work with in a spreadsheet application
iii. describe various function categories in Electronic spreadsheet.

3.0 MAIN CONTENT

3.1 Fundamental Spreadsheet Concepts

Business tasks that involve common calculations are easily done today by using Electronic Spreadsheet software. Few of the varieties of application spreadsheet software can assist you with are as follows:

i. Financial Analysis
ii. Invoicing
iii. Budgeting
iv. Inventory Management
v. Payroll
vi. Personnel Record Keeping
vii. Production Schedule
viii. Regression Analysis
ix. Tax Calculation, e.t.c.

For example, choose the new with cross (+) button on Google Drive dashboard to pick from Google sheet blank sheet or a template as seen in figure 11.1. access the menu from the spreadsheet and choose file, hence, select New Spreadsheet and it will open for you as seen in Figure 11.2

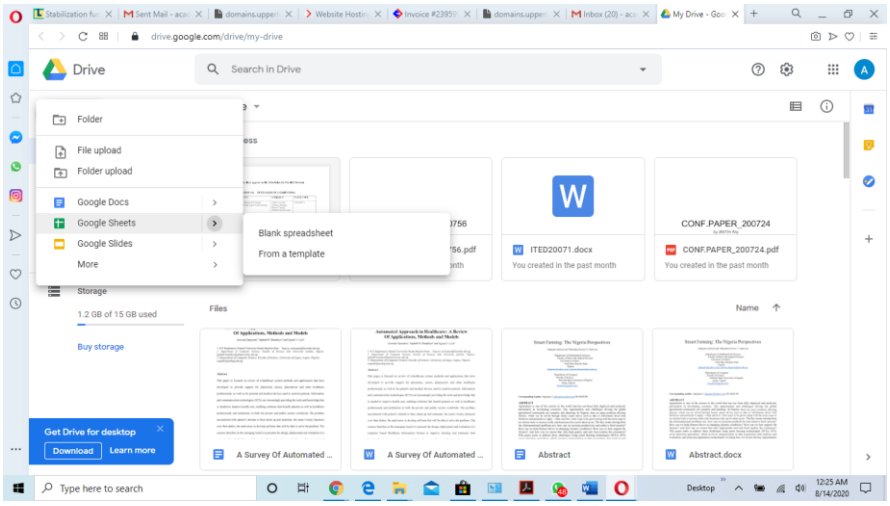

Figure 11.1: Google Drive Dashboard

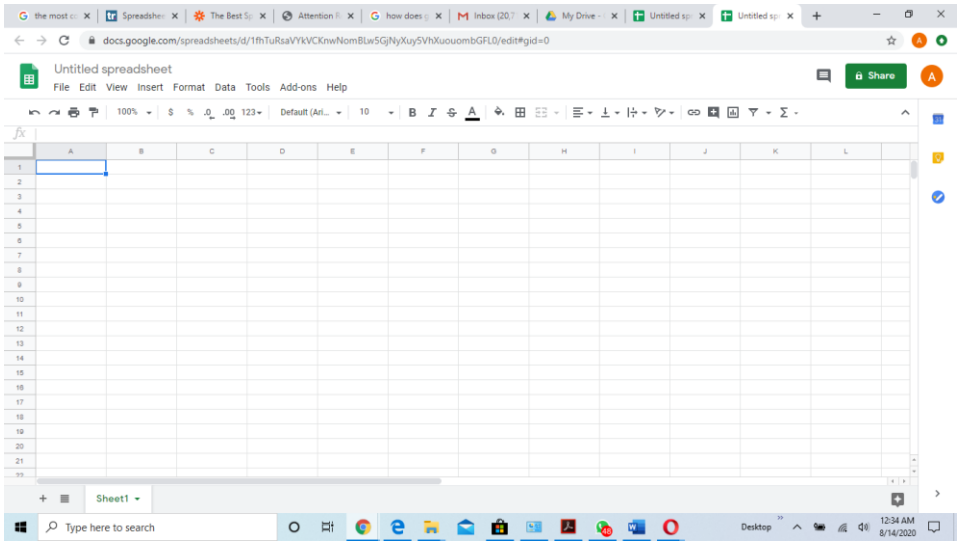

Figure 11.2: New Spreadsheet

You will now be introduced to the basic concepts associated with Electronic spreadsheet.

3.1.1 CELL

Every Electronic spreadsheet software uses a rectangular grid of cells called a worksheet. A worksheet is arranged in rows and columns. Now, a rectangular point of a row and a column a seen in figure 11.3 is called a CELL

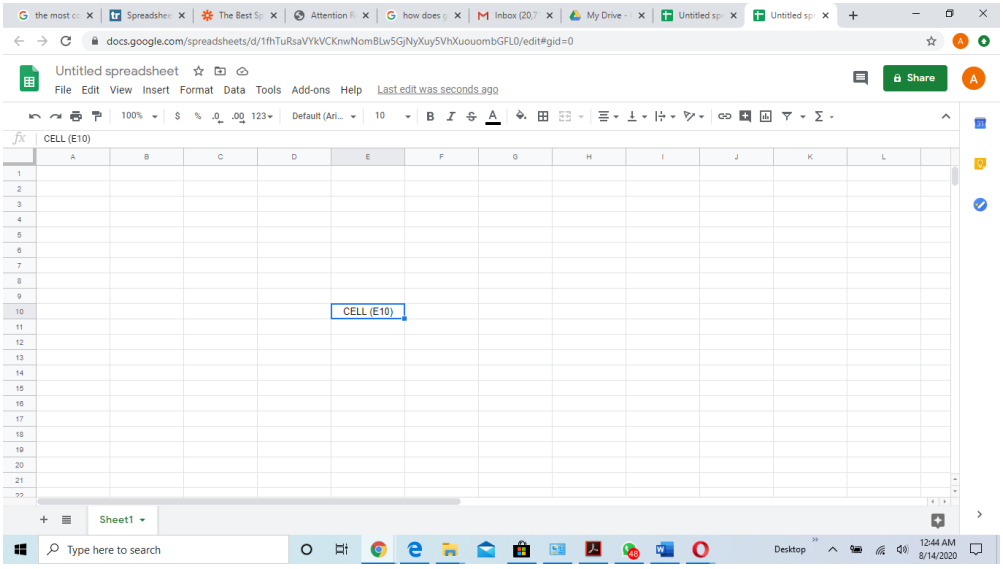

Figure 11.3: Cell

3.1.2 CELL ADDRESS

A cell address is also called a cell Identifier which consists of a column letter and a row number as seen in cell E10 in figure 11.3. The cell Address is indicated at the top left above the spreadsheet as seen in the same figure.

3.1.3 CELL POINTER

Unlike what you have in a word Processing environment, the Insertion Point is called a Cell Pointer, and it is a rectangular highlight which you can move around the worksheet.

Looking at Cell E10 in figure 11.3, you will see that, the cell pointer has a small square at its bottom right edge. This is called a Handle and it is used to increase or decrease the cell pointer.

As you can see in figure 11.4, the cell pointer at Cell E10 has been increased to Cell E14. You can do this by pressing down the primary mouse button and then drag along your required direction.

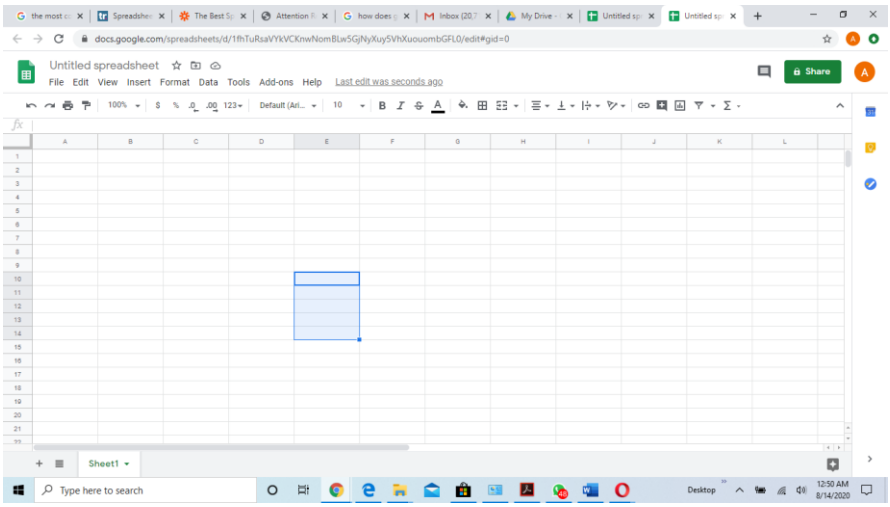

Figure 11.4: Increased Cell

3.1.4 WORKBOOK

In Electronic Spreadsheet environment, you can organise a number of worksheets into what is called a Workbook. For example, in the above screen, the workbook, named by "untitled spreadsheet" by Google sheet, has one worksheet, named sheet 1, other sheets can be added with the plus (+) sign on the left hand side. They are labelled below the workbook at the button left corner. You can rename these sheets if sheets are added by clicking in front of the tab labels and modify the names by renaming with the rename in the menu as seen in figure 11.5.

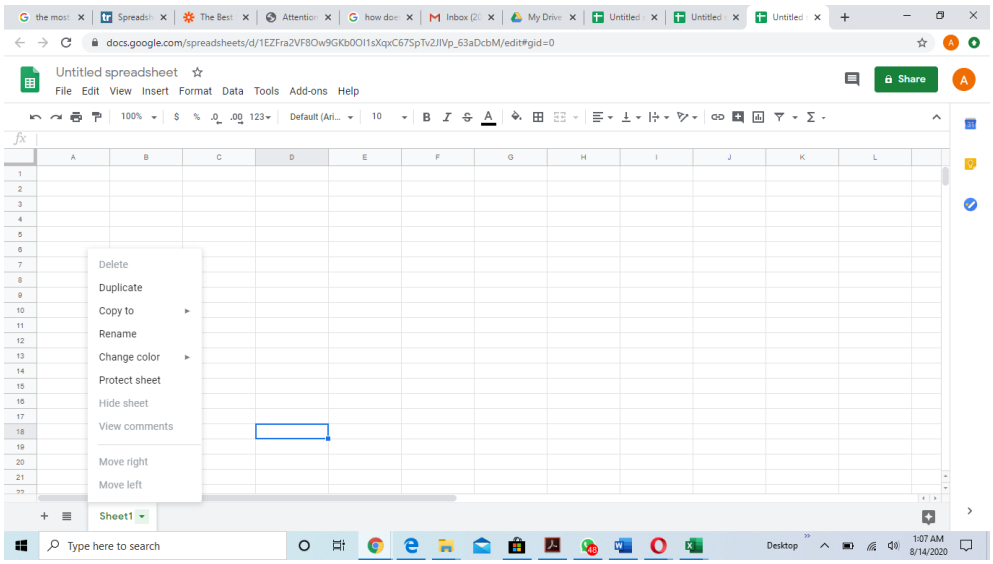

Figure 11.5: Renaming Sheet1

3.1.5 ACTIVE CELL AND WORKSHEET

As you have already learned in figure 11.5, you can have more than one worksheet in a workbook and a worksheet is made up of a number of cells. An active or a current Cell is the cell where the cell Pointer is, i.e. where you can enter data. In the same manner, an Active or a Current Worksheet is the one having the active cell.

SELF-ASSESSMENT EXERCISE 11.1

How do you move from one cell to the other using the keyboard?

ANSWER TO SELF-ASSESSMENT EXERCISE

By using the Cursor Control Keys, i.e. the arrow keys.
You will now see below what types of data you can work with in a spreadsheet environment and the categories of functions you can use to process your data.

3.2 FUNCTION CATEGORIES AND DATA TYPES

You will first of all see the various types of data you can enter into a cell. They are as follows:

i. Numbers or Values
ii. Labels or Characters
iii. Formula

3.2.1 NUMERIC DATA

The numeric data are the values or numbers used in calculations. Numbers also can be used in dates and times.

3.2.2 CHARACTER DATA

These are usually called "Labels" or Alphabetic data. These are text- only data. Generally, labels are not used in calculations.

3.2.3 FORMULAS

A formula is simply a mathematical expression that returns a result. In Electronic Spreadsheet, some values displayed are results of formulas. However, formulas employ cell addresses and a number of built-in functions.

In electronic spreadsheet, you can enter your formula through what is called the Formula Bar or directly into cells.

For example, figure 11.6 is the screen showing the formula Bar in Google sheet.

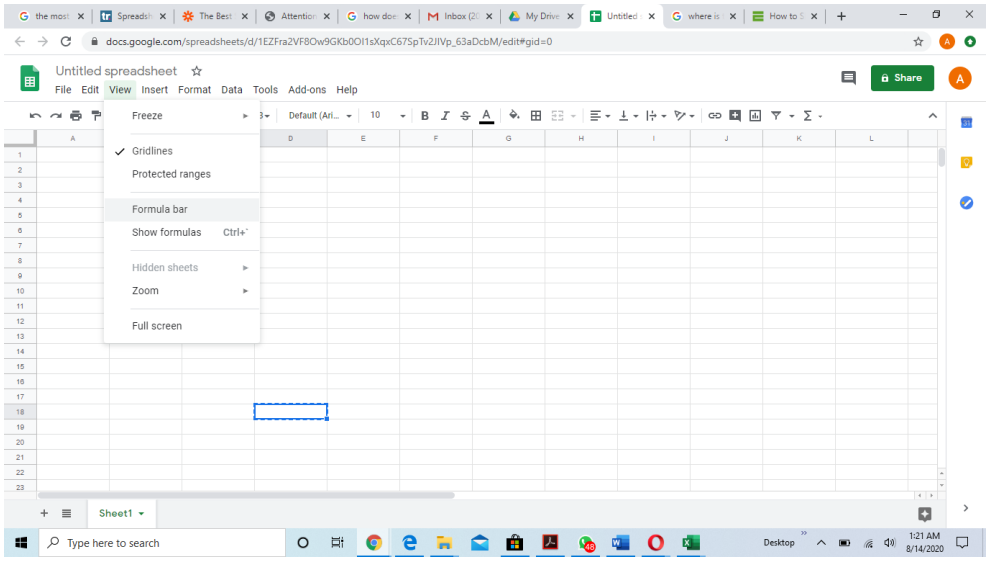

Figure 11.6: Formula Bar

You will now be introduced to various categories of functions available for your use in electronic spreadsheet. Some of the functions available in Google sheet are displayed in Table 11.1 and the use of sum is shown in figure 11.6:

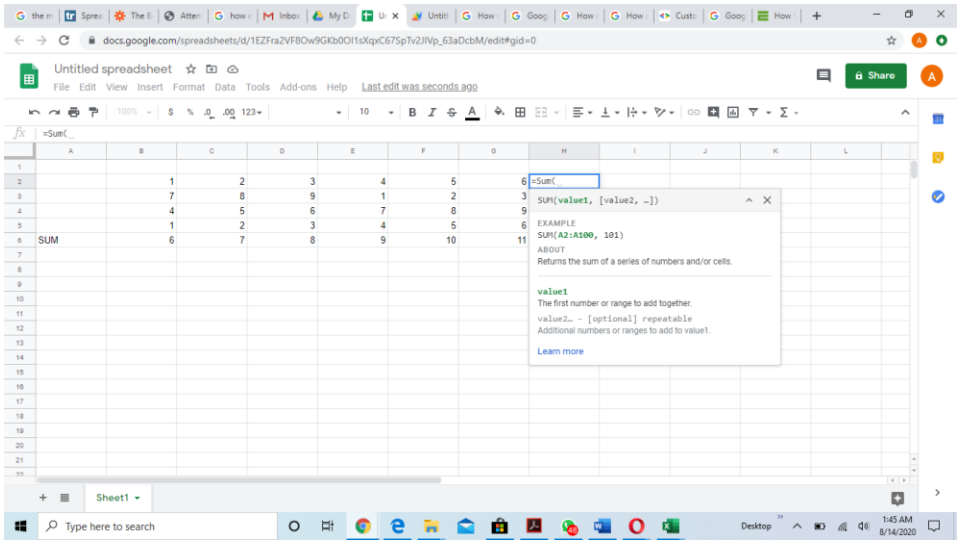

Figure 11.6: Use of Sum

Table 11.1: Some functions in Google Sheet

Type	Name	Syntax	Description
Array	ARRAY_CONSTRAIN	ARRAY_CONSTRAIN(input_range, num_rows, num_cols)	Constrains an array result to a specified size. Learn more
Array	FREQUENCY	FREQUENCY(data, classes)	Calculates the frequency distribution of a one-column array into specified classes. Learn more
Array	GROWTH	GROWTH(known_data_y, [known_data_x], [new_data_x], [b])	Given partial data about an exponential growth trend, fits an ideal exponential growth trend and/or predicts further values. Learn more
Array	LINEST	LINEST(known_data_y,	Given partial data about a

Type	Name	Syntax	Description
		[known_data_x], [calculate_b], [verbose])	linear trend, calculates various parameters about the ideal linear trend using the least-squares method. Learn more
Array	LOGEST	LOGEST(known_data_y, [known_data_x], [b], [verbose])	Given partial data about an exponential growth curve, calculates various parameters about the best fit ideal exponential growth curve. Learn more
Array	MDETERM	MDETERM(square_matrix)	Returns the matrix determinant of a square matrix specified as an array or range. Learn more
Array	MINVERSE	MINVERSE(square_matrix)	Returns the multiplicative inverse of a square matrix specified as an array or range. Learn more
Array	MMULT	MMULT(matrix1, matrix2)	Calculates the matrix product of two matrices specified as arrays or ranges. Learn more
Array	SUMPRODUCT	SUMPRODUCT(array1, [array2, ...])	Calculates the sum of the products of corresponding entries in two equal-sized arrays or ranges. Learn more
Array	SUMX2MY2	SUMX2MY2(array_x, array_y)	Calculates the sum of the differences of the squares of values in two arrays. Learn more
Array	SUMX2PY2	SUMX2PY2(array_x, array_y)	Calculates the sum of the sums of the squares of values in two arrays. Learn more
Array	SUMXMY2	SUMXMY2(array_x, array_y)	Calculates the sum of the squares of differences of values in two arrays. Learn more
Array	TRANSPOSE	TRANSPOSE(array_or_range)	Transposes the rows and columns of an array or range of cells. Learn more
Array	TREND	TREND(known_data_y,	Given partial data about a

Type	Name	Syntax	Description
		[known_data_x], [new_data_x], [b])	linear trend, fits an ideal linear trend using the least squares method and/or predicts further values. Learn more
Database	DAVERAGE	DAVERAGE(database, field, criteria)	Returns the average of a set of values selected from a database table-like array or range using a SQL-like query. Learn more
Database	DCOUNT	DCOUNT(database, field, criteria)	Counts numeric values selected from a database table-like array or range using a SQL-like query. Learn more

As you can see, for example in Google sheet, you have the following categories:

i. Array
ii. Database
iii. Date
iv. Engineering
v. Filter
vi. Financial
vii. Google
viii. Info
ix. Logical
x. Lookup
xi. Operator
xii. Parser
xiii. statistical
xiv. text
xv. web

Comparing the two common Electronic Spreadsheet software by Microsoft and Google sheet, you have the function categories in the following table:

Microsoft Excel	Google sheet
Financial Date and Time	Array Database

Math & Trig	Date
Statistical	Engineering
Lookup & reference	Filter
Database	Financial
Text	Google
Logical	Info
Information	Logical
Engineering	Lookup
User Defined	Operator
	Parser
	statistical
	text
	web

In unit 12, you will be introduced to the use of some of these functions when you specifically go through the use of Microsoft Excel.

Before you round up this unit, you will now see how the three types of data treated above can be entered into your worksheet.

Look at the figure 11.6 and see the date key-in there:

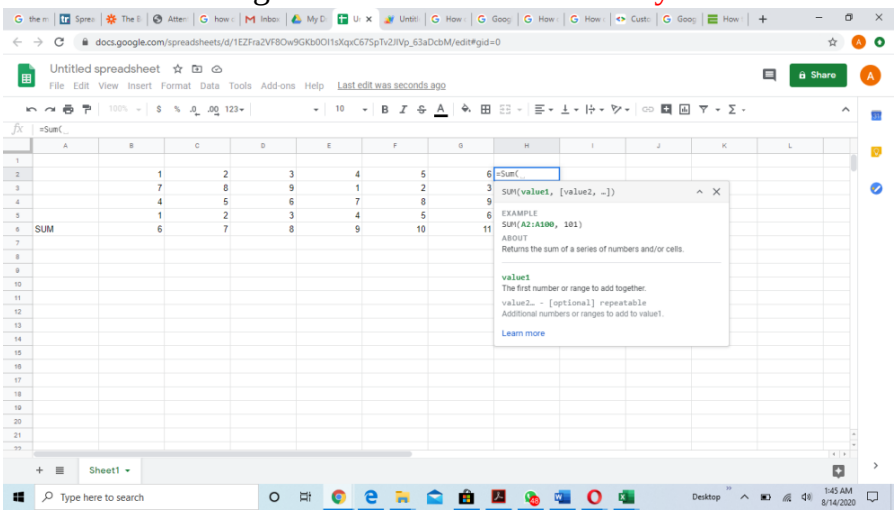

Figure 11.6: Use of Sum

As you can see in Figure 11.7, numbers are aligned right while labels are aligned left.

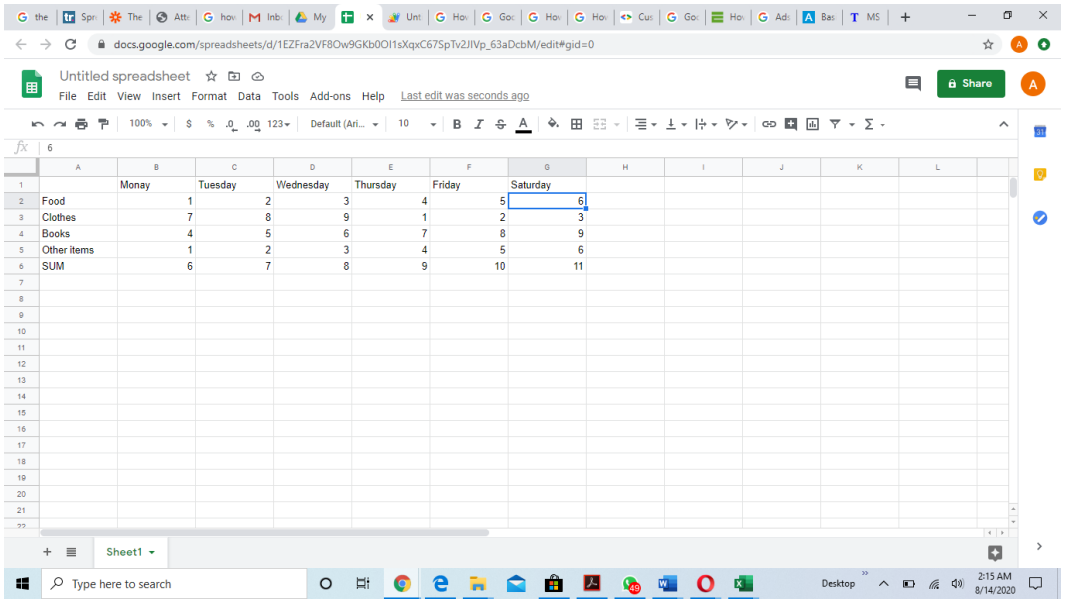

Figure 11.7: Alignment of data

The common arithmetic operators used in Electronic spreadsheet are as follows:

Operator	Meaning
+	Addition
-	Subtraction
/	Division
*	Multiplication
^	Exponentiation

You will be introduced to more operators when you interact with Microsoft Excel in unit 12.

4.0 CONCLUSION

This unit has taken you through the basic concepts in electronic spreadsheet such as cell, cell pointer, Cell Address and Workbook. You have also learned various types of data processing tasks you can perform using an Electronic Spreadsheet.

In this unit, you have leaned that there are mainly three types of data you work with within a spreadsheet, namely, values or Number, Labels and Formulas.

5.0 SUMMARY

In this unit, you have been introduced to the common features available on most electronic spreadsheet software. Apart from the basic concepts associated with the application, you have learned about the various function categories common with electronic spreadsheet programs. In this next unit, you will specifically be introduced to all these functions in Microsoft Excel.

6.0 TUTOR-MARKED ASSIGNMENTS 10

You should do the following assignments and submit your answers to your Tutor:

i. Define the following:
   (a) Cell
   (b) Workbook
ii. Identify the function categories that are exactly the same in Microsoft Excel and Google sheet in the way they are.
iii. List five (5) types of applications you can use Electronic Spreadsheet for.

7.0 REFERENCES/FURTHER READING

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Mandell, S. L., Computers and Data Processing (Concepts and Applications); Third Edition, West Publishing Company, 1985

Microsoft Corporation, Microsoft Excel 2016.

G Suite, 2020

ANSWERS TO TMA

i. (a) A cell is the rectangular intersection of a row and a column of a worksheet
(b) A work ok consists of a number of worksheets.
ii. They are:
i. Financial
ii. Statistical
iii. Database
iv. Text
v. Logical
vi. Information
vii. Engineering

iii. Five types of Applications are:

a. Payroll
b. Inventory
c. Regression Analysis
d. Invoicing
e. Budgeting.

UNIT 12: USING MICROSOFT EXCEL

CONTENTS

1.0 INTRODUCTION

Just as Microsoft word is the most common word processing software, Microsoft Excel is also the most common Electronic Spreadsheet software around today. This unit will take you through the common menu options of Microsoft Excel and also teach you how to use some of the functions already introduced in the last unit.

The next unit will specifically be devoted to using Microsoft Excel to generate various types of graphs. Now, you can see your study objectives for this unit in section 2.0.

2.0 OBJECTIVES

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

i. identify the various options available in Microsoft Excel 2016 menu
ii. explain the function categories in Excel use the most common functions of Excel software.

3.0 MAIN CONTENT

3.1 Common Menu Options

First of all, just have a look at the labelled part of Excel worksheet in figure 12.1:

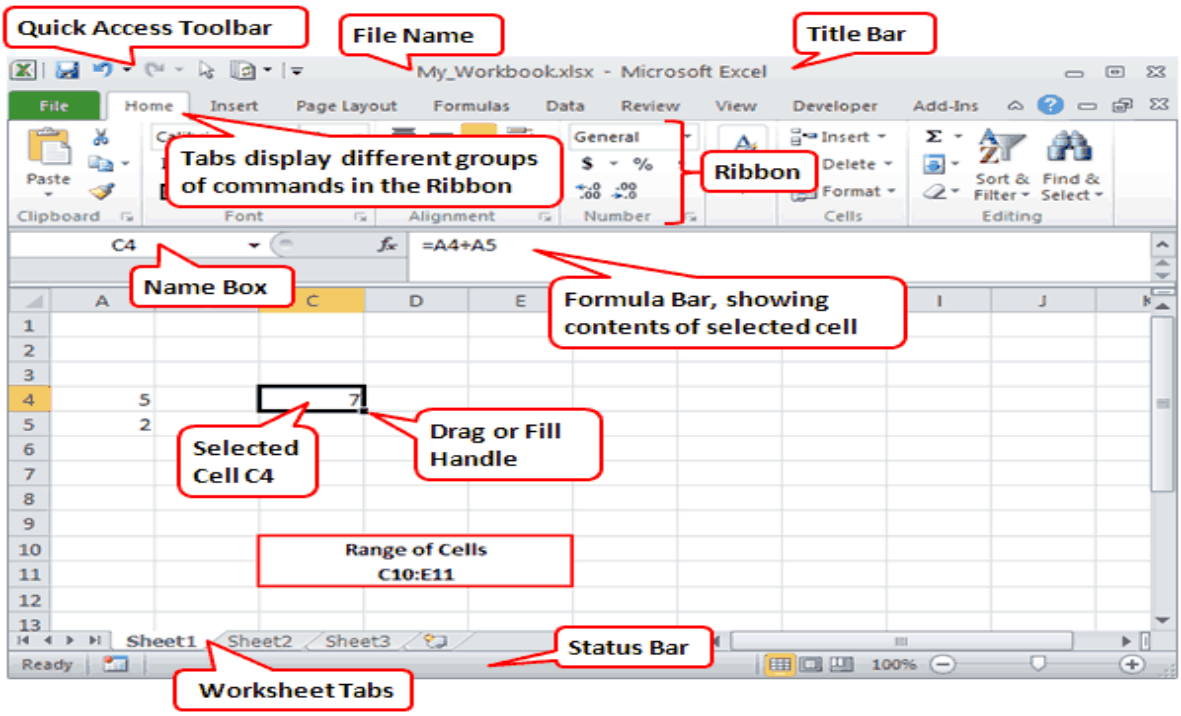

Figure 12.1: Part of Excel Worksheet

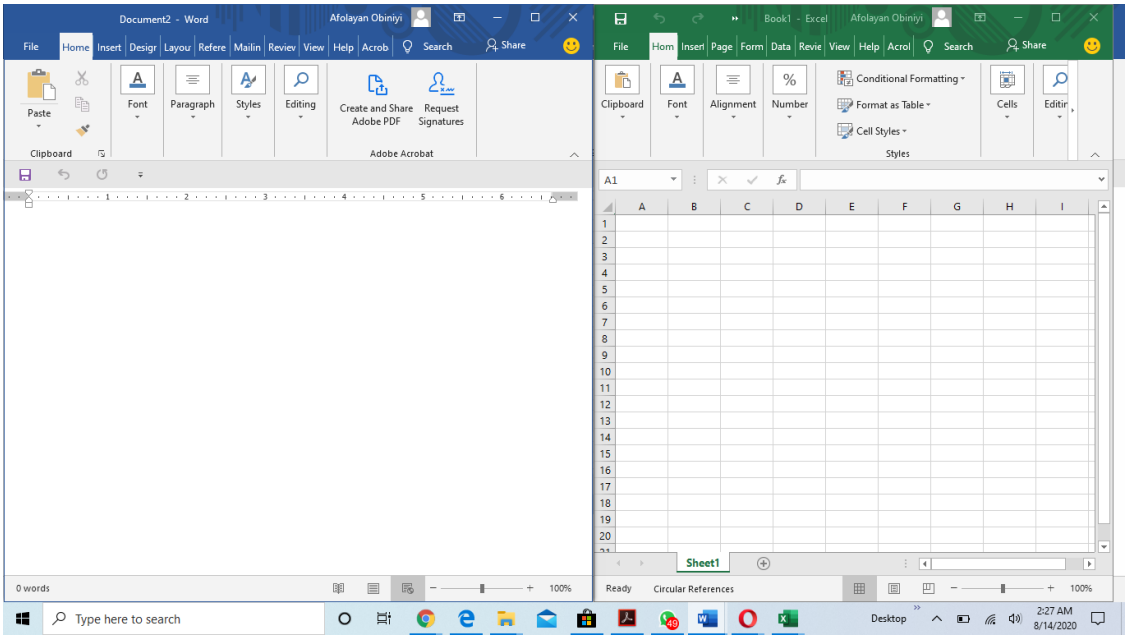

Figure 12.2: MS Word and MS Excel placed side by side

Figure 12.2 has two windows, one for Microsoft Excel and the other for Microsoft Word for you to compare their menu bars. As you will see, the only items they have differently are "Data" and Excel formula in Excel and design, referece, mailing and format in words.

SELF-ASSESSMENT EXERCISE 12.1

From the File menu of Microsoft Word, what are the items you have in Microsoft Excel that is not there?

ANSWER TO SELF-ASSESSMENT EXERCISE

The item in Excel 2016 that is not in word 2016 are Data and Excel formula.

Hence, most of the operations you can perform under File menu in Microsoft Word, you can also do in Microsoft Excel. As in Word, Excel also saves your worksheet or workbook in "My Documents" Folder, but with extension **.xls**

3.1.1 Edit

Now, look at the detail labelled description of component part of the Excel worksheet with particular reference to the category group and Ribbon context sensitive which houses the Edit buttons. This is in figure 12.3.

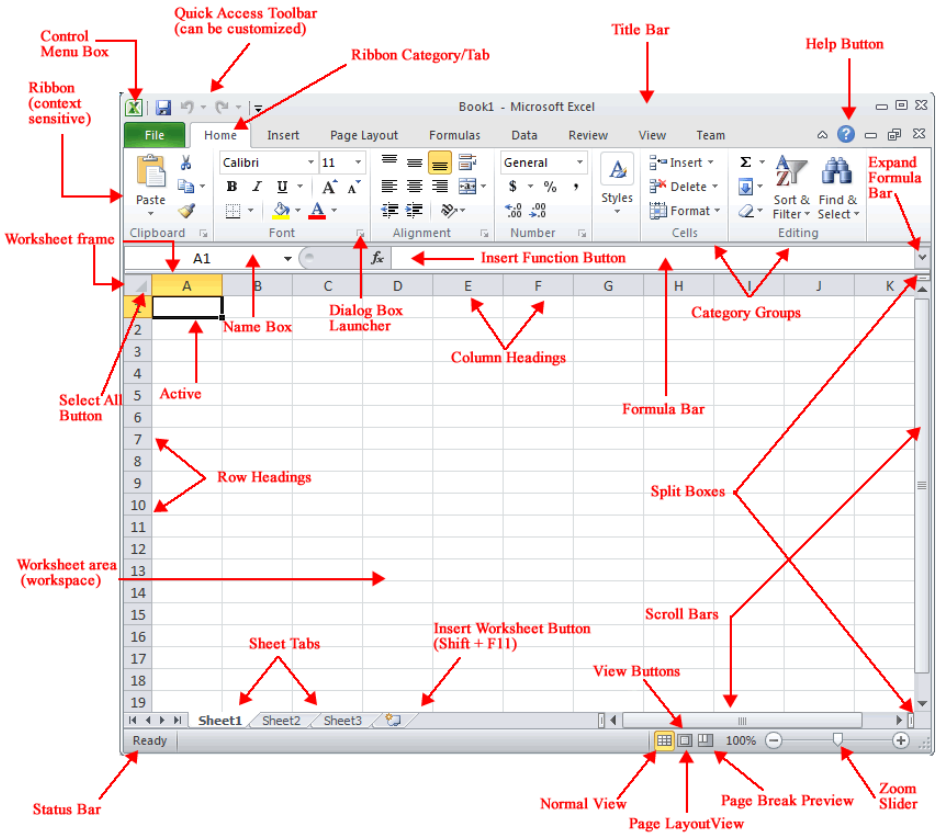

Figure 12.3: Components part of Worksheet

As you will see in figure 12.2 and 12.3, there is more Edit options in Excel than in Word. For example, using the "Copy" and "Paste" options of the Edit menu, you will have the following screen result in figure 12.4:

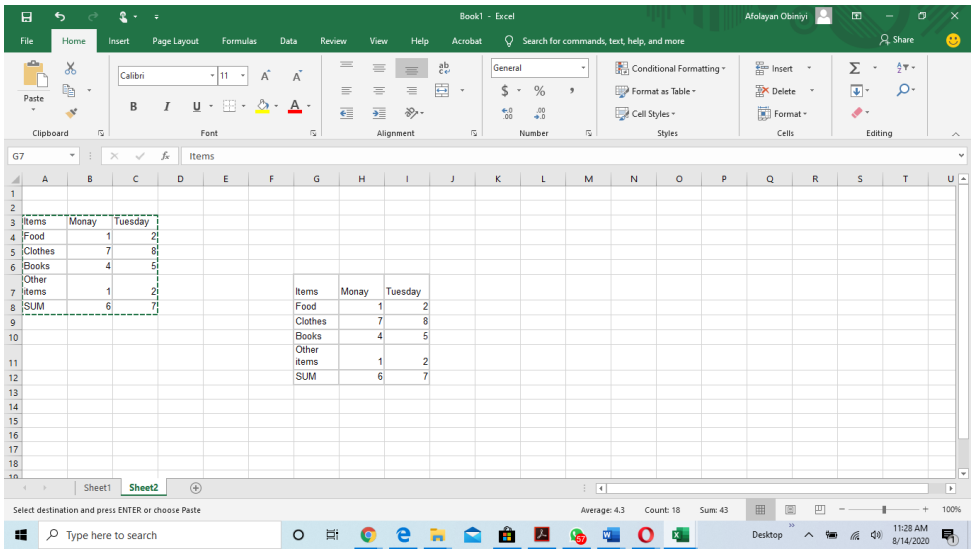

Figure 12.4: Copy and Paste sample

The above result is obtained by going through the following:

i. Typing the entries as seen in columns A and C (with C width increased)
ii. Selecting cells A3 to C8 and then clicking copy in Edit menu.
iii. Moving the cell pointer to cell G7 and then clicking Paste in Edit ribbon.

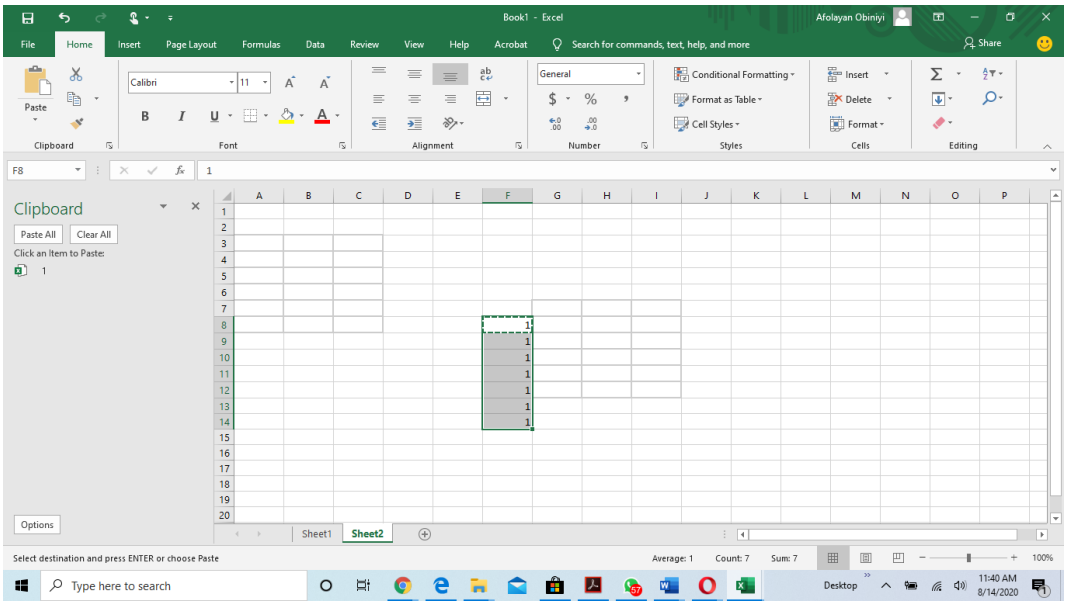

Figure 12.5: Filling Cells

i. Enter number 1 into cell F8
ii. Select the cell and extend the cell pointer downwards to cell F14
iii. Select paste from the Edit ribbon.
iv. Check Columns and Linear, then enter 1 in "step value" space

Excel will automatically fill the cells with serial numbers for the operation as seen above. So easy!

3.1.2 INSERT

The Insert menu is as follows, showing you aspect that can be inserted let into your active worksheet:

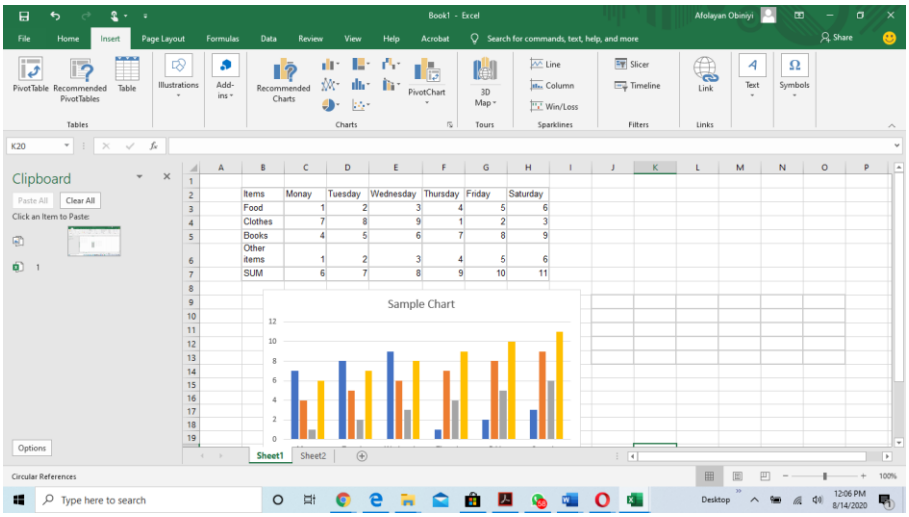

Figure 12.6: Chart Insert

The "Chart" and "Function options in the Insert menu will be treated ahead in this unit. A very important menu in Excel is the "Format" menu. A chart is inserted in figure 12.6:

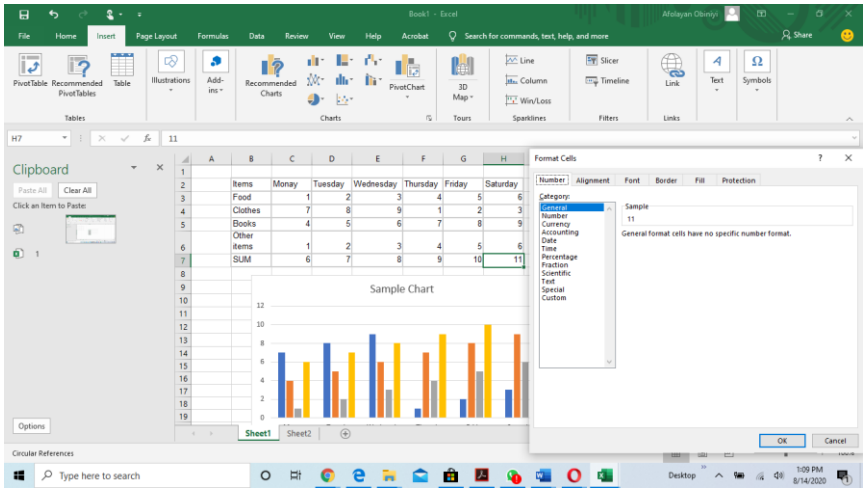

Figure 12.7: Formatting of a cell

For example, if you wish to format the cells, the window to the right of screen in figure 12.7 shows you what you can do to the cells. When the "Number" tab is selected, you can format your currency values format as shown in the window. Symbol "N" for Naira shown as the current currency symbol which has been previously set in can be set in the "Control Panel" under "Regional Settings"

Now, once you select a cell or a group of cells and you modify the cells appropriately using the format menu, the new format will automatically be reflected in the cells data.

To format a cell, move your cursor to that cell and right click on the cell and choose format cell, then a menu will be displayed as in figure 12.7. hence choose format cell. Different type of format will be shown. Choose the format you need.

3.1.3 Accessing Data Analysis

To access Data analysis, click on file menu, choose “more” and select “option”. Select “Add-on” as shown in figure 12.8. Then click on “ok”. Hence click on “Go” and you will be brought to the “Add-ins” as shown in figure 12.9 then choose “ok”.

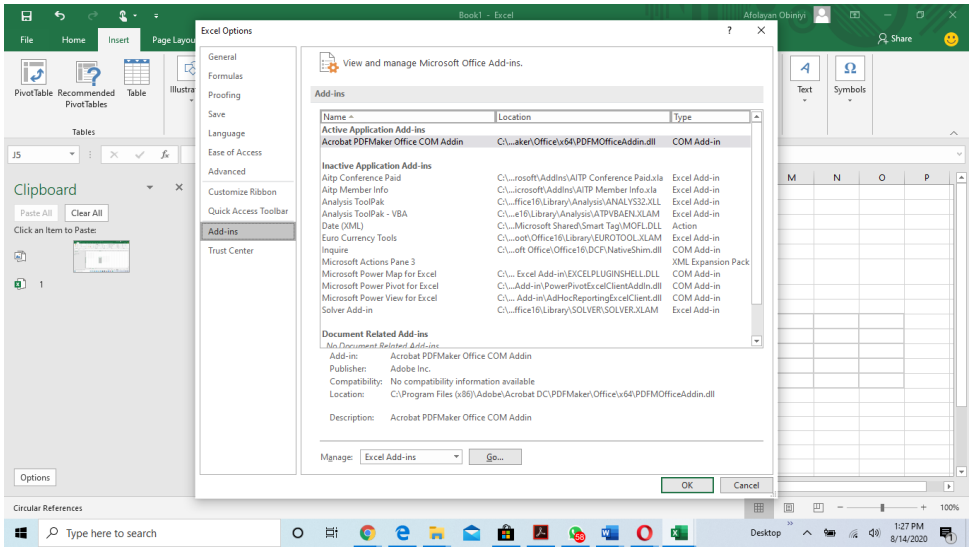

Figure 12.8: Accessing Ads-in in Excel option

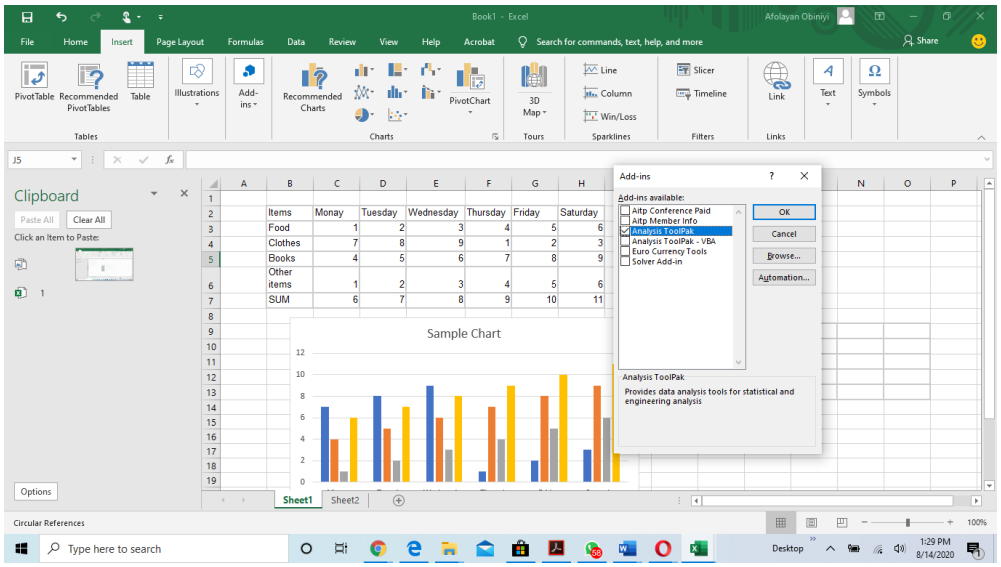

Figure 12.9: Analysis Tool pack

Now, “Data menu” will be displayed. Click on the “Data menu” and choose “Data analysis” at the near rightmost corner of the screen. It will usher you to the Data “Analysis Tools” from where you can choose anyone you want. Hence Analyze your data. Example of correlation between items are as shown in figure 12.10 and 12.11.

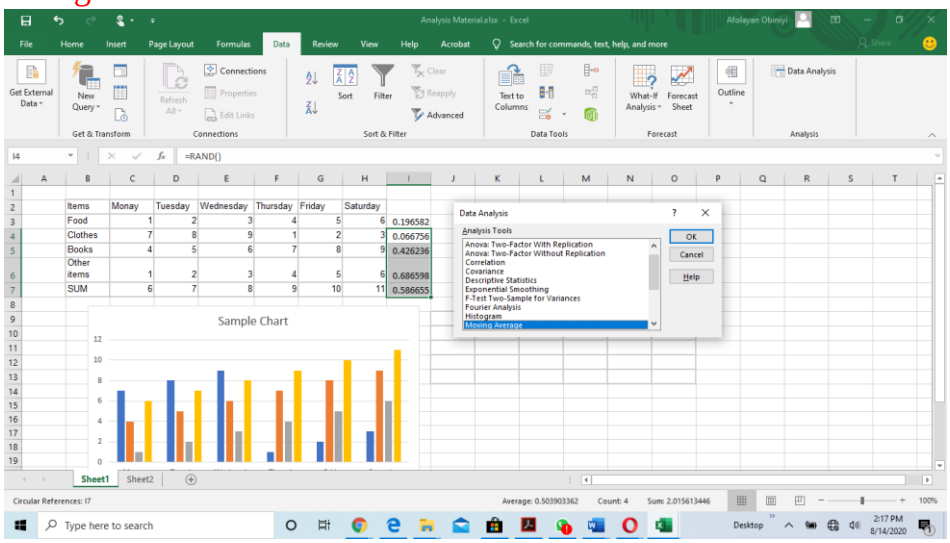

Figure 12.10: Data Analysis

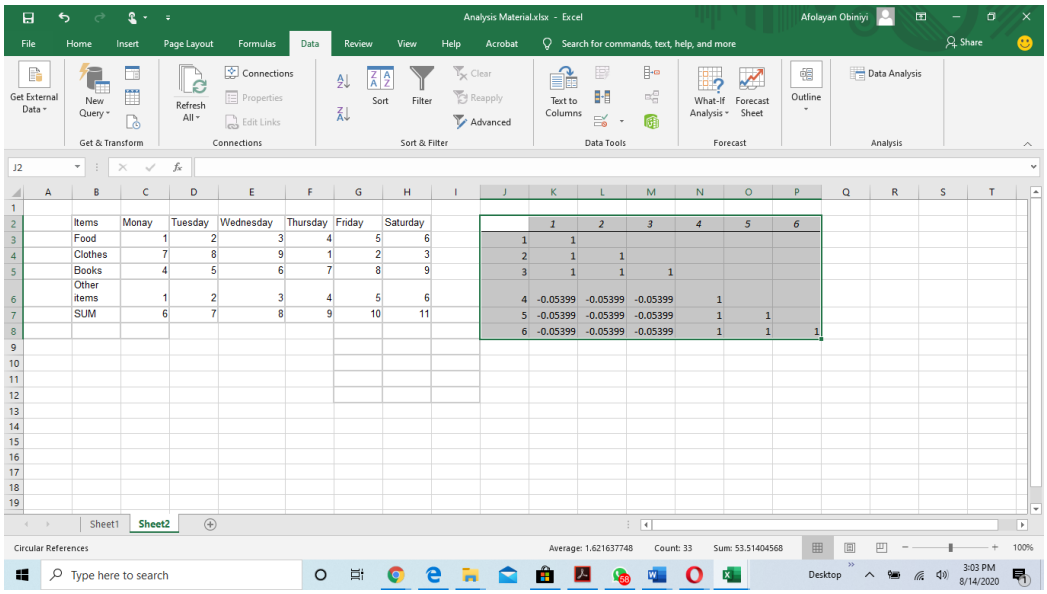

Figure 12.11: Correlation between Items

Before you move to the next section of this unit, you can take a look at Figure 12.12 and see the “Toolbars” that are currently on the Excel screen you have been working with:

Figure 12.12: A Quick look at the Toolbars

3.2 Using Excel Functions

Before you go directly to the use of some of the Excel functions, see the results below of using the "AutoSum" or "E" function. You can locate the button on the Standard Toolbar. The "E" symbol is called "Sigma" usually used for summation. Excel can be used to carry out mathematical or statistical calculation and financial functions as discussed in unit 1, section 3.2.3

Simply move your cell pointer to cell D10 and Excel automatically selects the whole column of values to be summed a seen in figure 12.13 left window. The formula
=SUM(D7:D10) also appears in the Formula bar. Simply press the Enter Key on the keyboard to get the result in the correct position in front of sum in the window as seen on figure 12.14.

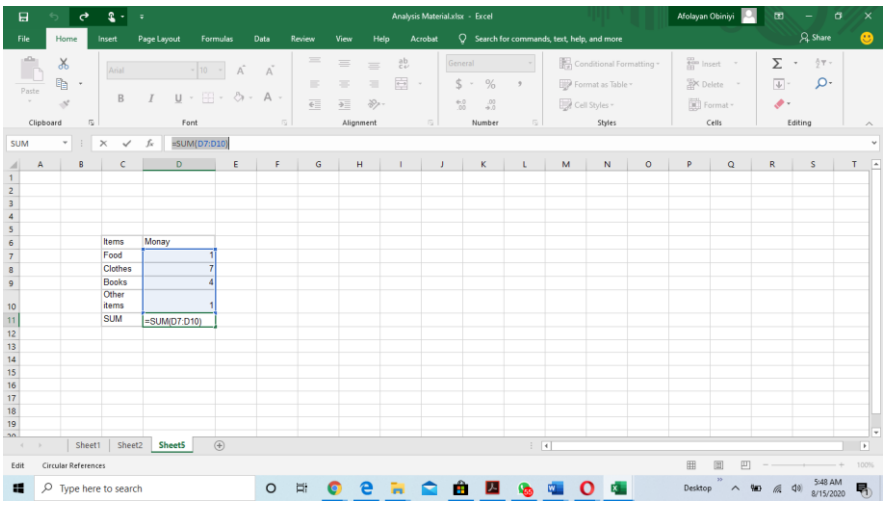

Figure 12.13: Summing Column

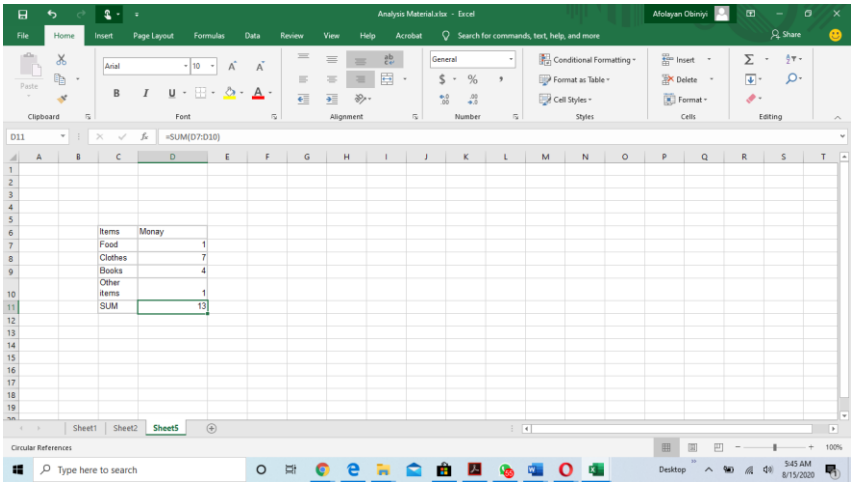

Figure 12.14: Summation of a Column

Now, consider an example of Excel function in action is in figure 12.5:

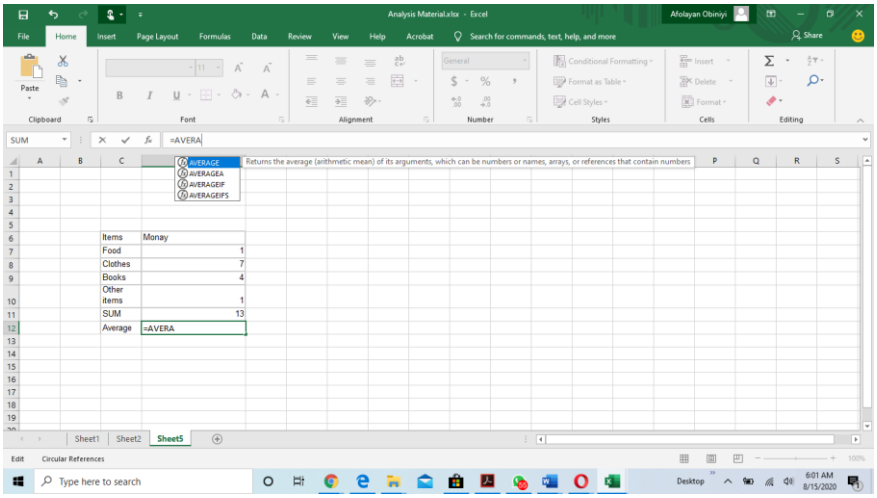

Figure12.15: Excel Function

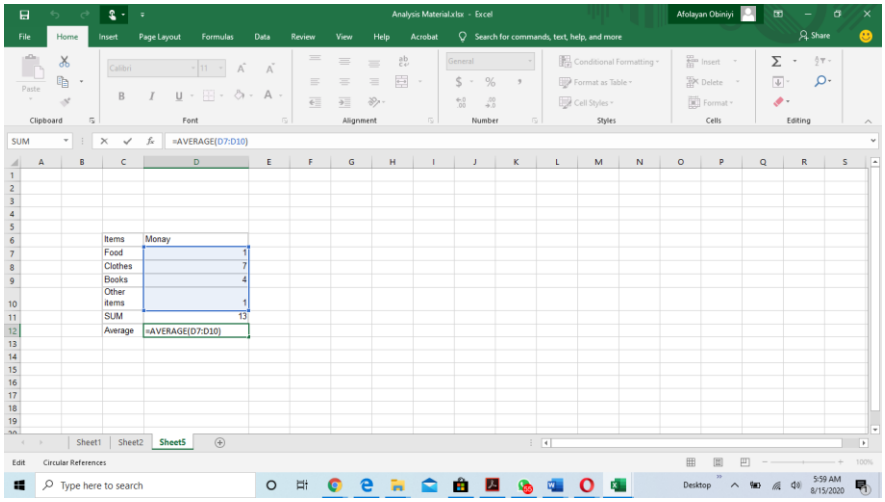

Figure 12.16: The Average formula

The "Average" formula is automatically used by Excel for column D7:D10 as seen in figure 12.16. Finally, on pressing your Enter Key, you have the result as in figure 12.17.

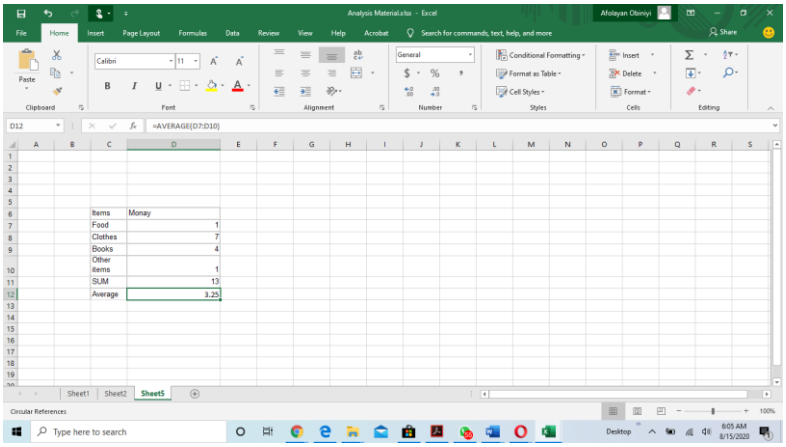

Figure 12.17: The Average Result

Excel automatically selects the range for you because your mouse pointer is directly below the column of value. If you select a cell away from this immediate cell, you have to enter the range yourself.

For example, using function "Max" under "Statistical" category, you have the result in figure 12.18.

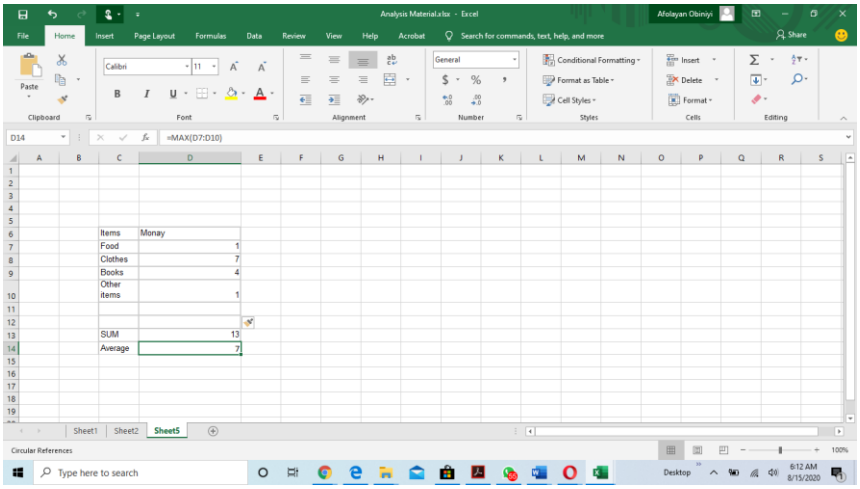

Figure 12.18: The result of Max

As you will observe, two additional empty cells have been added in the formula since your mouse pointer is below them. Excel will take the empty cells value as zero.

IMPORTANT COMMENT (FORMULA)

As you must have seen in the previous examples, Excel formula starts with an equality sign (=). If you are typing the formula directly yourself, you must start your expression with "=" sign.

4.0 CONCLUSION

In this unit, you have learned about the common menu options available in Microsoft Excel. The unit has also shown you the common toolbars most of whose buttons are the same with that of Microsoft Word.

Most importantly, the unit has taught you how to use some of the Excel functions. A very common functions is the AutoSum function which simply gives us the sum of values in a column or a row. For example, if you want to sum a row, simply place your Mouse pointer on the cell to the right of the values and press the AutoSum (Z) button.

5.0 SUMMARY

This unit has practically taken you through some operations you can perform in Microsoft Excel, either by using the Menu bar or the Toolbars.
The next unit will build on this unit by teaching you how to plot some graphs using Microsoft Excel.

6.0 TUTOR-MARKED ASSIGNMENTS 11

You should do the following assignments and submit your answers to your Tutor.

i. What menu item will you use in Excel to set the number of decimal places in your numeric data?

ii. Identify the functions to use to perform the following calculations:

(a) Square Root of a number

(b) Smallest value in a set of values

(c) The result of a number raised to a power.

7.0 REFERENCES/FURTHER READING

Microsoft Corporation, Microsoft Excel, 2016, 2019.

ANSWERS TO TMA

i.

(a) Format menu

(b) Select cell

(c) Select number tab

(d) Finally, select Number under category to modify the number for Decimal places.

ii. (a) SQRT

(b) MIN

(d) POWER

UNIT 13: PLOTTING GRAPH WITH MICROSOFT EXCEL

CONTENTS

1.0 INTRODUCTION

In the last unit, you learned about some operations you can perform using Microsoft excel with the Exception of plotting of charts. This unit will introduce you to various types of graphs you can plot with Microsoft Excel. Generally, graphing is a beautiful way of illustrating your data and you need to know how to select an appropriate graph type in Excel.

The unit will also teach you how to create Trend Lines for your sets of data. Such lines are very useful in predicting the performance of a business operation. Section 2.0 gives your study objectives for this unit.

2.0 OBJECTIVES

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

i. identify different types of graphs available in Microsoft Excel 2000
ii. add Trend lines to data plots perform "What-If "analysis on a set of data.

3.0 MAIN CONTENT

3.1 Selecting Graph Types

Assume that you are to modify a given data of "NOU Students" given in figure 13.1. You will now see in figure 13.2 how you select any type of graph of your choice.
However, the type of data to be analyzed determined the type of graph to be selected
First of all, the data have been divided into 2001 and 2002 columns. In 2002 data, a formula has been used, starting with FCT data in cell D5.

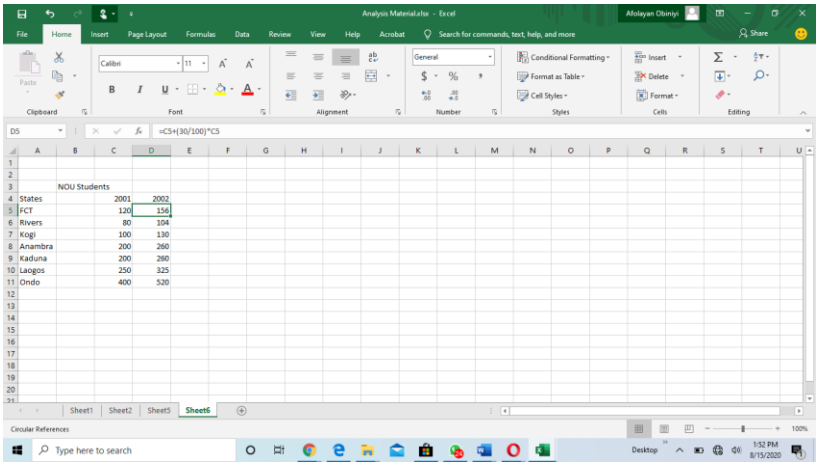

Figure 13.1: NOU Students' Data

= C5+(30/100)*C5

The above formula is COPIED into other cells by just dragging down the cell pointer with the Handle at the button right of the pointer as after keying first the formula. Now, for you to choose the type of chart you need for your data, click on Insert and select the type of chart you want.

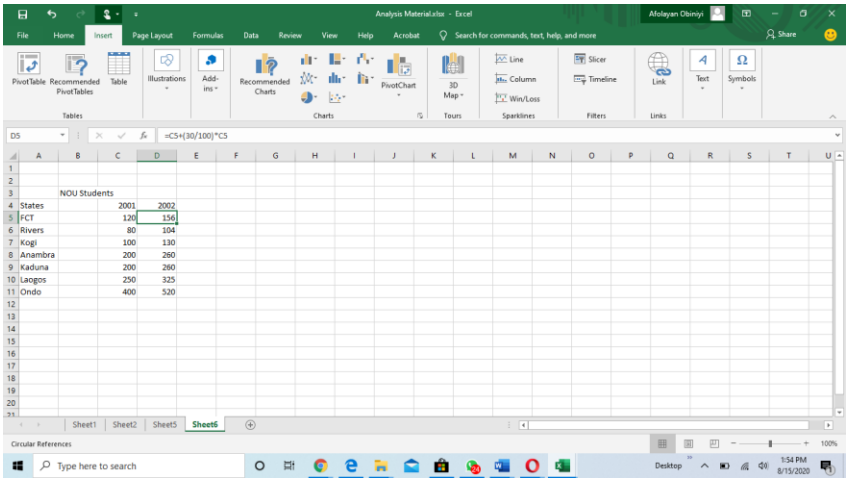

Figure 13.2: Types of Chart

In this case, we selected the recommended chart. Within the recommended charts, there are chart option to be chosen from, in which we clicked on the clustered column. Hence, edited the chart elements, chart colour and chart values to suit our purpose as shown in Figure 13.3. You can also make use of the format shape to format the item line type and the type of colour fill.

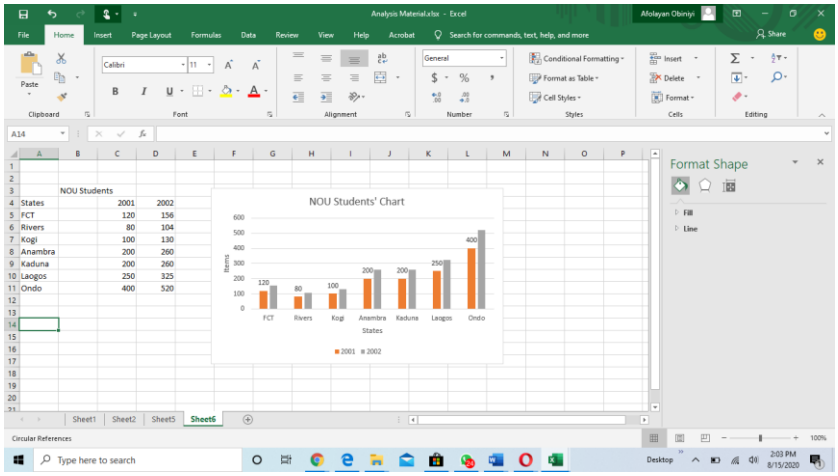

Figure 13.3: Clustered Column

You can change the chart type by selecting any of the graph you want from the insert menu "clusters bar". In this case, we selected from the insert menu as shown in figure 13.4.

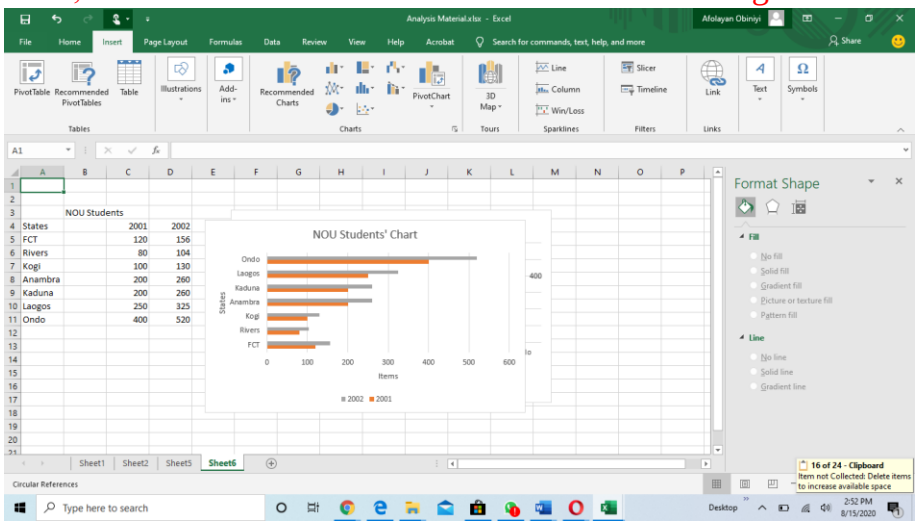

Figure 13.4: Clustered Bar

If you change the formula in D5 to C5+ (150/100)*C5 and copy it into other cells (D6:D11), the data and graph are updated automatically as seen in figure 13.5.

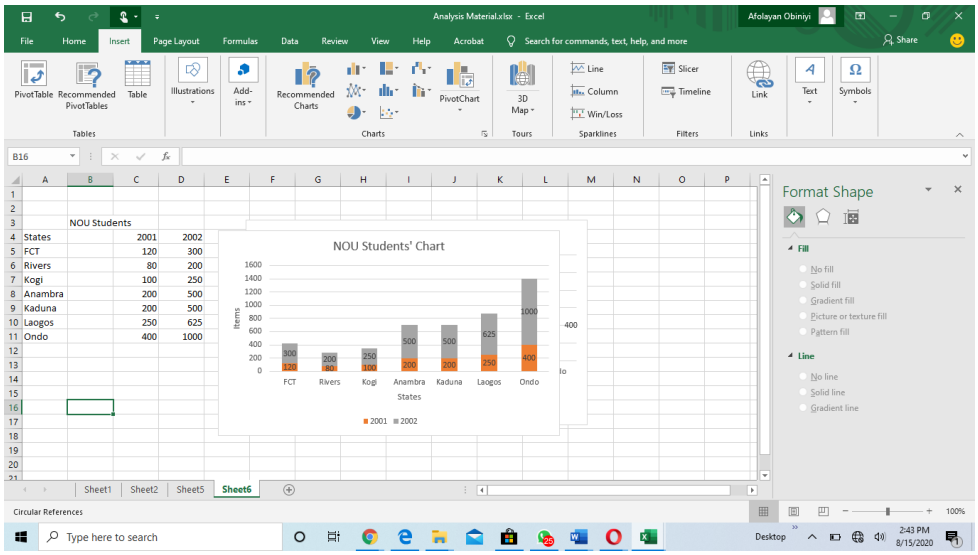

Figure 13.5: Updated Tacked Colum Graph

Figure 13.5 is an example of "What-If' situation, i.e. "What If' year 2002 admission of NOU students increases by 150%?

So far, you can see how it is easy to plot your graphs with Microsoft Excel.

3.2 Plotting Trend Lines

To plot trend lines, choose the type of line trend you want from the insert menu. Here, we selected combo chart from combo charts, we selected clustered column line as shown in Figure 13.6

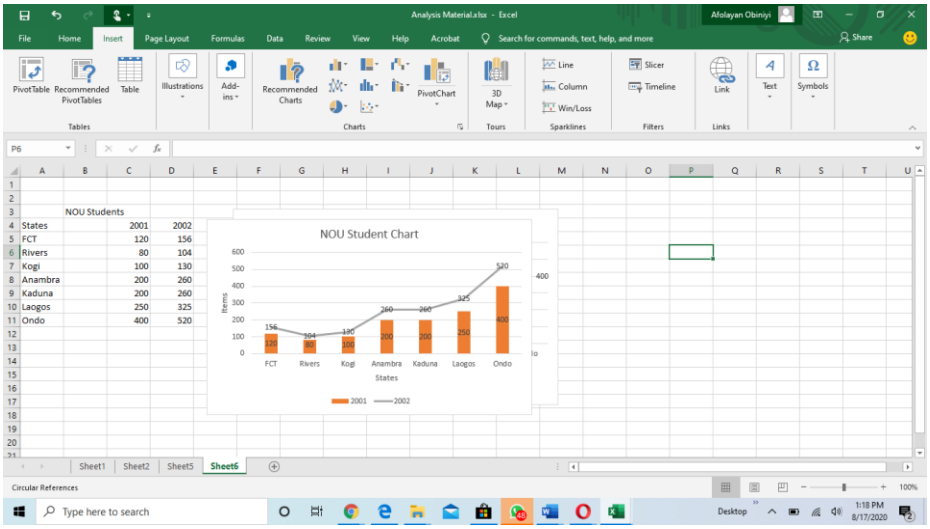

Figure13.6: Clustered Column Line

Figure 13.7 displays the range of different types of chart you can choose from, ranging from column, line to combo. You can choose the graph base on the work down at a particular time.

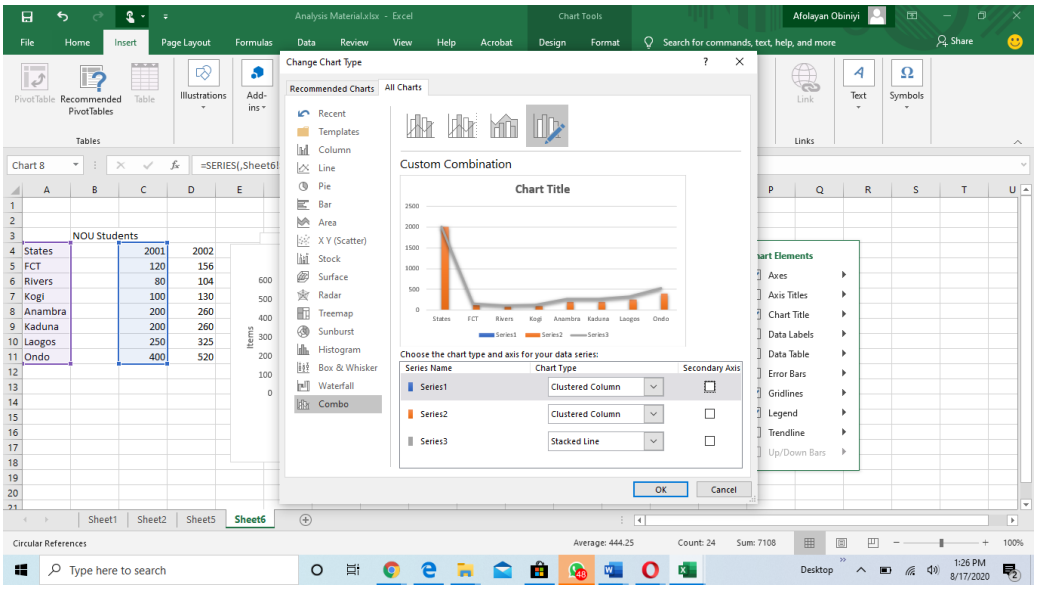

Figure 13.7: Different types of Charts

As you have seen in figure 13.7, there are various Trend types you can choose from as follows:

i. Linear
ii. Logarithmic
iii. Polynomial
iv. Power
v. Exponential
vi. Moving Average

SELF-ASSESSMENT EXERCISE 13.1

What type of trend produces the above graph?

ANSWER TO SELF-ASSESSMENT EXERCISE

Polynomial type of degree 2.

Generally, the closer the trend line is to the original graph, the better and this you can achieve by modifying the degree of the polynomial or choosing another trend type.

Finally, you can add Title and other labels to your graph as you follow the Wizard screen the first time you select your chart type.

4.0 CONCLUSION

In this unit, you have learned basically how to display your data in graphical forms so as to illustrate your results. As you have seen, there are various types of graphs available in Microsoft Excel.

The unit has also shown you how to add trendline to our graphs.

5.0 SUMMARY

Graphing your data has its usefulness. This unit has specifically taken you through the steps to follow in transforming your data into pictorial forms.
Trend analysis is an important part of data analysis. In this unit, we have observed the basic steps to be followed to add trend lines to your charts.

6.0 TUTOR-MARKED ASSIGNMENTS 12

Do the following assignments and submit your answers to your Tutor.

i. According to the chart Wizard, how many steps are involved to plot your data?
ii. Under Custom types of charts, identify the types that will produce 3-dimensional charts.
iii. (a) How many trend types can you select from Excel?
(b) What is the highest order you can have if you select a polynomial type of trend?

7.0 REFERENCES/FURTHER READING

Microsoft Corporation, Microsoft Excel, 2016, 2019.

NSWERS to TMA

i. 4 Steps
ii. They are:

Are Blocks

a. B & Column
b. Colons with depth
c. Cone

d. Floating Bars
e. Pie Explosion

iii. (a) 6
(b) 6

UNIT 14: FEATURES OF DATABASE APPLICATIONS AND MICROSOFT ACCESS

CONTENTS

1.0 INTRODUCTION

In this unit, you are to be introduced to the third in the series of the most common computer applications, named Database Management Systems (DBMS). These are software applications that process your data as records. Generally, using computers, a record is a set of data that has a common subject or theme. This unit will take you through the basic concepts in Database applications and specifically introduce you to the use of Microsoft Access which is an example of Database application software.

We shall consider the study objectives for this unit in section 2.0.

2.0 OBJECTIVES

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

i. define the basic concepts associated with Database applications
ii. use Microsoft Access to design simple Database Management tables and forms.

3.0 MAIN CONTENT

3.1 Introduction to Database Applications

As you already see in the Introduction, Database applications usually process data as records and from this point onwards we shall begin to consider the fundamental concepts of Database software.

3.1.1 Records

A Record is a data structure consisting of different items of data, all related to a common subject.

Each item of data in a record is called a Field and a Record made up of a group of fields.

For example, you can have the following fields to describe a record of students of National Open University of Nigeria:

i. Surname
ii. Other Names
iii. Study Programme
iv. Study Centre
v. Year of Admission
vi. Telephone Number

Each of the above six items is a field and the full group of the six fields is a record. Now, there are common characteristics of fields, as you shall see below:

3.1.2 Properties of Fields

There are three basic properties of a field as follows:

i. Field Name
ii. Field Data Type and
iii. Field Maximum Size

Name

In the above example, Surname or Study Centre is a field name. You have the choice of selecting your field name, but it should be meaningful enough to identify its data item.

Type

The type of a field depends on the Database application you are using.
However, you will find below the common data types used in field types

i. Numeric
ii. Character
iii. Date
iv. Logical
v. Memo

Some applications may combine character and Memo into one type as
Text size

The maximum size of a field depends on your DBMS application. However, character fields are usually limited to 255 characters. If a field type is Numeric, it may either be a whole number or one with decimal places. Date and Logical field types usually have fixed maximum sizes for some Database applications.

3.1.3 Database Tables and Forms

A Database Table is the group of records that hold all the data involved. Usually, a table is designed like a spreadsheet, made up of rows and columns. Fields are arranged as columns in a Database table.

Now, the collection of all the tables you can use at the same time is what you call a DATABASE.

3.1.4 Database Components

The components are:

i. Tables
ii. Queries
iii. Forms
iv. Reports

Tables

This is where data are stored in the database

Queries
These are request for particular data from the database and they are displayed on the place that you requested the database. The data can come from one or more tables and from other queries.

Forms
Forms are used to key-in, edit or show data from a table or a query. New records are entered through a form.

Reports
This shows the output of database queries. This output can be used for decision making and analysis.

SELF-ASSESSMENT EXERCISE 14.1

Draw a chart to illustrate the organisation of a Database

ANSWER TO SELF-ASSESSMENT EXERCISE

A simple chart is as follows

As you can see, the order progresses as follows:

i. Field
ii. Record
iii. Table
iv. Database

Database forms are simply defined as the screen plat forms between you and database records.

Forms can be used for a variety of purposes:

i. As a Data — Entry interface to enter data into a table
ii. As a custom dialog box to accept user input and then carry out an operation based on the input.
iii. As a switch board to open other forms or reports.

Figure 14.1 displays an example of Access database switchboard. Subsequently we shall Access 2016 and above to create a switchboard.

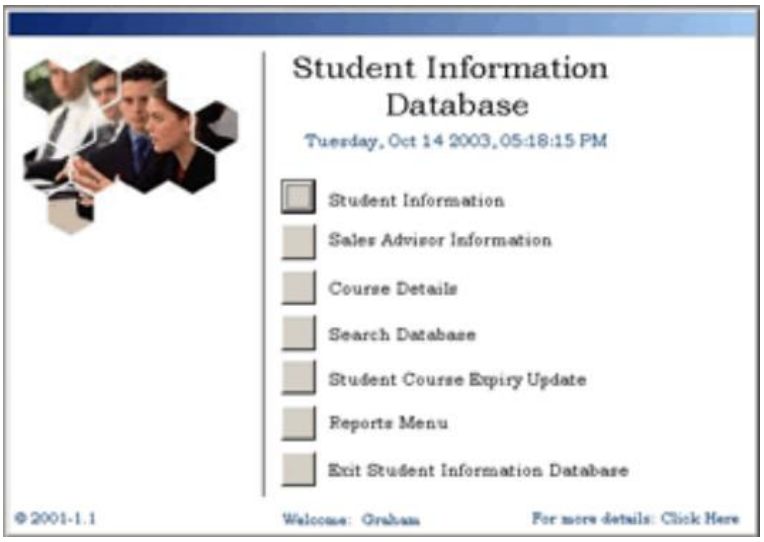

Figure14.1: Example of Students Access Database Switchboard

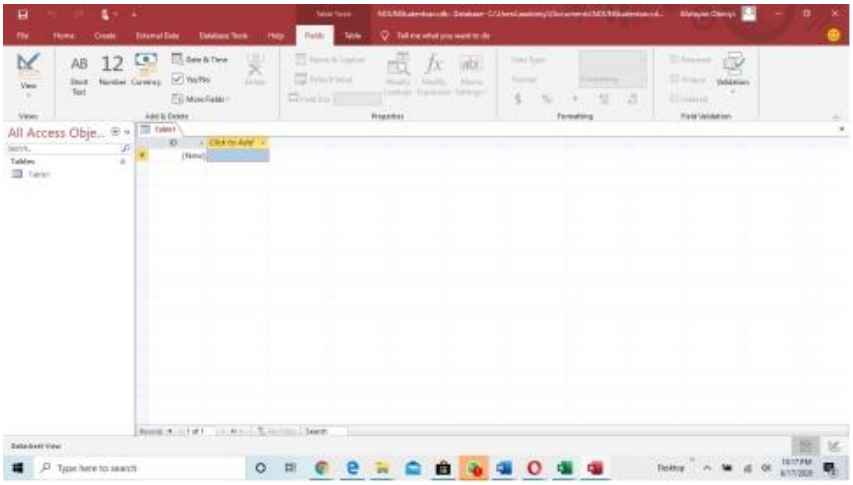
Figure 14.2: NOU Student database

Creating a database in Access 2016 and above.

i. From the menu bar, click on access 2016 or 2019 update or any other recent access available on your screen.
ii. Click on blank database
iii. Type in the database name, i.e, "NOUstudent.accdb" and click on create
iv. A database by the name you created will open for you i.e NOUstudent.accdb database as it is in figure 14.2

Table Design

To design a table, click on Table Design under create table as seen in figure 14.3.

Form design

To create a form, select create and select form design and design a form as shown in figure 14.4.

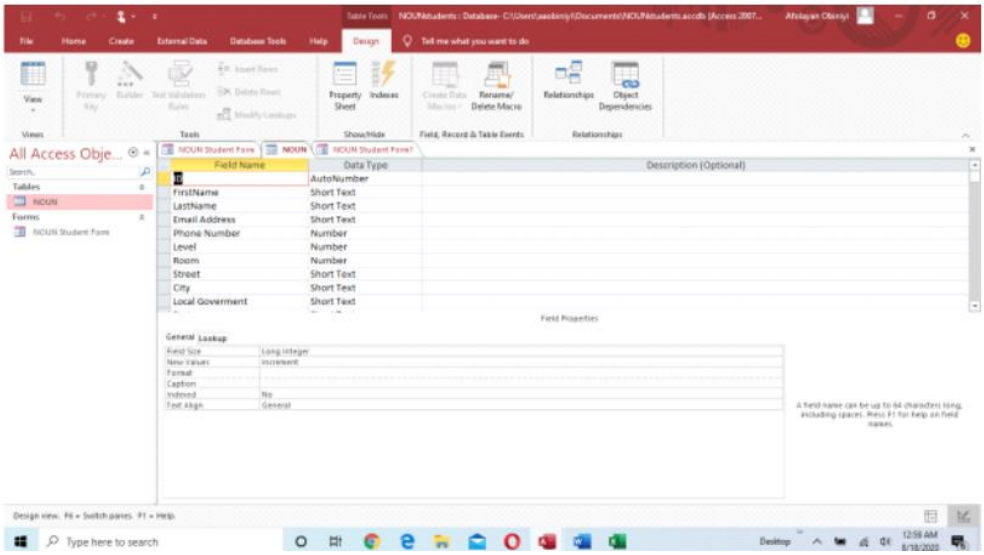

Figure 14.3: Table Design

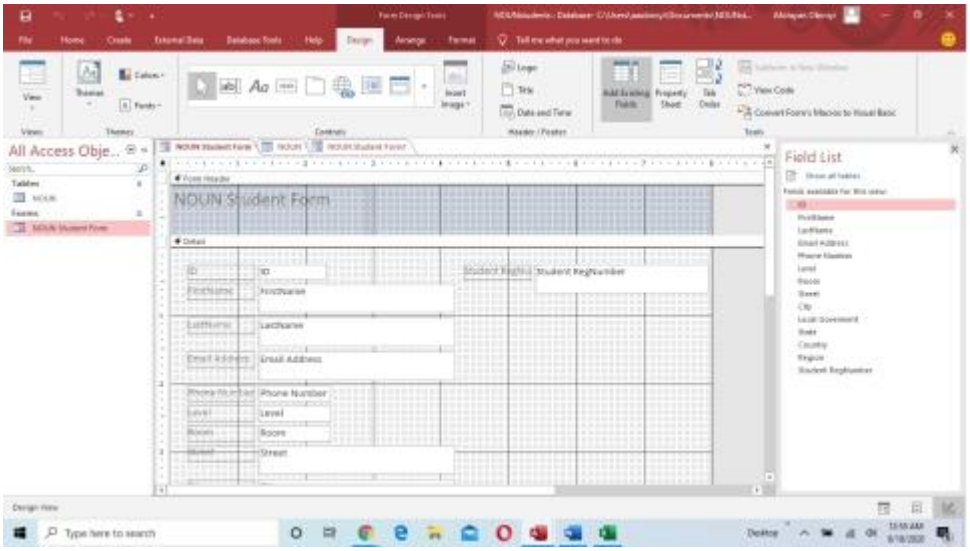

Figure 14.4: Form Design

Figure 14.5 is a Data-Entry form:

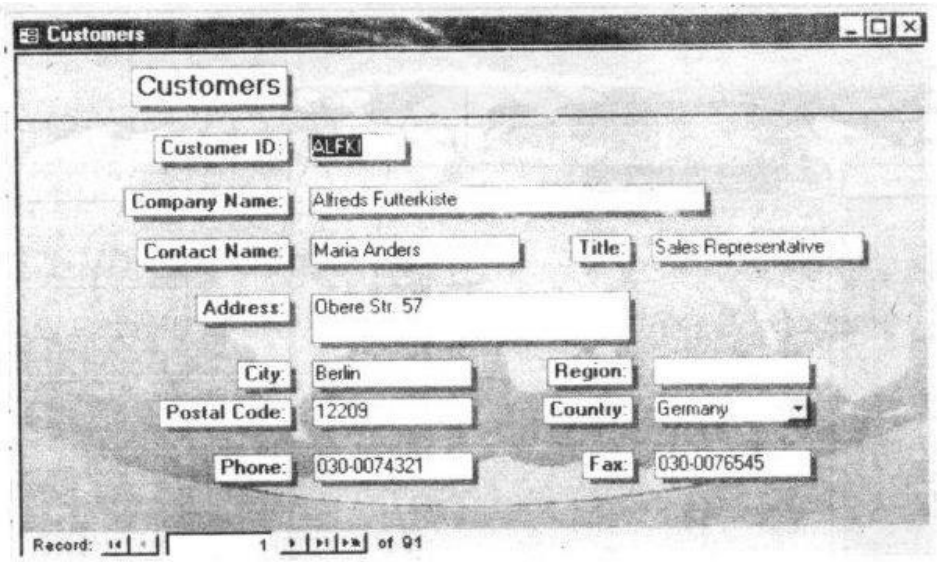

Figure 14.5: Data Entry form

As you see in Figure 14.5 form, some of the information are from the Design of the form while others are from a Record.

SELF-ASSESSMENT EXERCISE 14.2

Give two field names from the "Customers" form above. _____

ANSWER TO SELF-ASSESSMENT EXERCISE

i. Customer ID
ii. ii. Phone

Before you go into the next section, below are some common examples of Database applications:

i Microsoft Access 2016 and above
ii IBM DB2
iii MYSQL

Figure 14.6 is an example of a screen showing you a Form and a Table from the MS Access Database application.

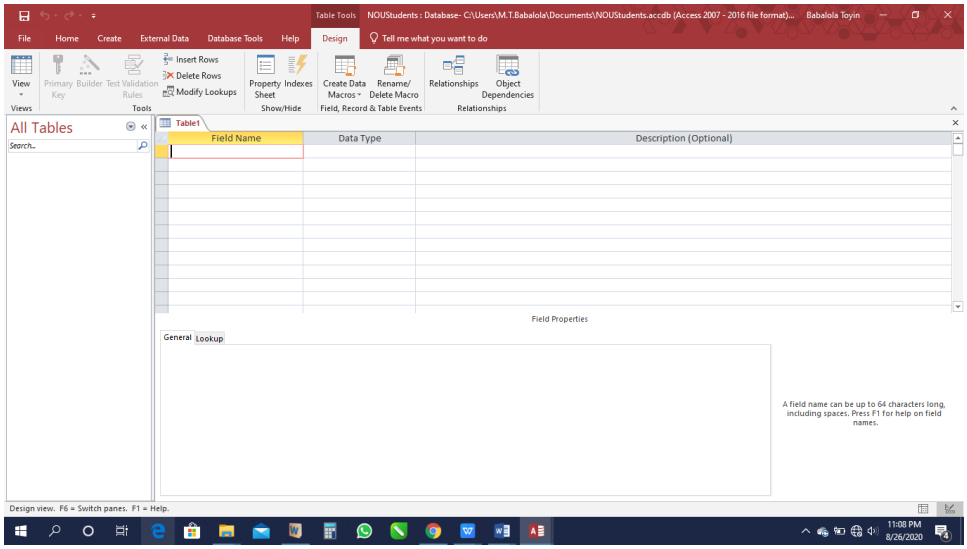

Figure 14.6: A Table and a Form

As you can see in the figure 14.6, Access refers to its table as a Worksheet. You will now go through Microsoft Access 2016 to create tables and Forms.

3.2 Using Microsoft Access

Microsoft Access 2016 is a component of the Microsoft Office 2016 and it's the most commonly used Database applications.

You can open MS-Access by following the steps below:

i Click Start
ii Select Programs and
iii Click Microsoft Access

Microsoft Access 2016 is easy to use as you observe in Figure 14.7, the moment you accept to create a new blank Database:

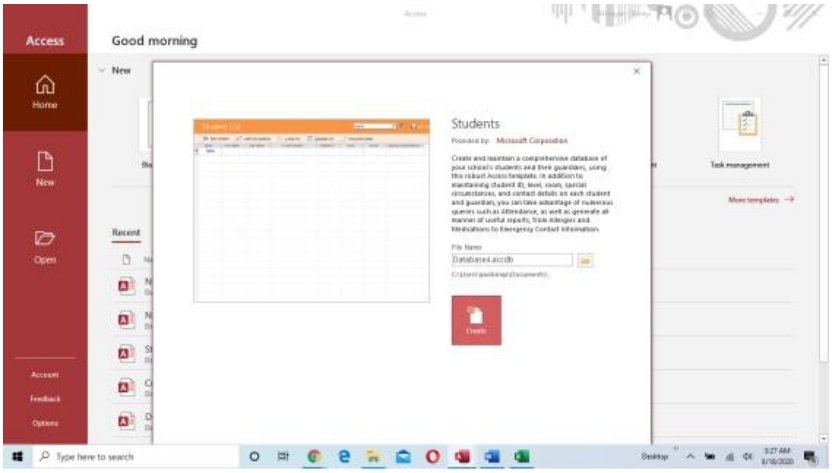

Figure 14.7: Using Wizard to Create Student list

For example if you are a new user, it is advisable to use the Table wizard to assist you. There are sample tables already given some sample field names. You can access it by clicking on student in the template after selecting access from the start menu. Then it will take you to a menu such as it is seen in Figure 14.7 then click on create. Hence, it will take you to a menu as seen in Figure 14.8.

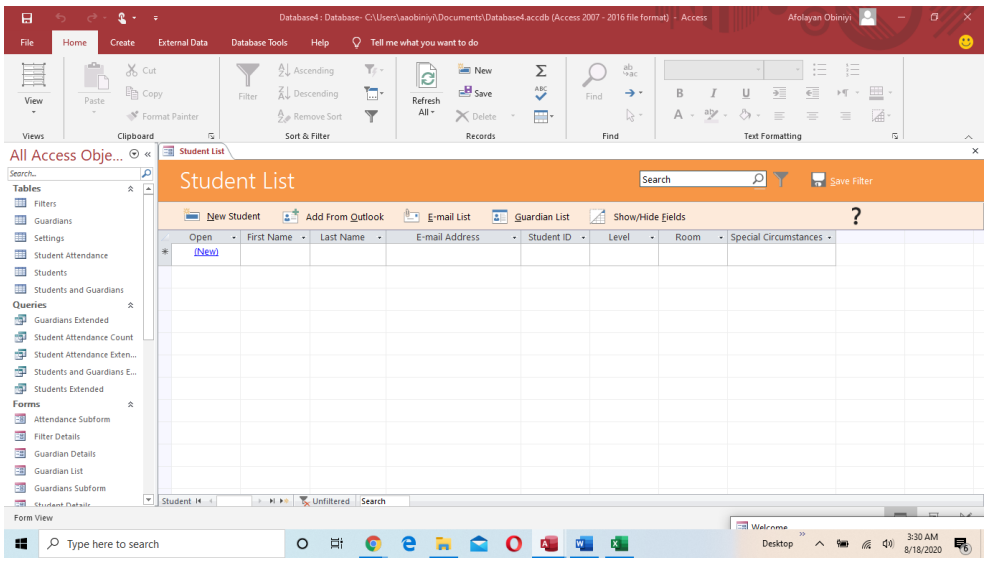

Figure 14.8: Student list

There is a sample table on "students". If you select the table and accept the Wizard to design a form for you using your selected fields, you will have something like figure 14.9

You can input data into the dialog boxes for each field as shown in the same figure 14.9.

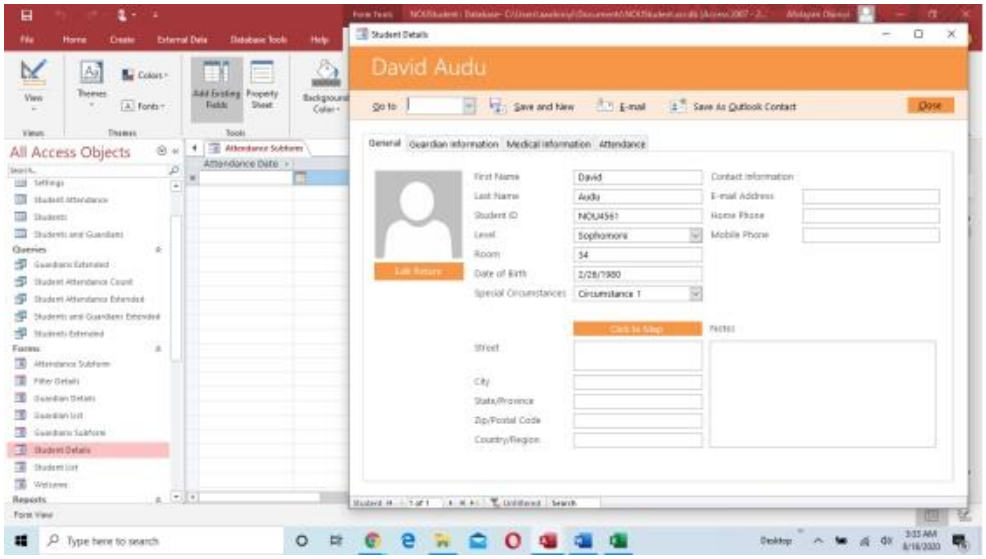

Figure 14.9: Form

The Wizard has already given your fields their appropriate data types. In the above screen, if you click "Tables" under "Objects" and then double- click the Database file name, i.e. NOU Students, you will have the Table at the top of the screen, arranged in rows and columns as you have already learnt and seen in figure 14.10.

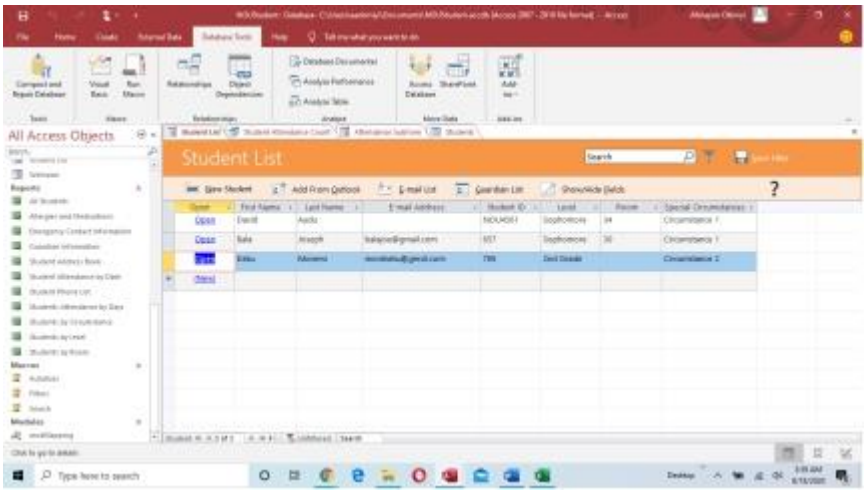

Figure 14.10: Table in Rows and Columns

If you click "Forms" and then double-click NOU Students, you will see the Form in figure 14.9 displayed.

As you can see, the database already has 3 records (figure 14.10) and you can move through the records by clicking the arrows below the window.

To add a new record, click the "new" to open blank dialog boxes for your data entries. Assume that you select "create table by entering data", is selected; the screen in figure 14.11 will be displayed.

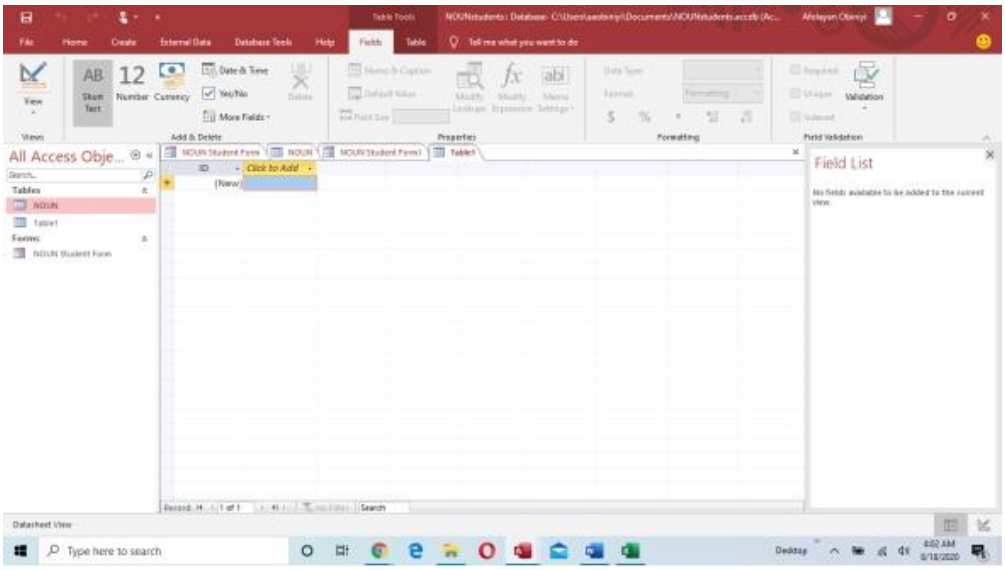

Figure 14.11: Screen Displayed after Clicking on Create Table

In the Table window, you can change the Field name by double-clicking the button Field 1 or Field 2 to modify the name as seen in figure 14.12.

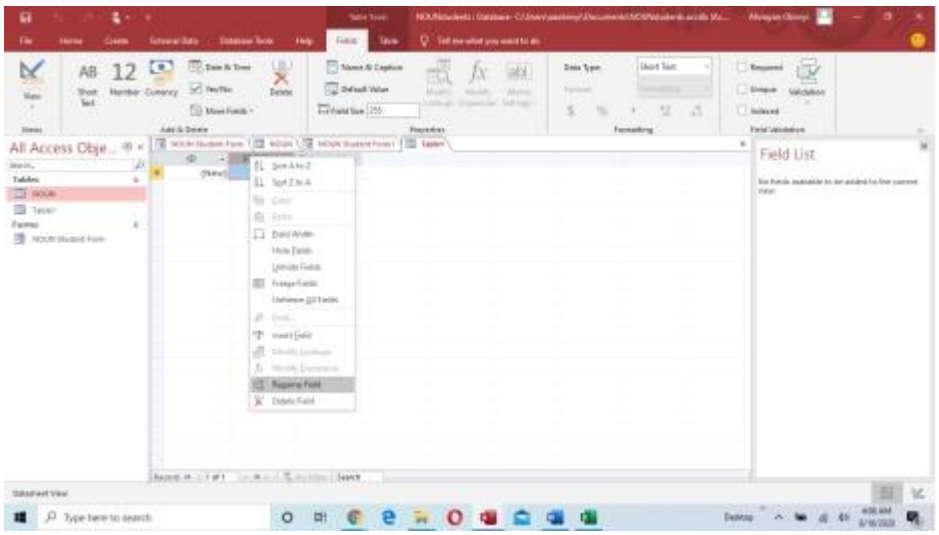

Figure 14.12: Renaming Field

If you select "create table in Design view", you will have the screen in figure 14.13.

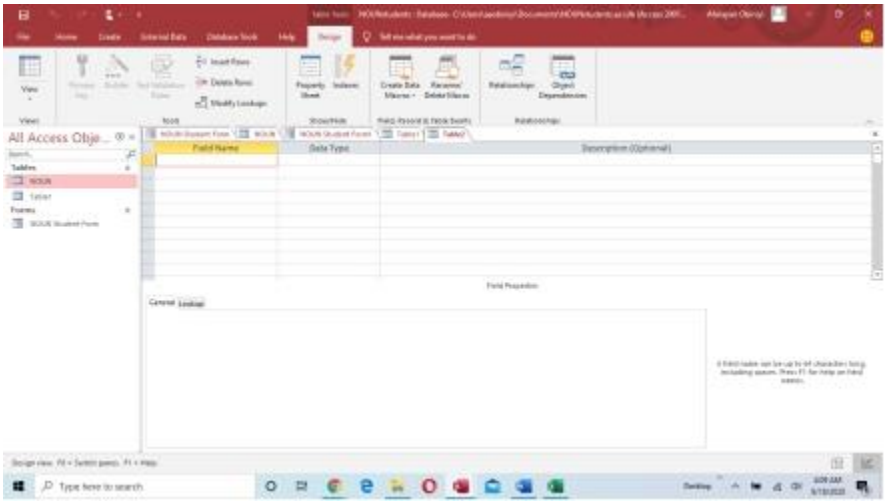

Figure 14.13: Create Table in Design view

Enter field names and select the Data Type from the list as shown in figure 14.14:

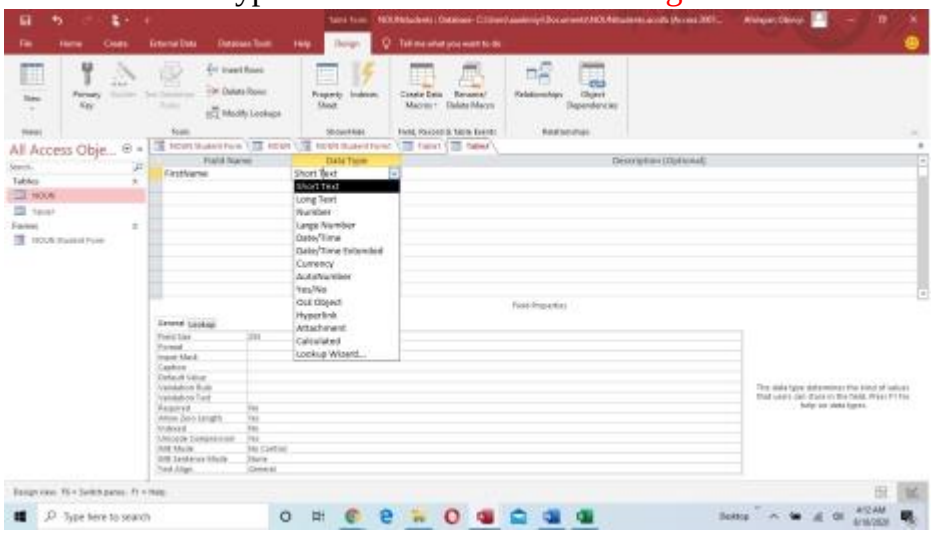

Figure 14.14: List of Datatype

After typing in the field names and selecting the Data Types, save your Table, using the Menu bar. Then close the window.

Select Forms under objects and then choose for example "create form by using wizard" select your Table name under "Tables/Queries". Your field names will automatically be listed under "Available Fields displayed in the figure 14.15".

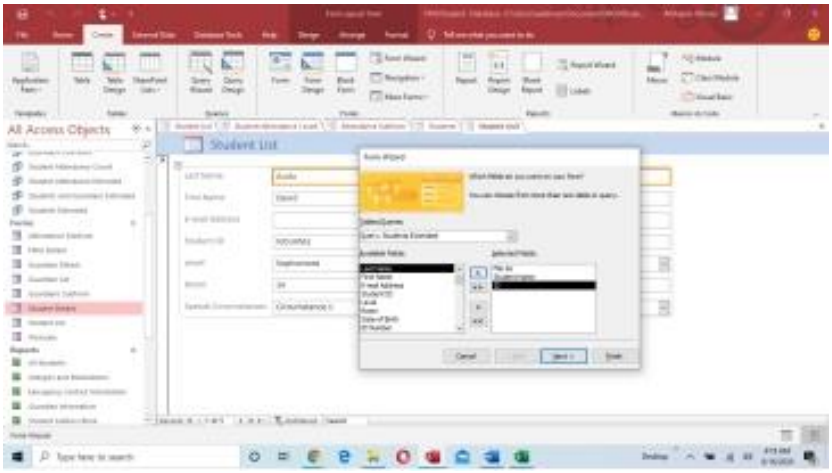

Figure14.15: Form Wizard under Create

The user can select the fields to be used in the form by clicking the Right Arrow. To select all the Fields at once, click the Double Right arrow.

On doing this, Microsoft Access will automatically create your form after checking the design type required, that is:

I. Columnar
II. Tabular
III. Datasheet
IV. Justified

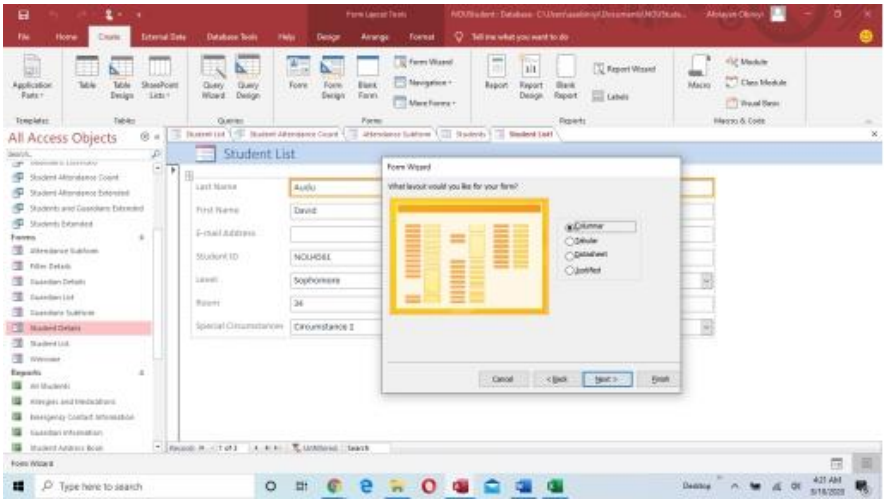

Figure14.16: Form Design Type

As shown in figure 14.16 Choosing "Justified" layout for example, your form will appear as in Figure 14.17.

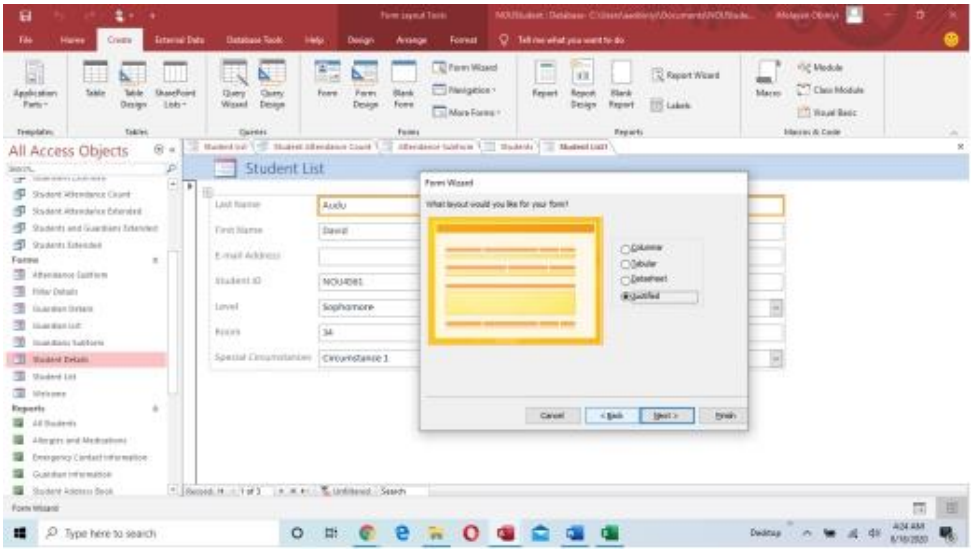

Figure 14.17: Justified Form Type

It is very easy to create tables and forms with Microsoft Access 2016. The database Table associated with the form is seen at the top of the Figure 14.2, labeled NOUstudent. Database table
Look at the figure 14.18:

You can search for a set of data in your database by using any of the following tools

i. Find and Replace
ii. Sorting
iii. Filter

The screen in figure 14.18 shows that when the word for instance "Bala" is to be searched by using "Find" under "Edit" menu or processing in the Find button on the Toolbar.

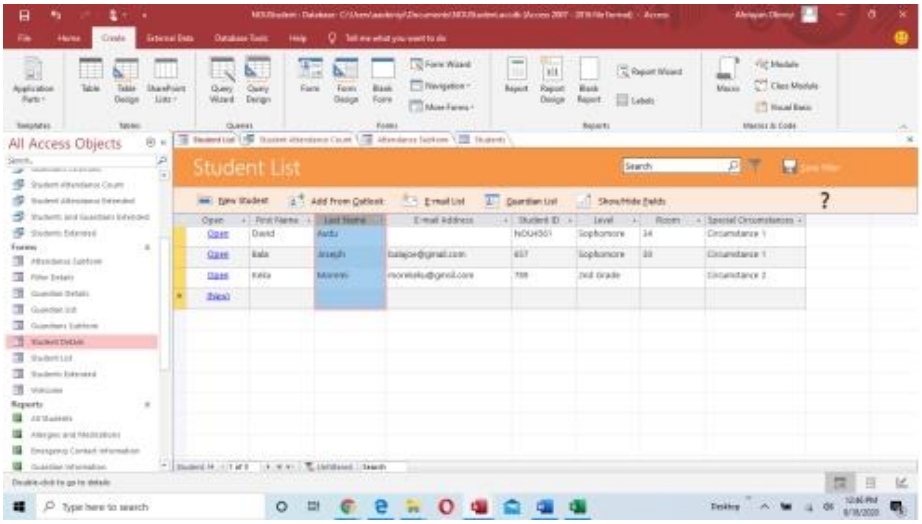

Figure 14.18: Surname sorted in order

The field "Surname" has been sorted in Ascending order. The user can access your sort option under "Records" menu or by pressing the button on the Toolbar.

4.0 CONCLUSION

In this unit, you have learnt the basic concepts associated with database applications. The unit has shown that a field is the basic element of a database.

We have observe in this unit how to construct a database table and how to design a form to use the table, using Microsoft Access 2016 and above.

5.0 SUMMARY

Apart from going through the steps of constructing a database table, this unit has taught us about how to filter and sort your data in a database system. As seen in your example. The user can also add a picture or image to your database also.

6.0 TUTOR-MARKED ASSIGNMENTS 13

Do the following assignments and submit your answers to your Tutor.

i. Define the following:
(a) A Table
(b) A Database
(c) Record ii. What data type is selected for a "Picture" field in the example you studied in this unit?

iii. What is the advantage of using a filter in a database?

7.0 REFERENCES/FURTHER READING

Lemon M. (2016), Microsoft Office Academic Course: Microsoft Access 2016, Wiley Publication

ANSWER TO TMA

Learn on

1. (a) A Table is a group of records in a database
   (b) A Database is the collection of tables one can use at the same time.
   (c) A Record id a data structure consisting of different items of data, all related to a common subject.
2. The data type is "OLE Object" OLE stands for "Object Linking and Embedding"
3. A filter helps to narrow a search operation to specific field data.

UNIT 15: STATISTICAL ANALYSIS APPLICATIONS

CONTENTS

1.0 INTRODUCTION

Statistical analysis plays a very vital role in business planning and management. For example, organisations can use samples of data of their operations to determine if their processing activities are working correctly. In actual fact, any process that requires sampling is a statistical procedure and is responsive to software application to statistical analysis.

In view of the above, we shall be introduced to some simple statistical tools available in software applications in this unit. In the next unit, we shall be introduced to the features of the most commonly used statistical package, namely, Statistical Package for Social Sciences (SPSS).

Below are the study objectives for this unit.

2.0 OBJECTIVES

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

i identify different types of statistical analyses you can perform on data
ii use Microsoft Excel to perform some Statistical analyses.

3.0 MAN CONTENT

3.1 Types of Statistical Analyses

Generally, there are various types of statistical analyses you can use to process data. However, different statistics fall under two major categories:

i Descriptive Statistics
ii Inferential Statistics

3.1.1 DESCRIPTIVE STATISTICS

Look at the following figure:

Figure 15.1 Window is obtained from Microsoft Excel 2016. The user can open the Windows from "Tools" menu by selecting "Data Analysis". As you will see in the figure, there is descriptive Statistics as one of the Analysis Tools.

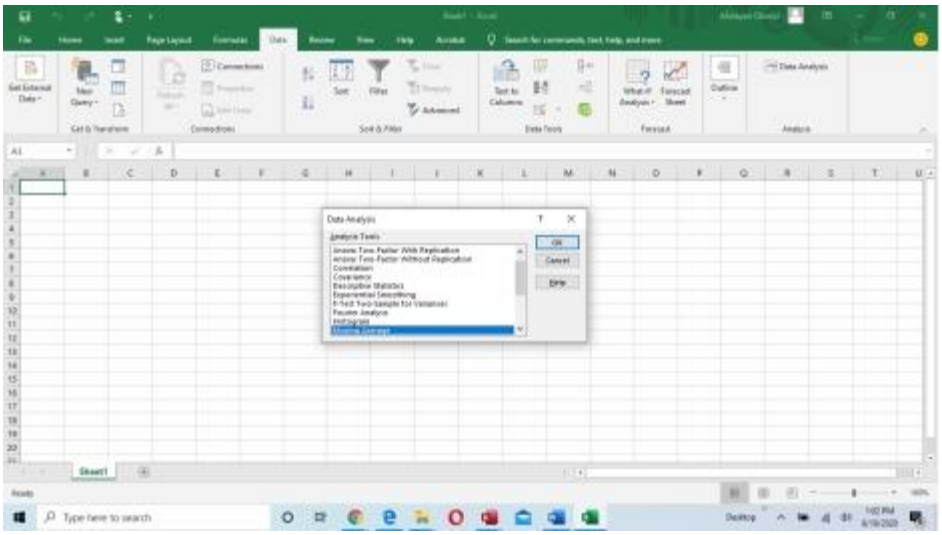

Figure 15.1: Data Analysis Tools

By definition, Descriptive statistics is one that describes a set of data without necessarily drawing conclusions about the data.

Figure 15.2 is an example of descriptive statistical analysis performed on two sets of data.

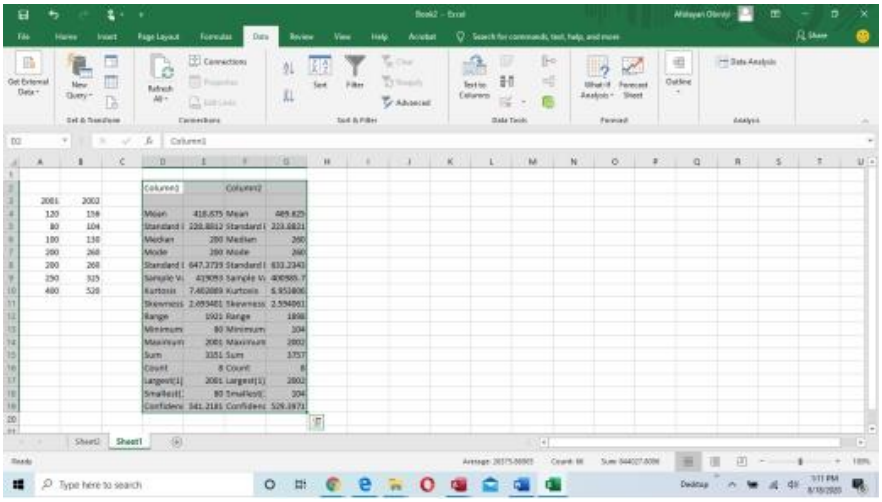

Figure 15.2: Descriptive Statistics

3.1.2 INFERENTIAL STATISTICS

Inferential Statistics unlike Descriptive Statistics, describes used data and allows the user to make inferences or draw conclusions from the results. For example calculation of correlation coefficients tell you how nearly two sets of data are related. Such statistical analysis belongs to term Inferential Statistics.

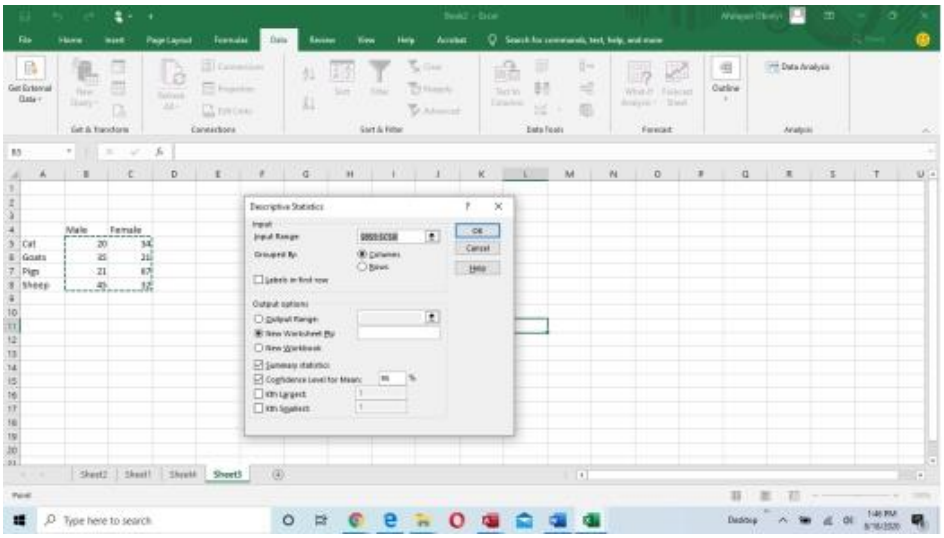

Figure 15.3: Descriptive Statistics Option

From the example in figure 15.7, the most common Descriptive Statistical analysis one can perform on data involves the following, as shown in the following screen from SPSS:

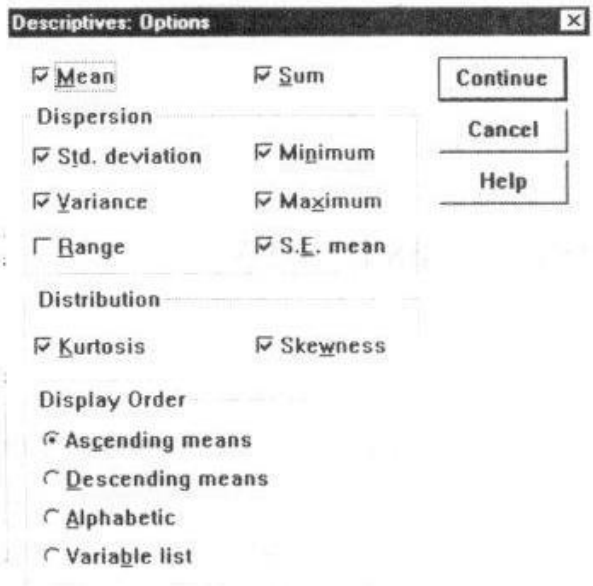

Figure 15.4: SPSS Descriptive statistic

The common options are:

i Mean

ii Sum
iii Standard Deviation
iv Standard error of the Mean
v Minimum
vi Maximum

We shall now be taken through the steps of using Microsoft Excel to perform some simple statistical analysis.

3.2 Using Microsoft Excel for Analysis

From the first figure in this unit, Microsoft Excel 2016 for example, has a number of statistical analysis tools you can use to describe data.

Below is the process of obtaining the results obtained in the last example:

i Enter your Data
ii Select Tools from the Menu bar
iii Select Data Analysis
iv select Descriptive Statistics
v Click OK in figure 15.1
vi Select the Input and Output ranges
vii Check the options as seen below
viii Click OK to get Figure 15.2

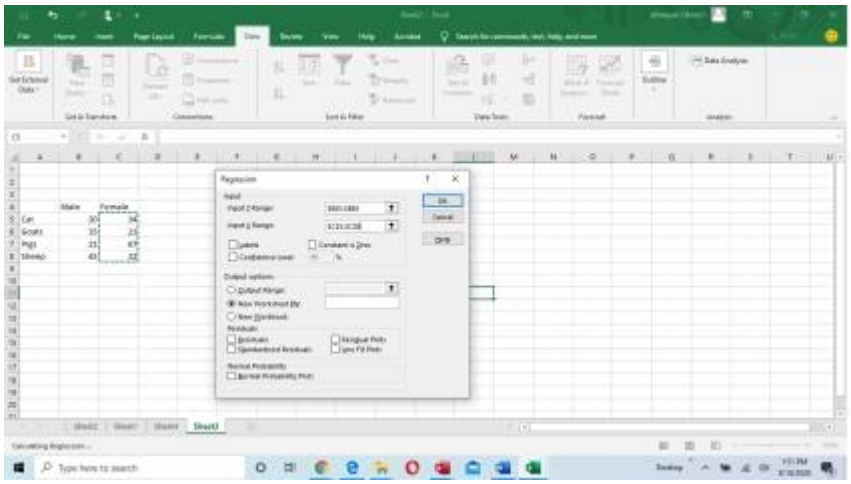

Figure 15.5: Regression

The descriptive statistics option is displayed in figure 15.4

Assuming you intend to perform a Regression analysis on data earlier considered, follow the steps below:

i Select Tools from the menu
ii Select Data Analysis
iii Select regression
iv Enter Input Ranges as shown below in figure 15.5
v Enter your output Range.

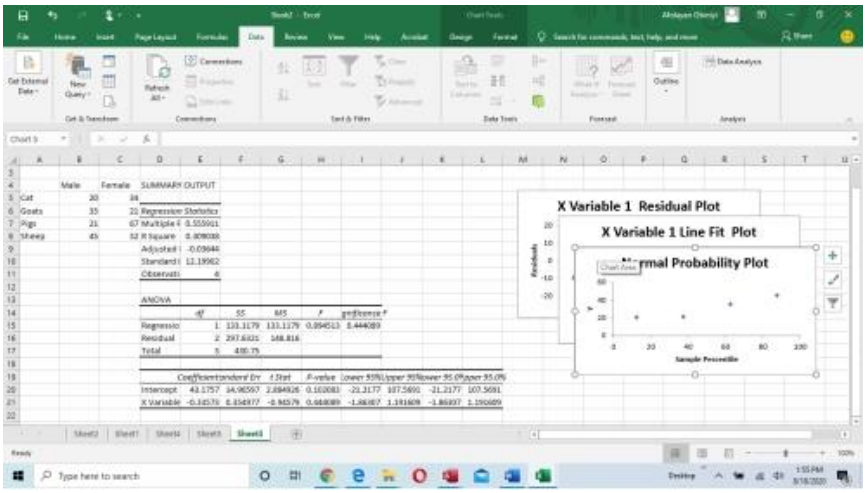

Figure 15.6: Result of Regression Analysis

On clicking OK, you have your results display in figure 15.6:

We have learned how to plot graphs with Microsoft excel. We know that, graphs play vital roles in illustrating your data.

For example, plotting the data above using column option, we have the graph in figure 15.6, the graph is displayed separately in figure 15.7 for clarity.

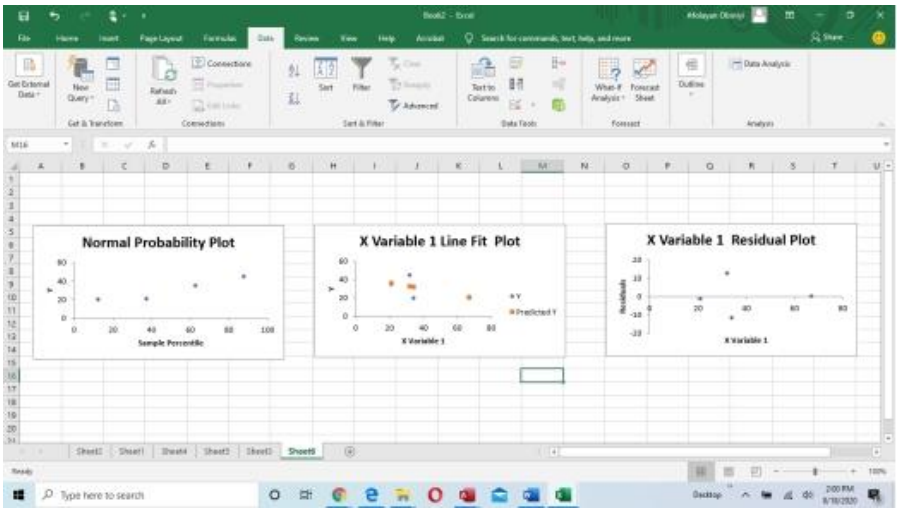

Figure 15.7: Separate Display of the plots

Remember that the above graph will give a good result of statistical analysis.

SELF-ASSESSMENT EXERCISE 15.1

What tool in Data analysis can we use to illustrate your statistical analysis graphically in Excel?

ANSWER TO SELF-ASSESSMENT EXERCISE

You can see the "Histogram" option

Taking you through the Inferential statistical analysis tools will be outside the scope of this course. Hence, we have been introduced to simple analysis of data as done above.

4.0 CONCLUSION

In this unit, you have been introduced to the basic types of statistical analysis you can perform using statistical analysis applications. Broadly categorized, statistical analysis can be divided into two:

i Descriptive Statistics
ii Inferential Statistics.

The unit has equally taught you how to use Microsoft Excel to perform same sample common data analyses.

5.0 SUMMARY

The unit has shown us that statistical analysis is very essential in business planning. Statistical analysis applications are specially developed to help you calculate some statistical values that are manually cumbersome.

Using Microsoft Excel to perform some statistical operations is what this unit has majorly taken us through. In the next unit, introduce users to SPSS, which is the most commonly used statistical package.

6.0 TUTOR-MARKED ASSIGNMENTS 14

Do the following assignments and submit your answers for your tutor:

i. Under what type of statistical analysis will you categorize correlation in Excel?
ii. List two ways of plotting your Histogram by using Microsoft Excel.
iii. List 3 statistical elements of descriptive statistics.

7.0 REFERENCES/FURTHER READING

Brightman, R. W. and Dimsdale, 3. M., Computer in an Information Age, Delmar Publisher Inc; 1986.

Microsoft Corporation, Microsoft Excel 2016, 2019 update.

ANSWER TO TMA

1. Inferential Statistics
2. (a) By using Tools menu and selecting Data Analysis. Finally, Histogram is selected.
   (b) By using Insert Menu and Chart option or using the chart button on the toolbar.
3. Three of them are:

i Mean

ii Sum
iii Standard Deviation

UNIT 16: USING SPSS SOFTWARE

CONTENTS

1.0 INTRODUCTION

In the last unit, we were introduced to the types of statistical analysis you can use computer applications to perform. Specifically, you went through the use of Microsoft Excel in performing some simple analysis.

Over the years, SPSS (Statistical Package for Social Sciences) has gained much popularity and acceptability it among many computer users. This unit will take you through some common features of version 6 for Windows as a case study. You will see how to use the package to perform some statistical analyses.

2.0 OBJECTIVES

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

i explain the common features of SPSS Software
ii use SPSS to perform some statistical analysis on a given data.

3.0 MAIN CONTENT

3.1 Common Menu Options

The SPSS software has a spreadsheet as its data-entry interface. Hence one can copy data from your Microsoft Excel worksheet. Though there is a higher version of SPSS now in the market, Version 20

released in year 2018 being used in this unit is presently adequate to intimate you with the features of SPSS.

Look at the following figure:

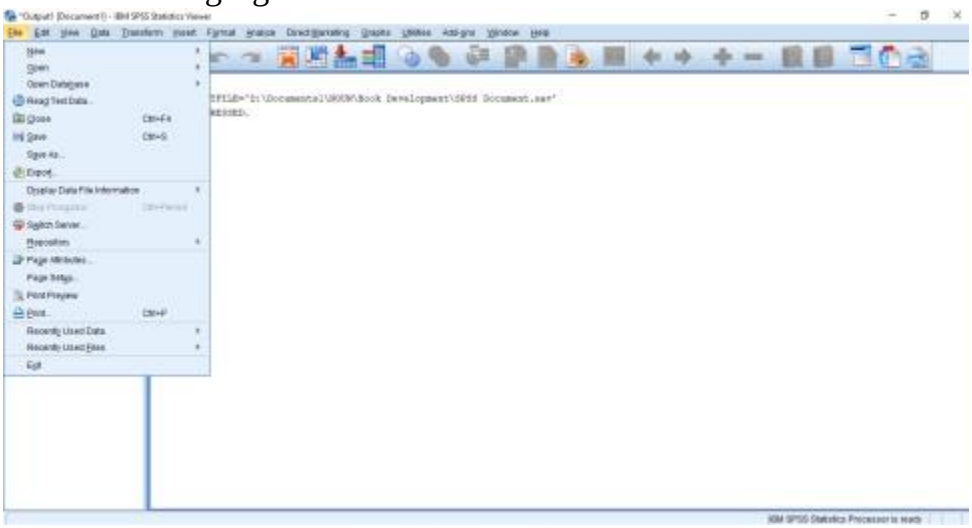

Figure 16.1: File menu

Figure 16.1 screen shows the File menu of SPSS Version 20 for windows. The "Open" option reveals that SPSS is designed to open a number of file types.

Next to it is the "Edit" menu as shown in figure 16.2

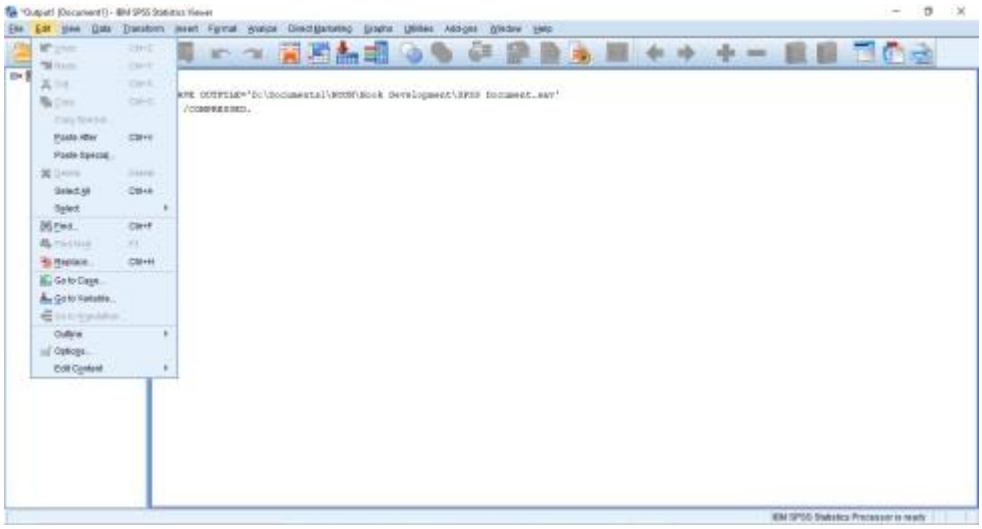

Figure 16.2: Edit menu

As seen in the "Edit" menu, the user can perform a number of operations on your active Worksheet contents.

In the preferences option of the "Edit" menu, the user can modify a number of settings on the worksheet. For example, the "options" window allows you to manipulate a lot of things as seen in figure 16.3.

Figure 16.3: Options button of the Edit menu

The next menu is the "Data" menu as seen in figure 16.4:

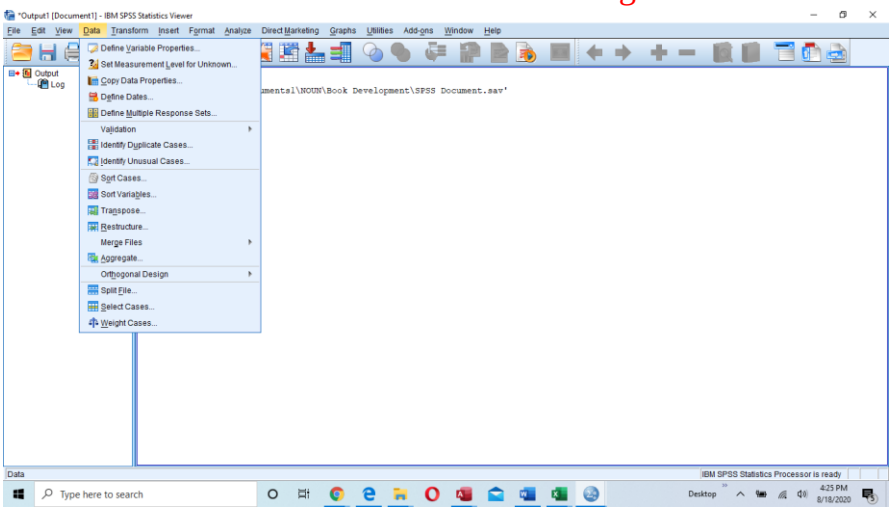

Figure 16.4: Data Menu

As we shall observe in figure 16.4, the "Data" menu; is completely different from the Data menu in Microsoft excel 2016.

It is within this menu the options for "Insert" and "Sort" operations

We shall be introduced to the "Transform" menu in the next section of this unit. Please this is an important menu in SPSS package.

In SPSS version 20 and above the statistical menu is replaced by the analyze menu as seen in figure 16.5

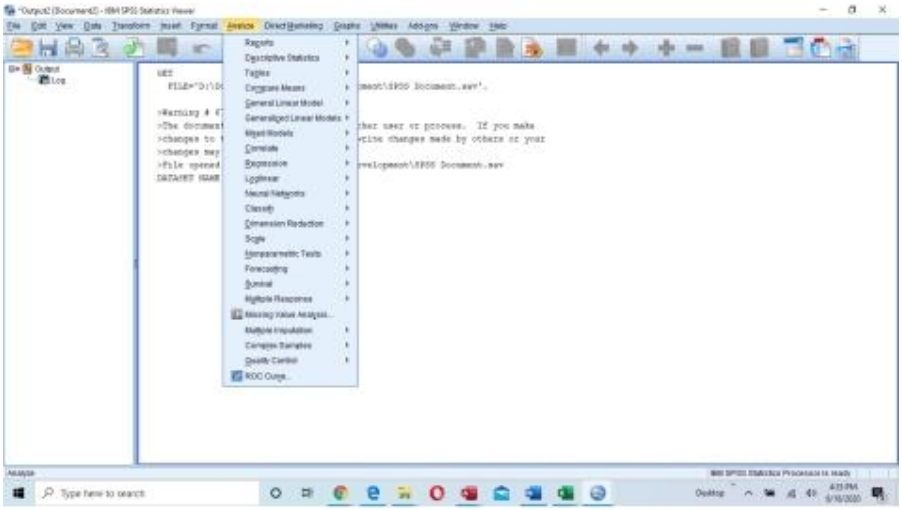

Figure 16.5: Analyze Menu

The "analyze" menu is where the user would select the type of statistical analysis desired to carry out on the target data. The ability to select the right statistics here is very important in analysis. From here, the user would perform statistical operations in the next section.
Look at the "Graphs" menu in figure 16.6.

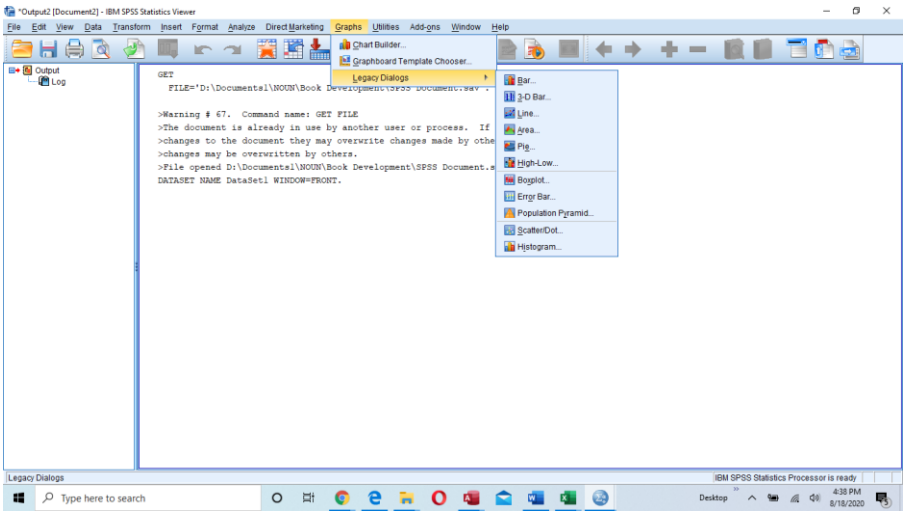

Figure 16.6: The Graph menu

As you can observe from the pull-down menu under "Graphs", a number of graphs can be plotted using Excel cam be plotted by SPSS also.

The "Utilities" menu as shown in figure 16.7 gives the user access to a number of operations within SPSS.

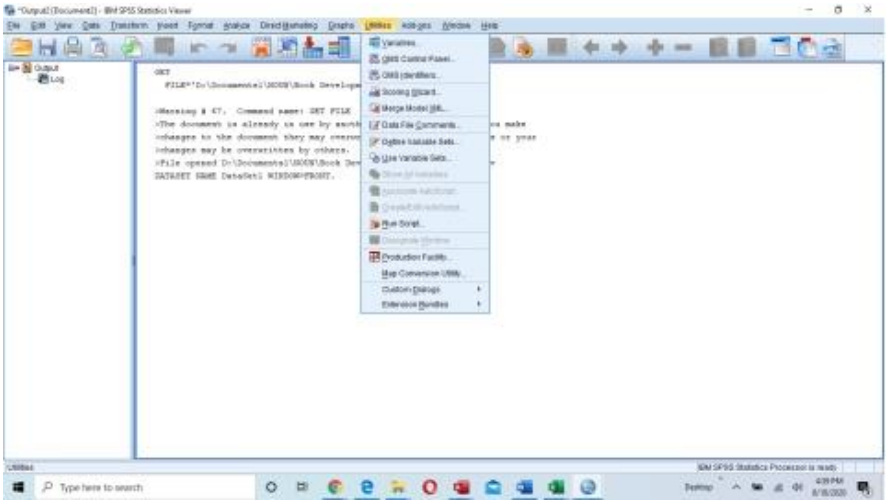

Figure 16.7: The Utility menu

For example, defining variable sets, selecting a scoring model and run script.

Do you remember the data in figure 16.8?

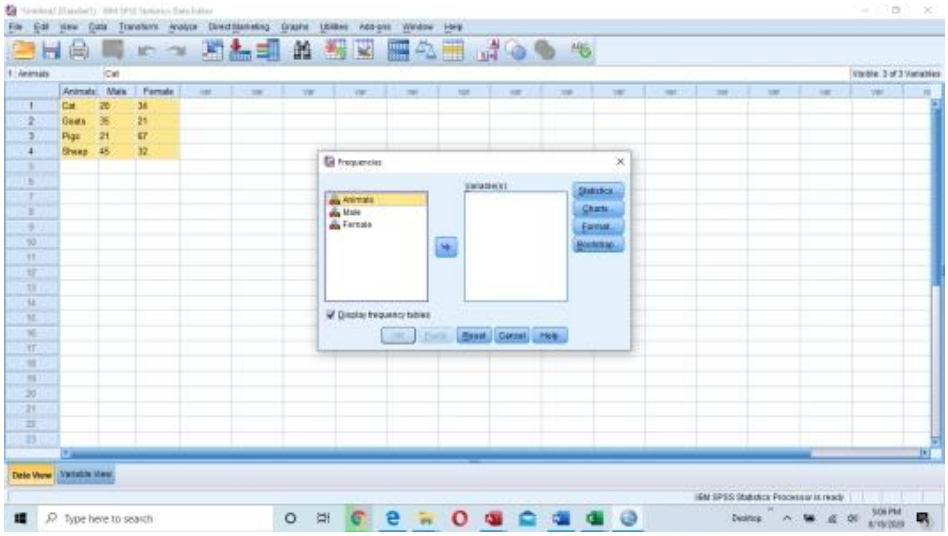

Figure 16.8: Frequency Analysis

Yes. For example, if you choose "frequencies" command as shown in the same figure 16.8 and then click the "Open" button, SPSS automatically gives the screen in figure 16.8.

The results of processing this selection will be shown in the next section of this unit.

3.2 Examples of Statistical Analysis

Having introduced us to the various menu options available in SPSS, we will now be taken through some steps to perform a few examples of statistical analyses.

To start, check at the variable view screen as shown in figure 16.9 with the screen you can define your variable, define the data type, change the width of specialization, define the significant figure and do many other things:

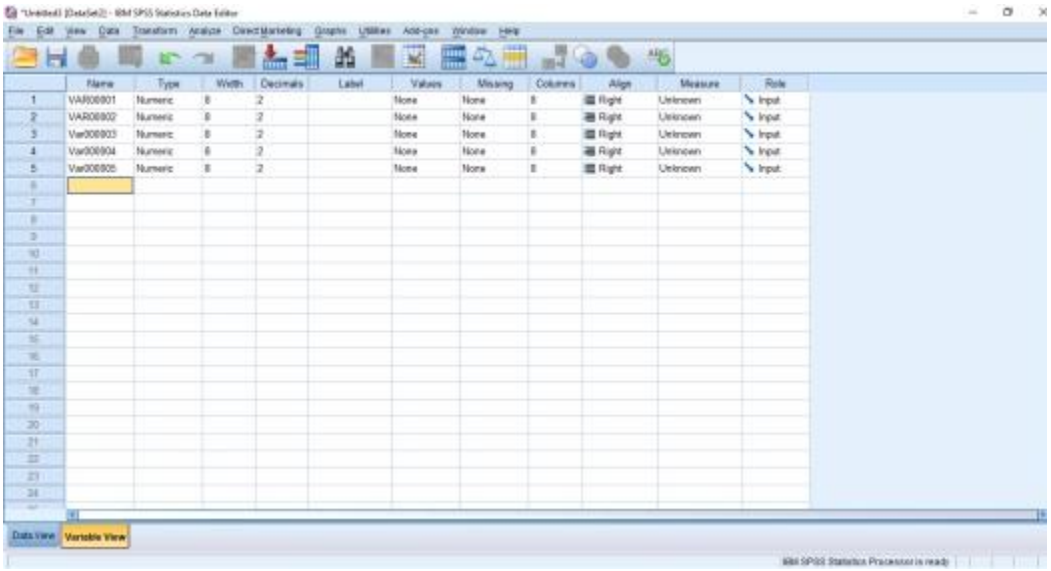

Figure 16.9: Variable View Screen

Click on any of the items such as name, type, width, etc and changing the data to suit your need.
Select each cell under name and type the name of the variable for each cell such as Cals, Goals, Pigs, and Sheep appropriately.

Selecting "Type" button in the "Define Variable" window gives us the above screen, we will observe that the cell pointer is in "male" column before this was done. As seen above, you can set the type of desired variable in this window.
For example, the "animals" variables is set as a "string" to be able to enter the names you can see on your worksheet. Now, you can perform a simple analysis operation as follows:

i Select analyze from the menu
ii Select Descriptive statistic as shown in figure 16.10

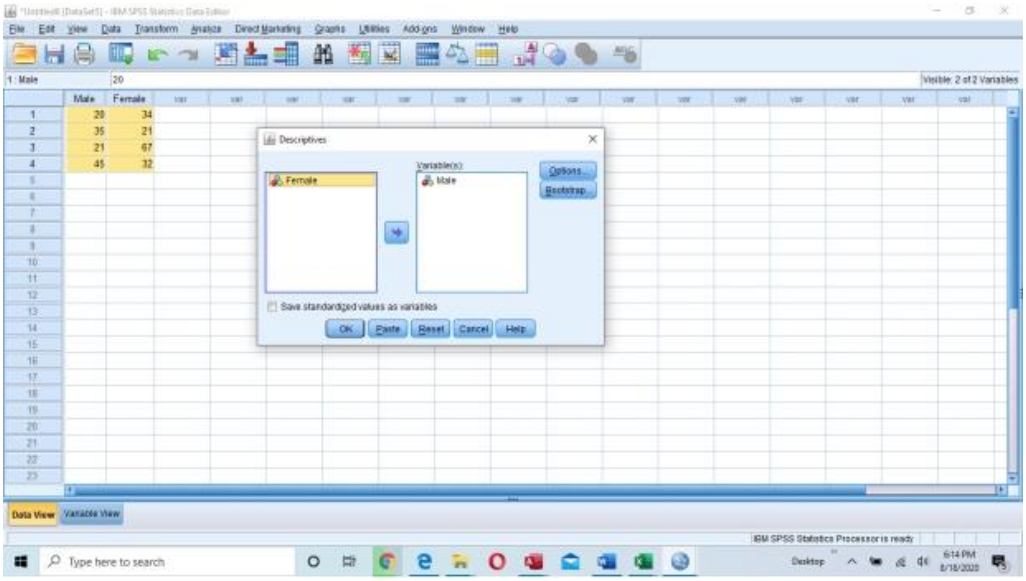

Figure 16.10: Descriptive statistics

Select the variables one after the other and click the arrow button to more then to the right. If you select only one and proceed, our analysis will only be on the single variable selected.

Now, assuming you select the two variables (male and female) and press the "Options" button, you will have the desired and seen in figure 16.11:

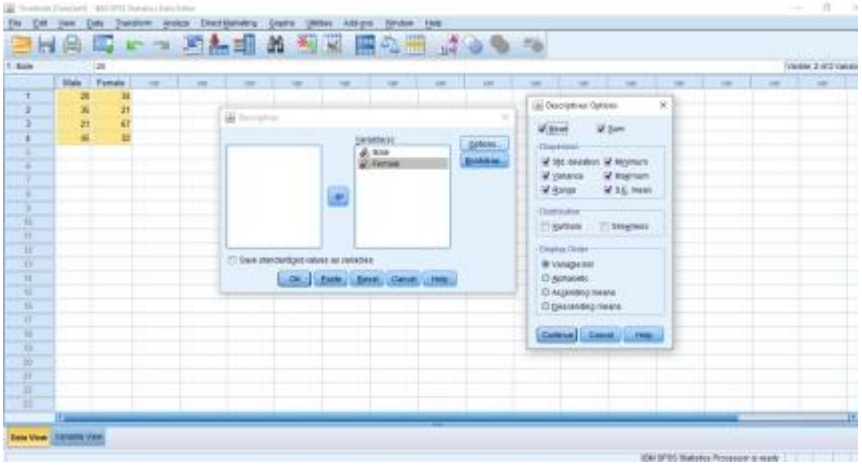

Figure 16.11: descriptive options

Press "Continue" button and then click "OK" to get the figure 16.12 Output screen:

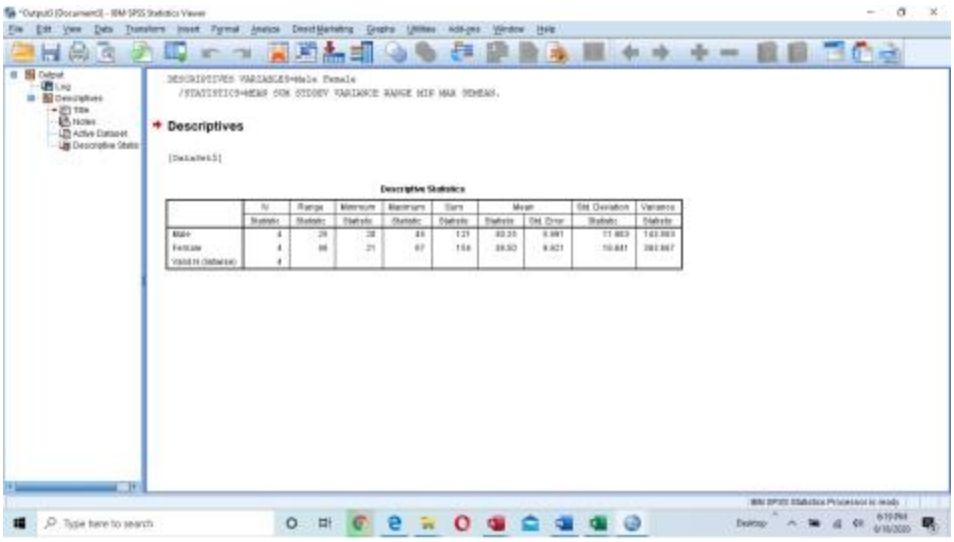

Figure 16,12: Descriptive statistics

Please follow the instruction below:

i Select Summarize cases analyze from Statistics menu
ii Select statistics

Check the options as shown below after clicking the "Statistics" button. When you have finished, click continue and click ok. The result is displayed in figure 16.13 and 16.14

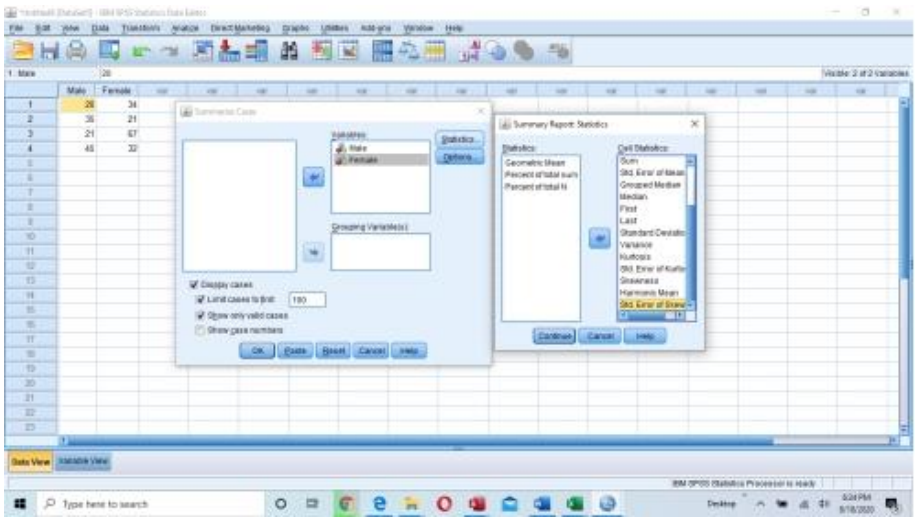

Figure 16.13: Summary statistics options

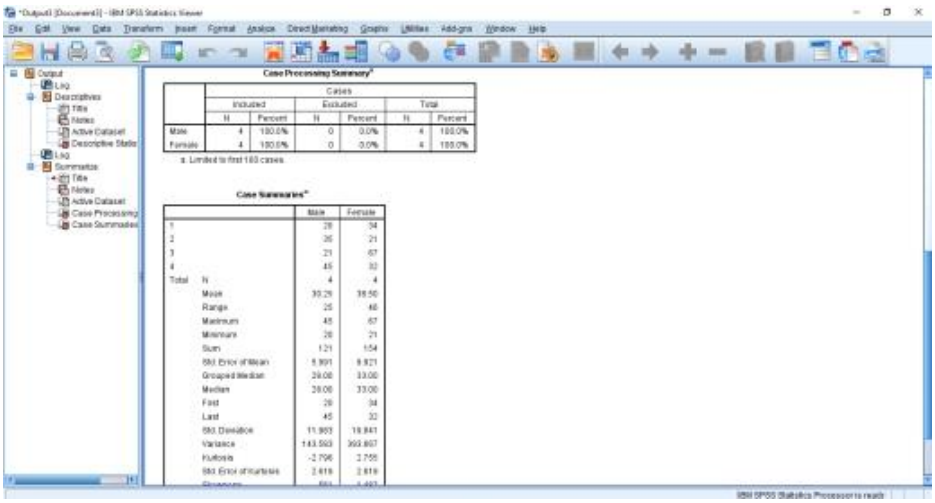

Figure 16.14: Summary statistics

Also, click the "Graph" button to select "chart builder". Select Gallery, from the Gallery, choose bar and drag it to the required space for the type of bar chosen to be plotted as seen in figures 16.15a, 16.15b and 16.15c.

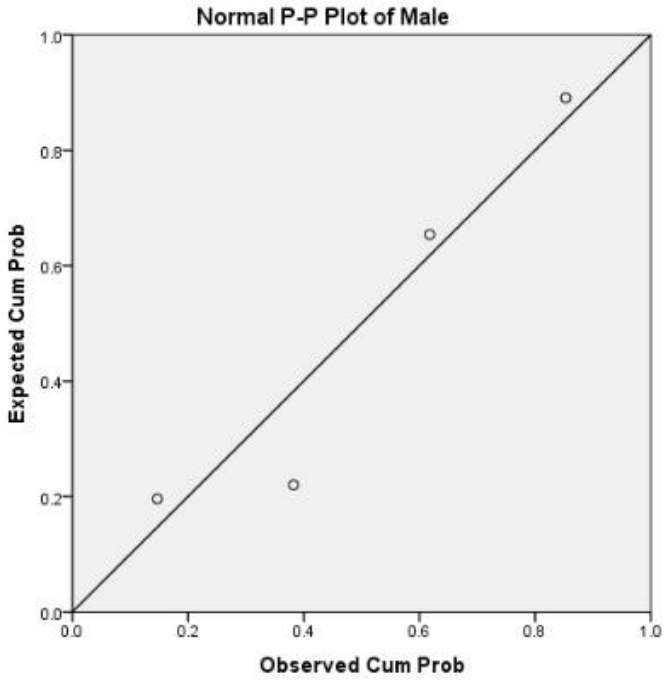

Figure 16.15a: Graph Plots (Male)

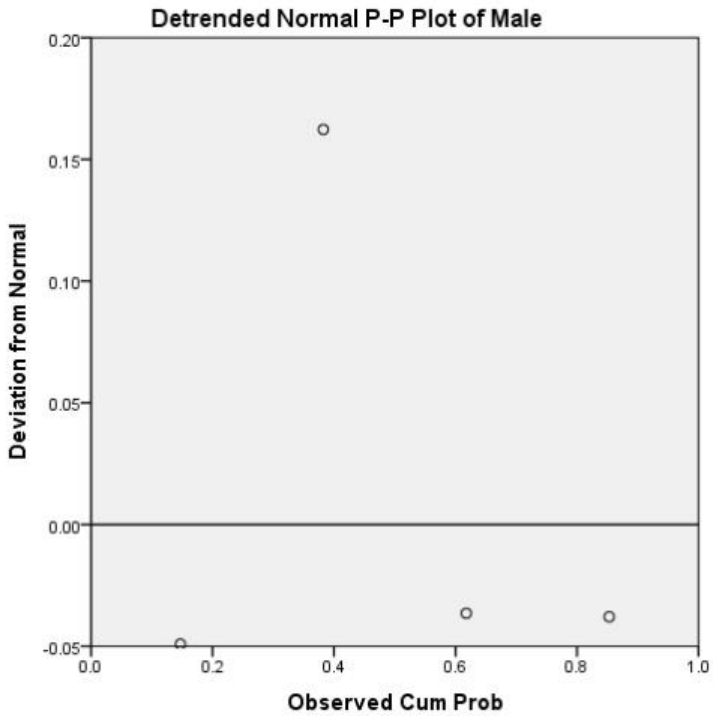

Figure 16.15b: Graph Plots (Female)

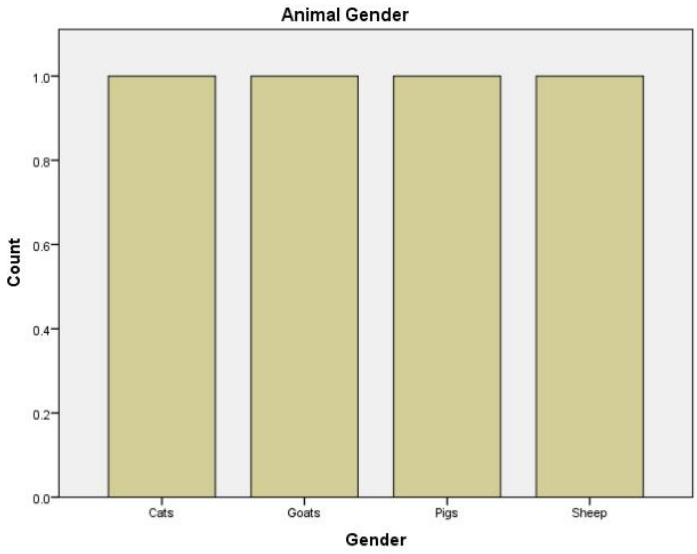

Figure 16.15c: Bar Graph (Gender)

You can see how much you can do with SPSS. Now look at the next figure 16.16 displays

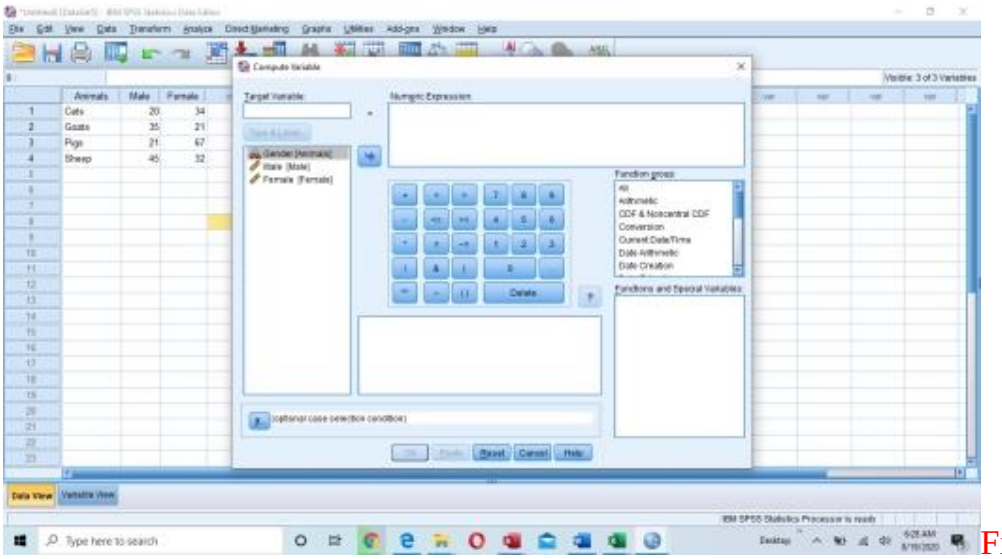

Figure 16.16: Compute Variable from Transform menu

Figure 16.16 screen is what we have when the select "Transform" from the menu bar and you then select "Compute".

As one can see, we can use this option to compute some numerical expressions associated with the variables. SPSS language function or commands are also available in the window for the user to select from easily.

We shall now round up this unit with the conclusion in section 4.0.

4.0 CONCLUSION

In this unit, we were introduced to SPSS Version 20 for Windows, which is the version the user will likely have as the most common one around in Nigeria locality for now.

The unit has taken through the common SPSS menu options and also through some common and simple examples of statistical analysis.

5.0 SUMMARY

As seen in this unit, us of analysis intend to perform will determine your choice of statistical option. The unit has equally shown clearly how to plot graphs to illustrate further your results of statistical analysis.

As we would observe in this unit, SPSS is a good choice for data analysis, however if we have more sophisticate statistical analysis beyond what Microsoft excel will offer you.

The next unit will take us through another type of computer application software.

6.0 TUTOR-MARKED ASSIGNMENTS 15

Do the following assignments and submit your answers to your Tutor.

i. How do you access the analysis tool for Descriptive Statistics in SPSS?

ii. Define the following SPSS language commands:

(a) GET

(b) WRITE

(c) REGRESSION

iii. How do you define your variables in SPSS?

7.0 REFERENCES/FURTHER READING

SPSS Inc., SPSS for Windows, Release 20, 2018.

ANSWERS TO TMA

1. Please follow the procedure below
   a. Select Analyze from the menu
   b. Select Descriptive statistics
2. (a) GET — This command opens a data file previously saved in SPSS format.
   (b) WRITE — This command writes the value of your variables into an ASCII file
   (c) REGRESSION — This calculates simple or multiple regression equations, with associated statistics and plots.
3. Define variable by following the procedure below the following:

i Move your cell pointer to the appropriate variable column

ii Select 'Data' from the Menu

iii Define a variable using the variable viewer

iv Assign your variable name in the cell provided.

UNIT 17 INTRODUCTION TO DESKTOP PUBLISHING PPLICATIONS

CONTENTS

1.0 INTRODUCTION

This unit will introduce us to another special category of software application called Desktop Publishing Software. These are software packages that build on the general features of Word Processing Software to handle highly standardized publications.

Desktop Publishing Software combined a lot of graphic designs and text formats will result in beautiful publications. We shall now introduce to Microsoft Publisher 2016 as a very common Desktop Publishing package that you can use compatibly with Microsoft Office components.

The objectives for this unit is in section 2.0.

2.0 OBJECTIVES

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

i explain the vital features of Desktop Publishing software
ii use Microsoft Publisher to design a given publications.

3.0 MAIN CONTENT

3.1 Features of Desktop Publishing Software

Remember that you were introduced to, for example, Microsoft Power Point in section 2.3 of unit 7 as an example of Presentation Application. Though a Presentation software combines text and

graphic features, however, most design facilities present in Desktop Publishing software are absent in Presentation application.

Now, there are few examples of Desktop Publishing Software as follows:

i Microsoft Publisher

ii PageMaker

iii Corel Draw

iv Adobe illustrator

Each of the above examples of Desktop Publishing Software has its different versions.

Below are various types of publications and designs you can create with most Desktop Publishing applications:

i Newsletters
ii Brochures
iii Flyers
iv Postcards
v Web Sites
vi Letterheads
vii Calendars
viii Certificates
ix Business Cards
x Invitation and greeting Cards
xi Envelopes
xii Banners
xiii Advertisements
xiv Signs
xv Labels
xvi Business Forms etc.

If your publication job is not in the extended list (i) to (xvi), yet a good Desktop Publishing package will offer you an appropriate design.

For example, look at figures 17.1:

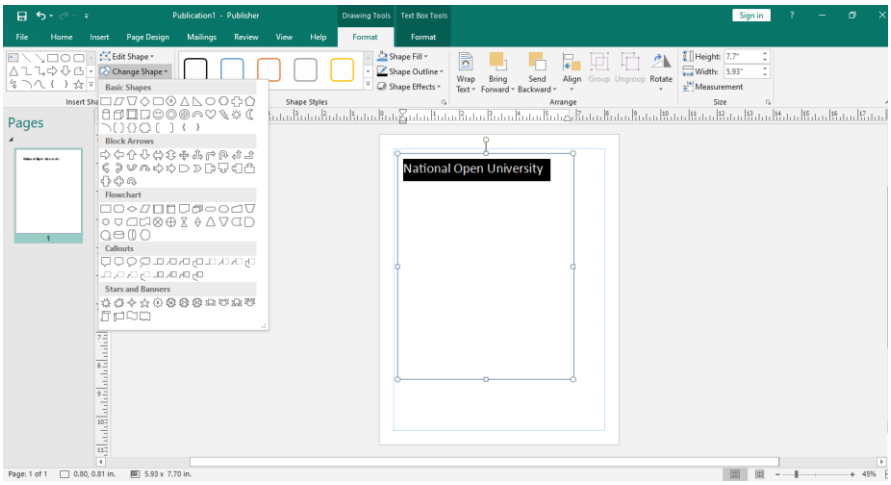

Figure 17.1: Objects and shapes

Figure 17.1 gives you an idea of tools available on Desktop Publishing software's to make your document a befitting publication. As seen in the figure, you can add various types of objects and shapes to your publications.

Figure 17.2 is a figure showing various shapes which can give your text, a beautiful coloration.

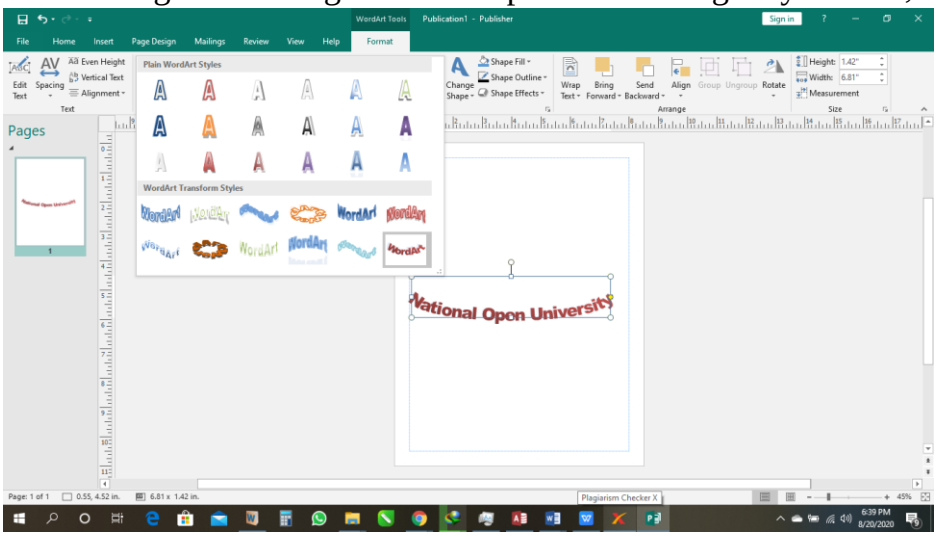

figure 17.2: changing the text colour and effect

For example, the curved shape of "National Open University" text on the right is obtained by selecting a format on the left.

One can add pictures to any publication using the appropriate tool available on the application.

SELF-ASSESSMENT EXERCISE 17.1

Identify some of the menu figure 17.1 that are similar to those available in other applications.

ANSWER TO SELF-ASSESSMENT EXERCISE

You have:

i. File
ii. Edit
iii. View
iv. Insert
v. Format
vi. Table

The following Help Window from Microsoft Publisher 2016 to tell you how you can use any Desktop Publishing Software side by side with other software packages, especially the Microsoft Office components, though, you have to be connected to the internet.

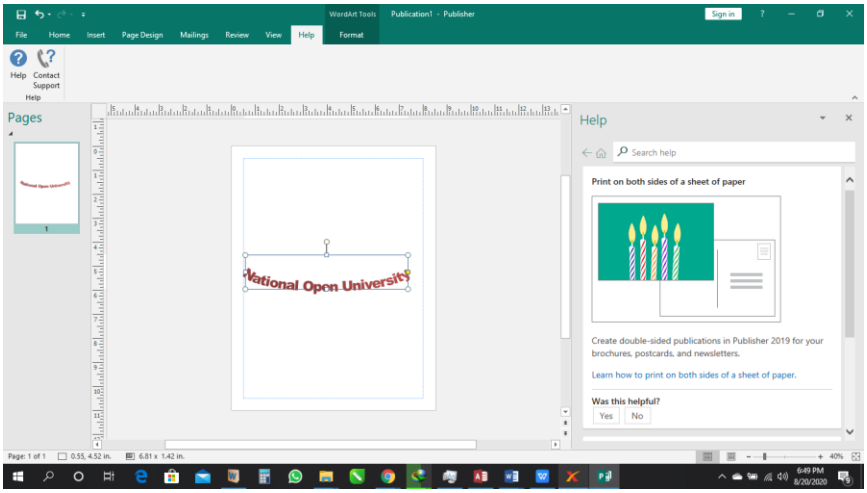

Figure 17.3: MS Publisher help window.

We can see clearly how Microsoft Publisher can guide you through the steps of creating a good publication.

3.2 Using Microsoft Publisher

If Microsoft Publisher is properly installed on the user's computer system, one can access it by clicking "Start" button and then going to "Programs" group.

On starting Microsoft Publisher, you have in figure 17.4;

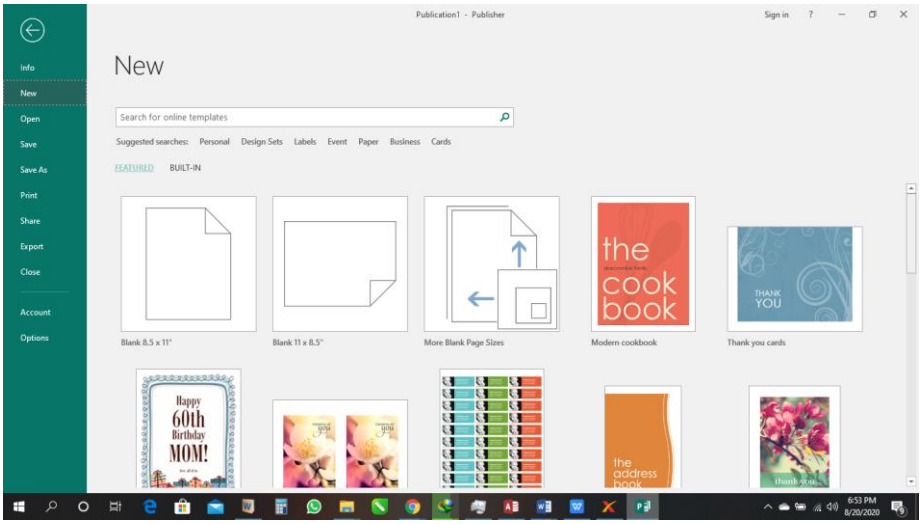

Figure 17.4: MS Publisher screen

As you can see above, you have a list of publications styles to choose from with their sample designs on the right to select from.

For instance, if you choose the "Art Boxes Newsletter" design under Newsletter style, the figure 17.5 will appear on the screen

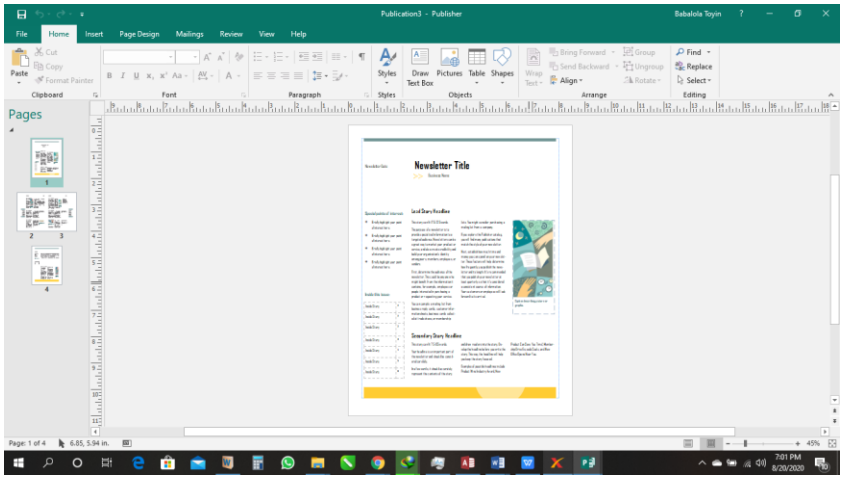

Figure 17.5: Newsletter Template

Interestingly, enables you to edit and create new your publication.

The next screen gives you opportunity to choose your colour scheme as shown in figure 17.6:

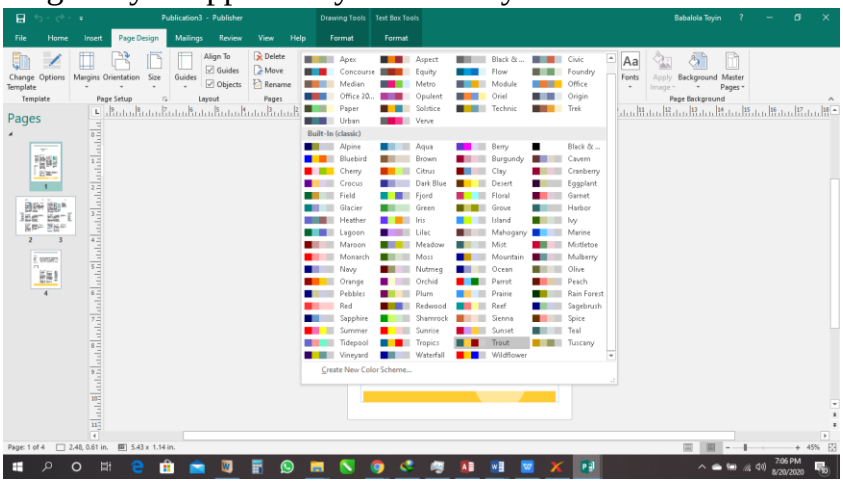

figure 17.6: Colour Scheme

Following this, we will be told to select the numbers of many columns you expect the page to contain and whether you want to have your publication printed as single-sided or double-sided. On finishing with the selections, figure 17.7 screen is the final style to modify in order to create your own publication:

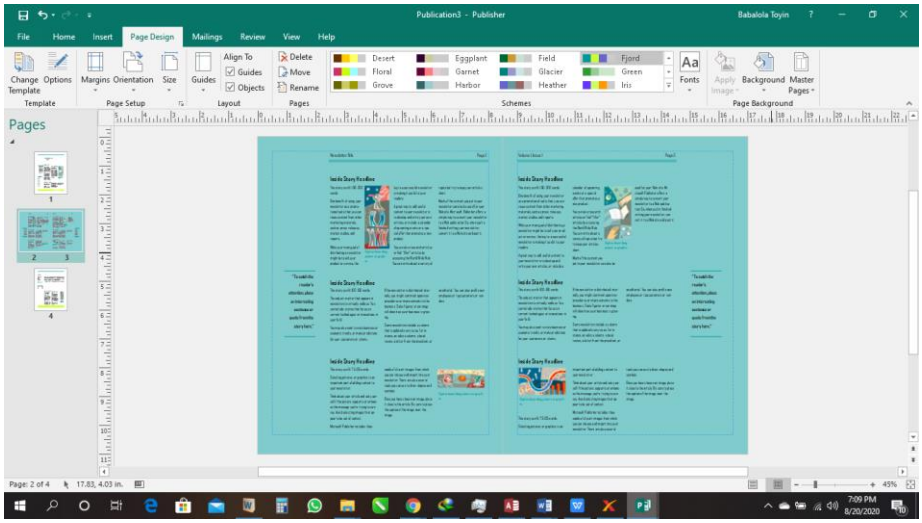

Figure 17.7: creating a publication

Now, look at Figure 17.8.;

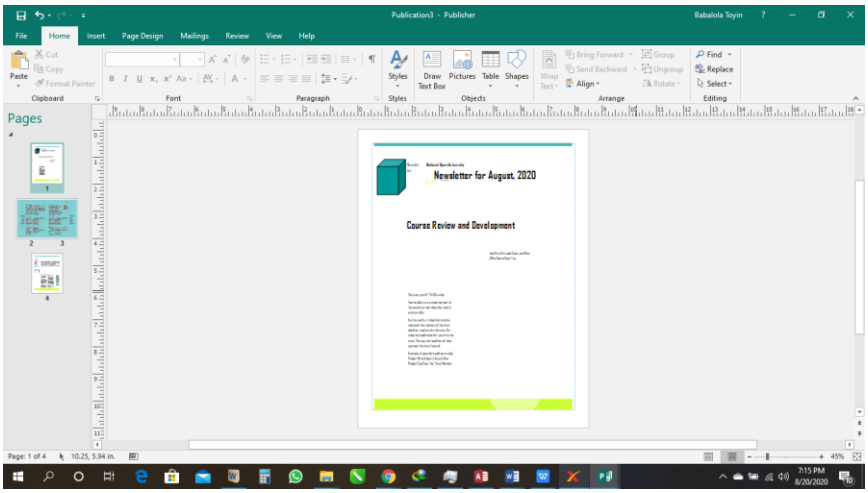

Figure 17.8: Modified publication

From figure 17.8, one can observe modifications made to the earlier style. The user can double-click the picture frame to insert your own picture.

Now on the top left corner we have the wizard frame in place, to select from in order to modify the publication publication properties automatically without going backwards

See another beautiful example as you make the following selections:

i Select Quick publication under built-in templates as shown in figure 17.9
ii Select Arcs design as shown in figure 17.10

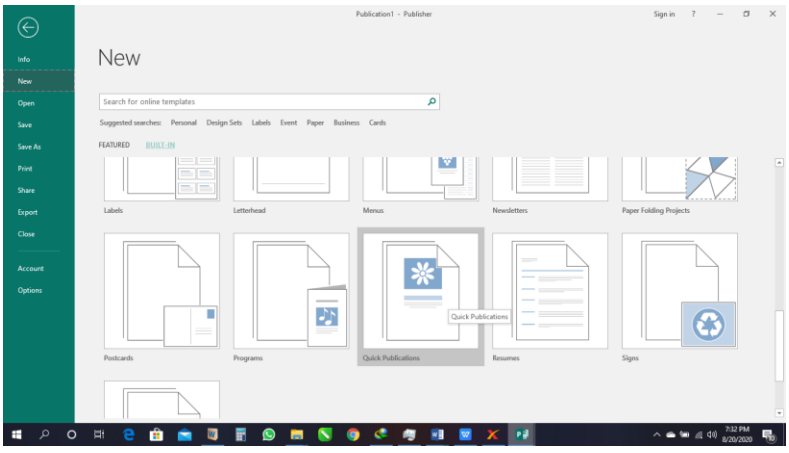

Figure 17.9: selecting a template

Follow the steps in the template to create your Web Site according to the design in figure 17.10:

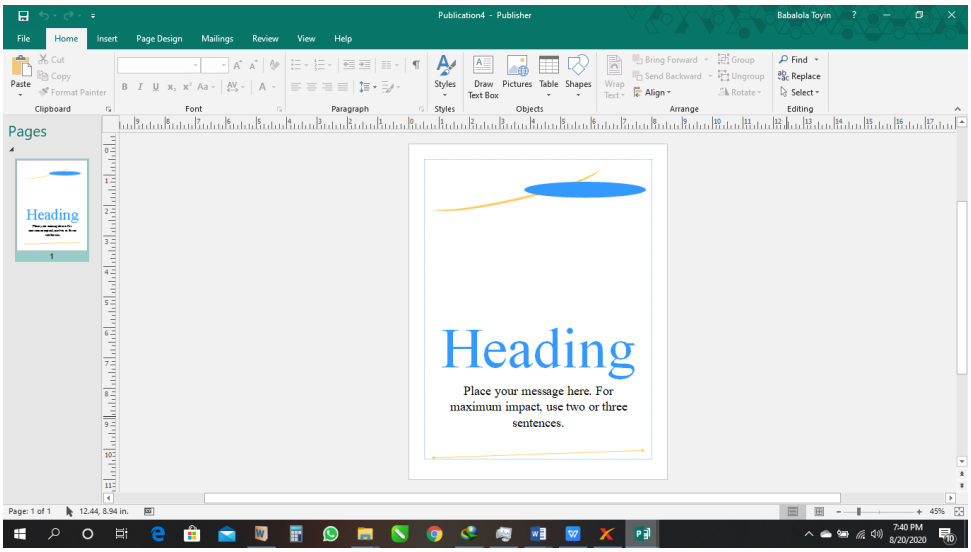

Figure 17.10: Arcs design using in-built template

Modifying the contents, of the arcs template chosen as shown in figure 17.11

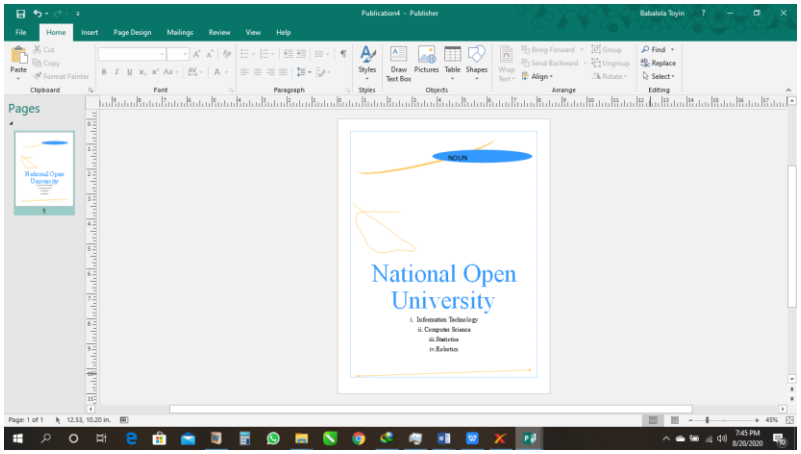

Figure 17.11: modification of the created Arcs design

Remember, one can change the pictures or graphics on the pages depending on your need.

Try to create other designs on your publications. We shall now round up this publication with the following conclusion and summary.

4.0 CONCLUSION

This unit has taken us through the Desktop Publishing applications, showing their special features and types of publications the user can create with them.

Specifically, you were taken through the features of Microsoft Publisher, being a very common application with many styles to select from.

As we have seen from the figures in this unit, you can better prepare any publication using Desktop Publishing tools. They have more advanced features than Word Processing Software.

5.0 SUMMARY

This unit has taught us the special features that characterise desktop Publishing software. They are designed for special materials like:

i Newsletter
ii Postcards
iii Brochures

Microsoft Publisher is very good in designing your postcards, letter heads without learning how to use some special graphics software. Have fun with Publisher!

6.0 TUTOR-MARKED ASSIGNMENTS 16

Attempt the following assignments and submit your answers to your Tutor?

i. List five types of publications you can design with Desktop publishing software.
ii. In Microsoft Publisher, how many publication designs do you have under flyers?
iii. How many types of designs can you see in the quick publication template
iv. List the types of Master Design styles set under "in built template" in Microsoft publisher 2016.

7.0 REFERENCES/FURTHER READING

Microsoft Corporation, Microsoft Publisher 2016, 2019.

ANSWERS TO TMA

i (a) Newsletters
(b) Brochures
(c) Business Cards
(d) Envelops
(e) Banners

2. Six:
(a) Informational
(b) Special Offer
(c) Sale
(d) Event
(e) Fund-Raiser
(f) Announcement

3. 76

4. They are:
(a) Arcs
(b) Brocade
(c) Blends
(d) photoscope
(e) bounce
(f) makers
(g) Accent Box
(h) Perforation
(i) Tabs
(j) Simple Drivers

UNIT 18: COMPUTER APPLICATIONS IN NURSING

CONTENTS

1.0 INTRODUCTION

This is a very interesting unit for a computer user or students in a medical/ medical related discipline, especially Nursing. The unit will take us through the various areas of application of computer in Healthcare profession.

Just as there are various types of computer application which performs different operations related to some specialized areas, a number of applications are also in the market today to assist those in the Health- Care profession.

In this unit, we will be introduced to examples of softwares which are very helpful in the training of Nurses and other Health-care professionals. We shall also see how the computer can assist Nurses to keep their patients' records.

The study objectives for this unit are as in section 2.0.

2.0 OBJECTIVES

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

i. explain the roles of computer in Nursing Training and
ii. Practice use the computer to keep vital records of patients.

3.0 MAIN CONTENT

3.1 Computer-Aided Learning in Medicine

Start by looking at the following figure:

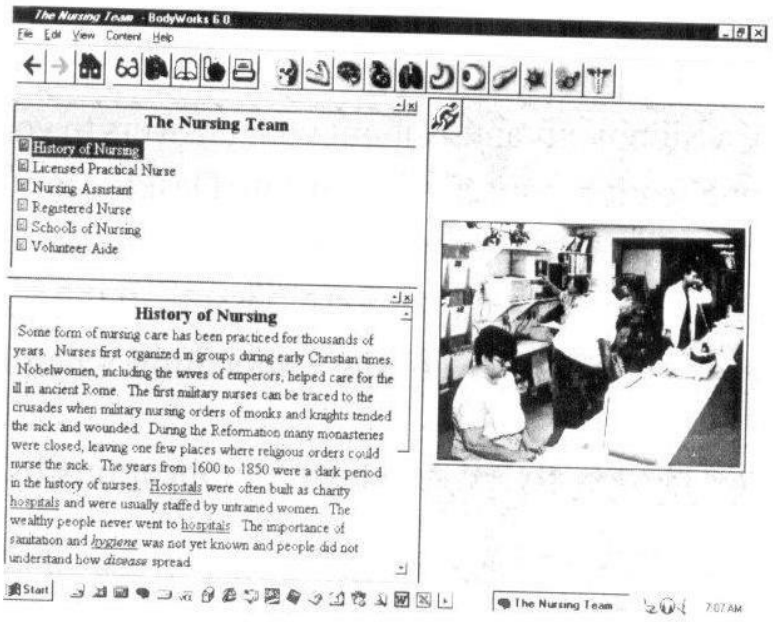

Figure 18.1: Electronic tutorial page

Figure 18.1 is a screen display of an Electronic Tutorial page of a very good software called "Body Works 6.0". It is a Multimedia Package that teaches almost all the common topics a student of Nursing or Medicine should know.

Please find below an example of a screen which is useful to the topic under reference

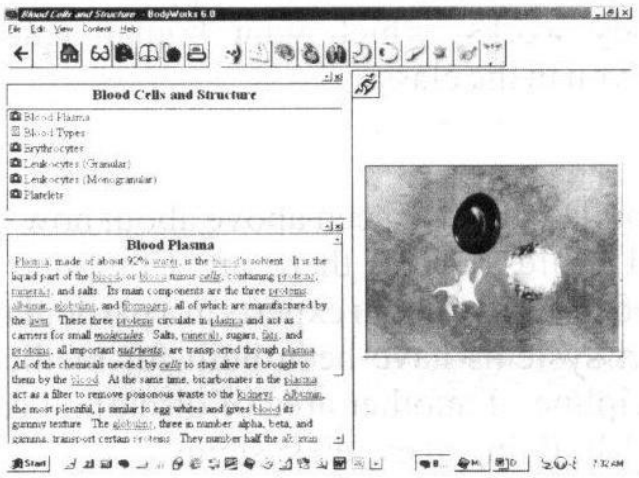

Figure 18.2: picture of Body part

As we can see in figure 18.2, the software shows the pictures of the body parts being explained including audio effects to properly teach us how to pronounce some technical terms rightly.

For example, the moment your mouse pointer to a picture component, there is a tip as shown in figure 18.3 to show you the name:

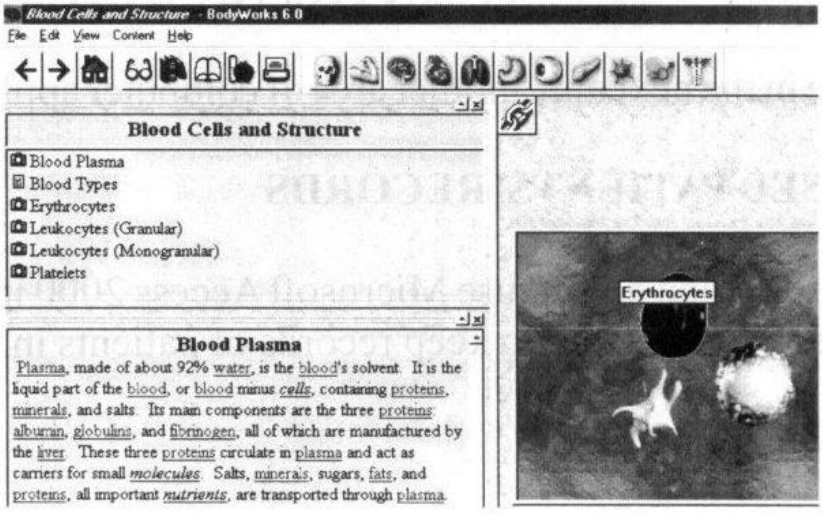

Figure 18.3: tip to indicate name

For example, in figure 18.3, the name of the Red blood cells are shown and if we click the name on the top left panel, the phonetic name will be heard through your speaker.

In order appreciate the role of computer applications in learning, look at the following screen:

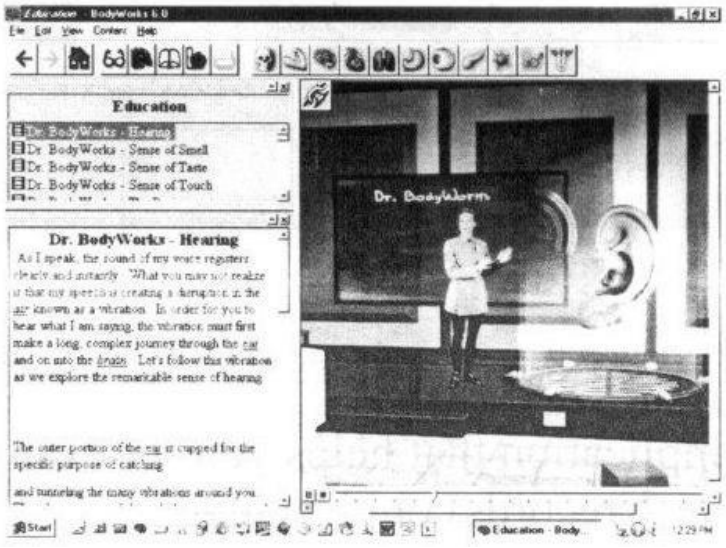

Figure 18.4: Videos recording

As we would observe in the figure 18.4, the right hand picture is actually a video recording showing Dr. Body works teaching you about Hearing. Her speech is recorded at the left hand side. The picture of the ear shown in the picture is animated to always demonstrate whatever she says.

It is a wonderful demonstration of application software that can assist about how your body works, which our human teacher may not be able to demonstrate practically to you in the class.

3.1.1 EXPERT SYSTEMS

Apart from the example you have seen in section 3.1 about ways the computer can assist in the training of medical professionals, there are Computer programs called Expert Systems specially developed to act as human experts in a particular area of knowledge.

For example, expert systems have been built for medical diagnosis. Knowledge Engineering is the sub-discipline of Artificial Intelligence (AI) which is concerned with building of expert systems.

Even though expert systems are designed to provide information normally available from highly skilled specialists, they cannot replace expert humans.

Expert systems have several features, for example, they have access to a collection of information in a given field of study and a method to select appropriate information for specific situations and circumstances. Hence, they appear to "Think" like human experts.

What you should understand is that in reality expert systems are programmed to imitate human thought by comparing facts, searching for similar cases in their historical databases, looking at the probable consequences of various conclusions, and then finally, providing expert opinions. Such programs have been very useful in Medicine, the particularly in teaching trainee-doctors.

We shall now consider another area of computer applications in Nursing in the next unit.

3.2 Computerized Patients' Records

We have already learned application of Microsoft Access 2016. We shall observe how one can use such tool to keep records of patients in the hospitals for easy access by Nurses and other health workers.
Check the following figure:

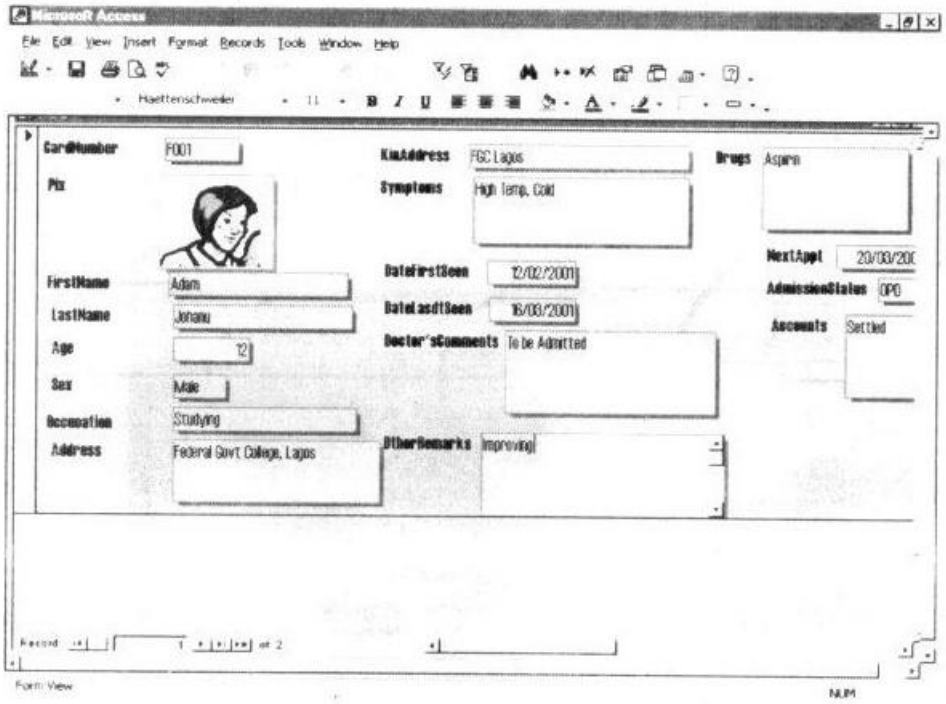

Figure 18.5: record keeping Application

The screen shows an application that helps for example a Nurse to keep the essential records of a patient. Such records could include:

i Card Number
ii Names Li Age
iii Picture
iv Sex
v Occupation
vi Address
vii Date Last Seen
viii Doctor's Comments
ix Drugs
x Next Appointment Date etc.

The software can also help to easily search for records of patients using filtering operation as shown in figure 18.6:

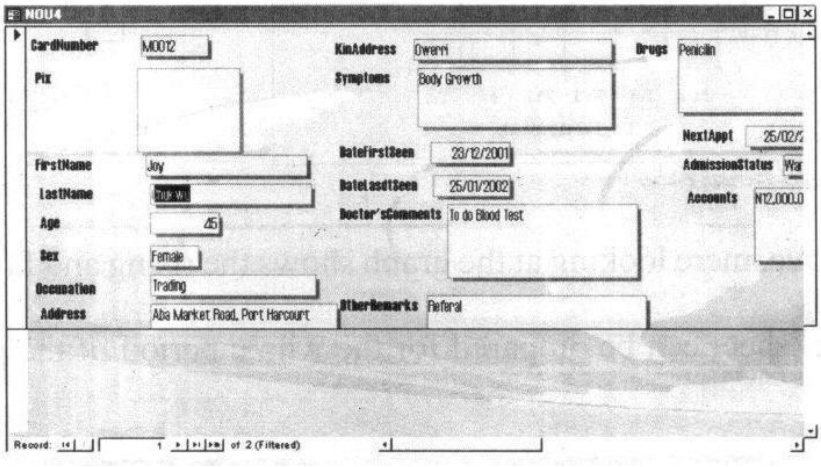

figure 18.6: search for record

As we can see in figure 18.7, one can filter the database by searching for "Chukwu" Record Number bar shown in figure 18.7. We can move to the next filtered record by clicking the right arrow button.

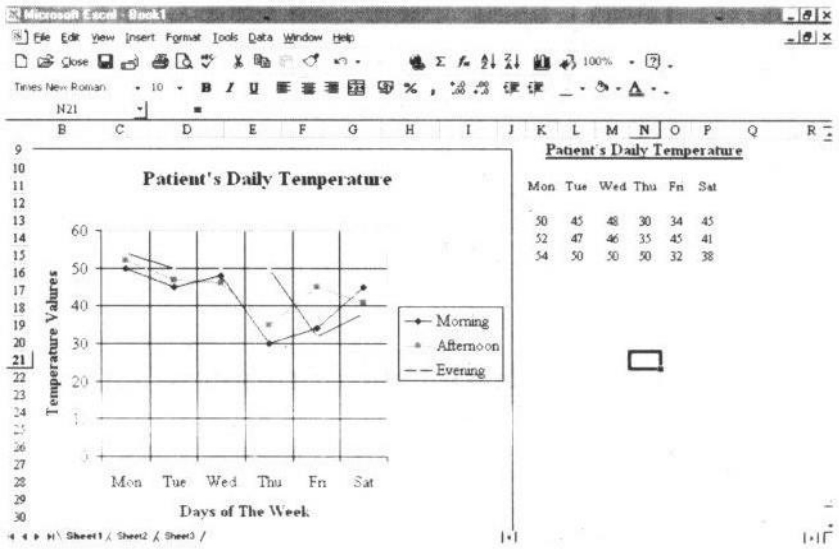

Figure 18.8: Monitoring of patient record

Figure 18.8 is an example of how we can use Microsoft Excel worksheet to monitor the temperature of a patient.

As you already know from our knowledge of Electronic Spreadsheet application in this course, the moment we enter a new value into the table on the right hand side, the graph on the left will be updated automatically.
For example, assuming the Patient's temperature has only been taken up to the Morning of Thursday, the graph will look as found figure 18.9:

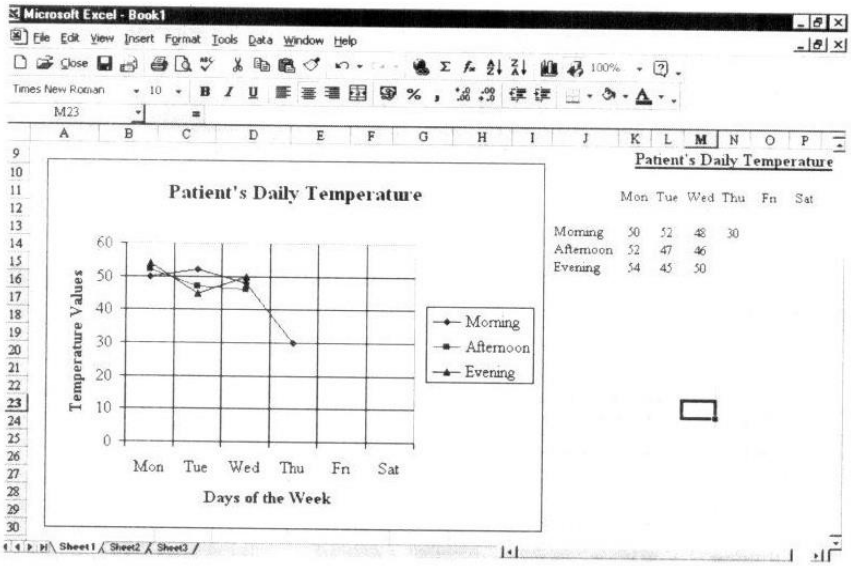

Figure 18.9: Dynamic temperature record

As you will see above, mere looking at the graph shows the behaviour of the patient's temperature records.

Such a worksheet can be prepared for the whole period of the patient's stay in the hospital as shown in figure 18.10.

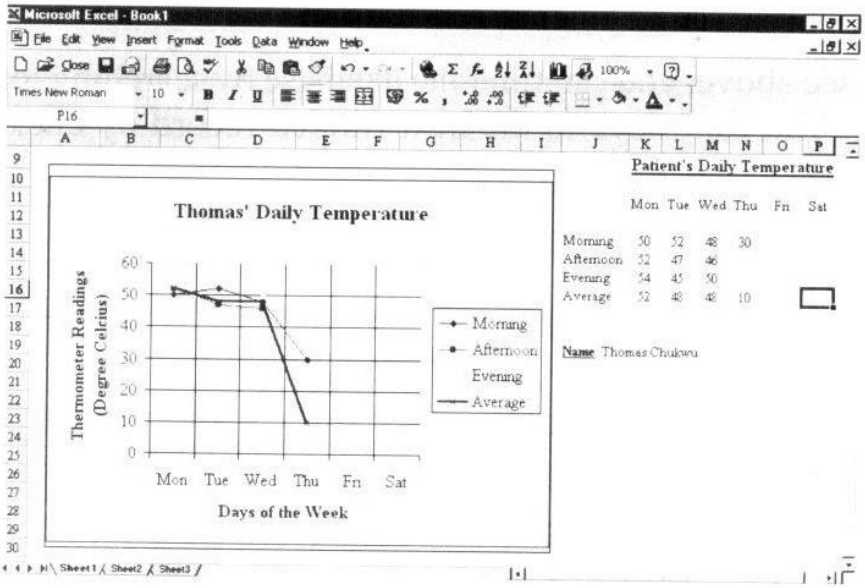

Figure 18.10: Patient Record

SELF-ASSESSMENT EXERCISE 18.1

Using the figure above, write out the formula to calculate the Average Daily Temperature of the patient.

ANSWER TO SELF-ASSESSMENT EXERCISE

In cell 316, you can type "Average". Then in cell IC16, type the formula as follows:

= (K13+K 14+K15)/3

or

= AVERAGE (KI3:15) assuming you decide to plot your values 8 for the average temperature, your screen will look like the one below:

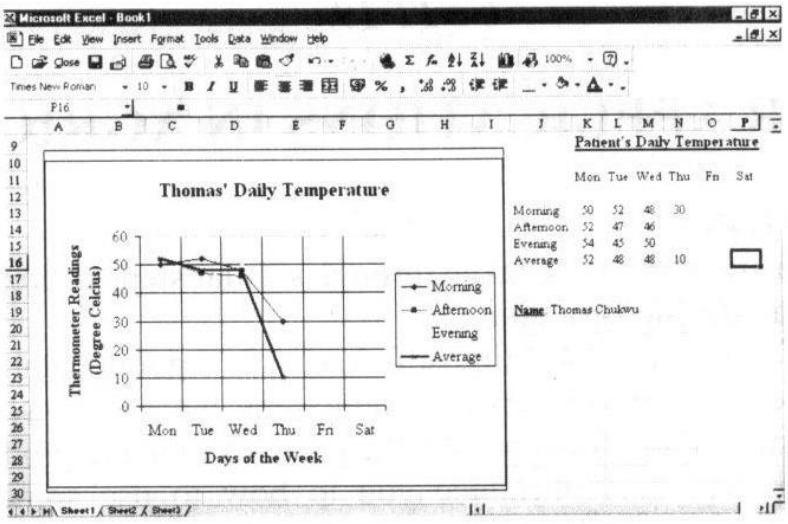

Figure 18.11: result of the plot in the formula

We shall now round up this unit.

4.0 CONCLUSION

In this unit, we have learnt how to apply computer applications in both the training and practice of Health-Care Professionals, especially the Nurses since they are the ones the patients first have access to before the Doctors.

You have seen how the computer plays a very important role in the training of Nurses in addition to their practical training in the hospitals as a professional.
The computer is a very useful tool in keeping the records of patients in the hospitals and clinics as you have seen it demonstrated in this unit.

5.0 SUMMARY

In the earlier units you have been introduced to the use of Microsoft Excel 2016 and Microsoft Access 2016. This unit has practically demonstrated with you how you can use these application software to keep various records of patients in the hospital or clinics for easy use by the Nurses or the Doctors.

The next unit will extend the same applications to agriculture.

6.0 TUTOR-MARKED ASSIGNMENTS 17

Do the following assignments and submit your answers to your Tutor.

i. State two roles computer applications can play in the Medical Profession.
ii. Define an expert System as a computer application in the Medical profession
iii. Among the applications software you have studied in this course, which one is most appropriate in keeping full records of patients in the hospital?.

7.0 REFERENCES/FURTHER READING

Microsoft corporation, Microsoft Access 2016, 2019.

Microsoft Corporation, Microsoft Excel 2016, 2019.

The Learning Company, Inc; Body Works 6.0, 1997.

ANSWERS TO TMA

1(a) in training of Health-Care professionals, the Computer-Aided Learning Software

UNIT 19: COMPUTER APPLICATIONS IN AGRICULTURE

CONTENTS

1.0 INTRODUCTION

In this unit, you are going to be taken through similar steps in creating a 'database for records of items associated with Agriculture.

As learnt in unit 14**,** Microsoft Access is a good Database application for creating a database of records. In Agricultural productions, there is always the need to have a good monitoring system to study for example, the growths of some products such as plants and animals. This unit will also introduce you to how to use some of the computer applications to monitor such Agricultural processes.

The study objectives are as follows in section 2.0.

2.0 OBJECTIVES

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

i explain the various areas of applications of the computer in Agriculture
ii use some of the computer applications already studied in agricultural Data management.

3.0 MAIN CONTENT

3.1 Keeping a Database of Agricultural Products

Just as we did in the last unit on computer applications in Nursing, we would also attempt to create a database for agricultural products.
After loading the Microsoft Access 2000 software, following the steps below after loading the program:

i Type Plants in the dialog box for your File name of database to create.
ii Select "Create table by using template"
iii Select your sample table and fields as in figure.

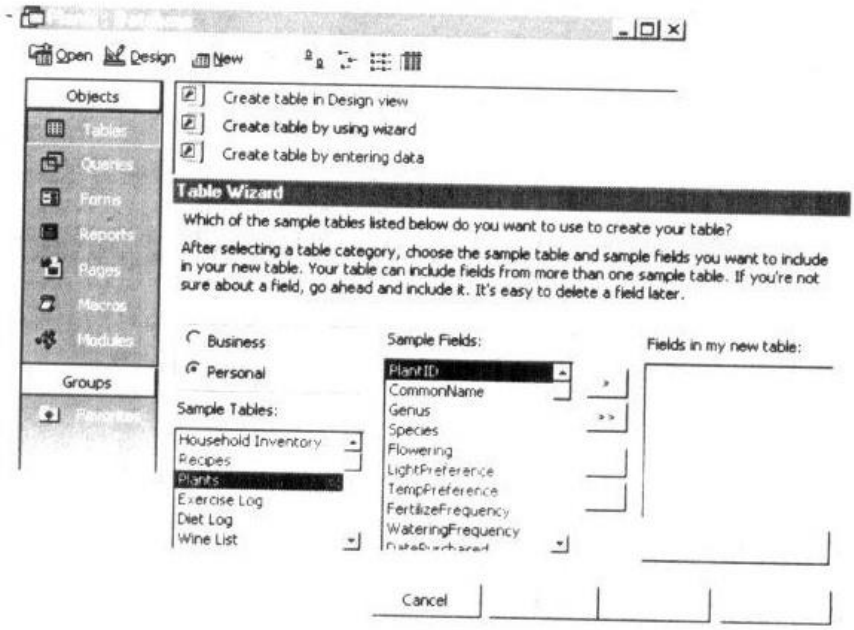

Figure 19.1:Sample table and fields

In the next screen, don't select the option of setting a primary key. We shall follow the next steps until we start entering data into the table.

Save the table and then click the button for "Forms" on the left panel to create your form. Allow the wizard to create the form. Then the form designed would be in the format in Figure 19.2:

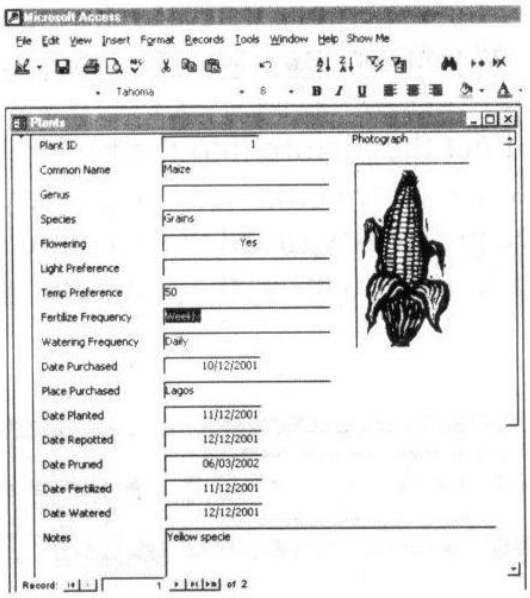

Figure 19.2: Form Design

We will need to do some modifications to our form in order to have exactly what is in the figure 19.2.

i Select the required form (Plants)
ii Click the secondary mouse button (i.e. the right button)
iii Select Design View as seen in figure 19.3:

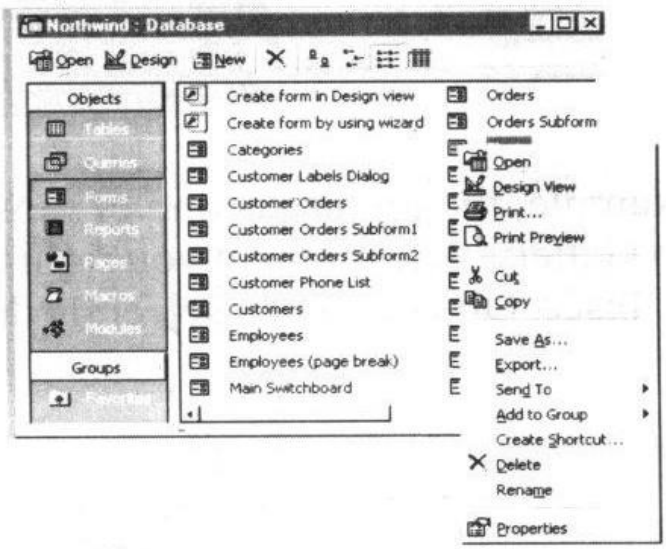

Figure 19.3: Design view

On carrying out the last step, we will have the screen that in figure 19.4:

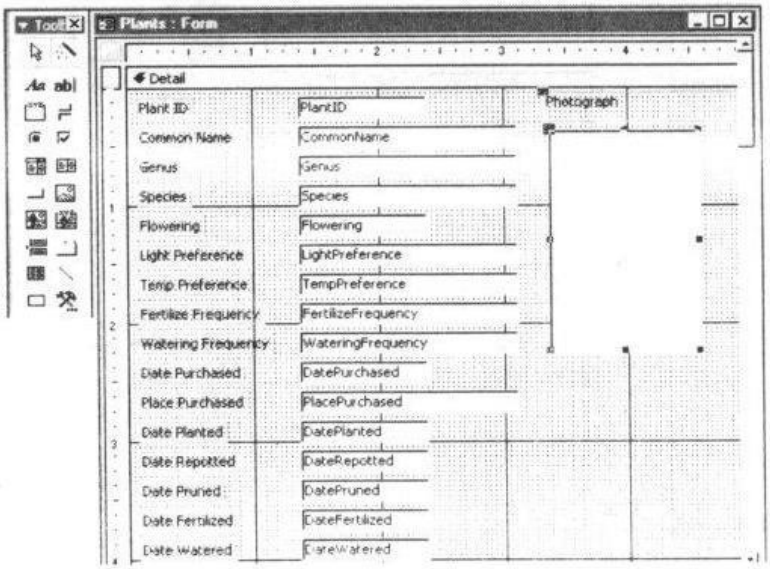

Figure 19.4: Form with Photograph box

Please observe that the "Photograph" field is taken to the bottom of the form when you use wizard to create your form. Now, in this design view, select the photograph field and drag the two boxes (i.e. the field name and the empty space) to the top right as seen in figure 19.4.

In fact, in the design view, we can modify the form layout according to your taste.

We may ask, "how do I get the picture into the picture box?" That is very simple, simply right-click the bot to insert and the computer will guide you through where to locate your picture, assuming you have previously saved the picture and kept the file in a folder. You will type the address of the file name to insert the picture as seen in figure 19.5:

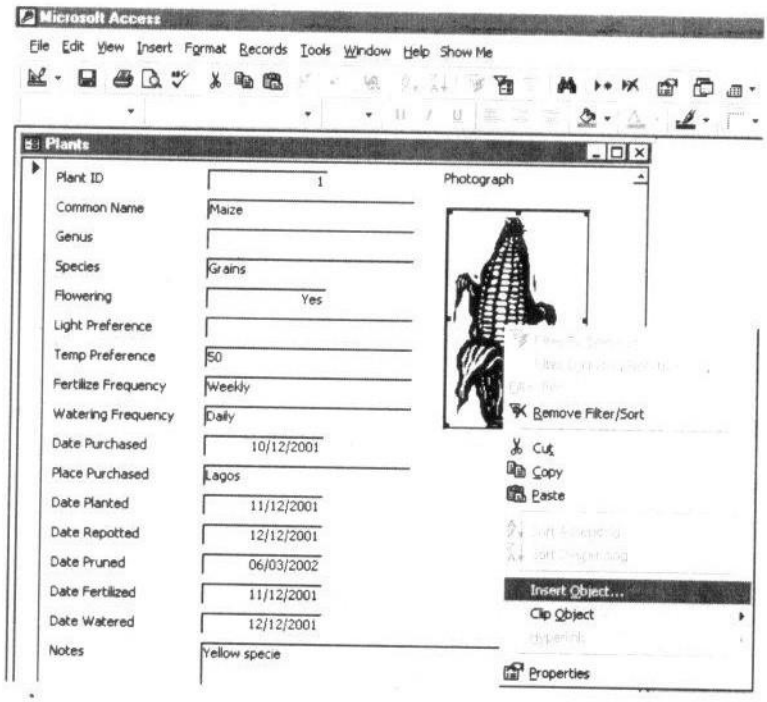

Figure 19.5: Form with Photograph Picture

However, in the figure 19.5 example, the picture is one of those available in Microsoft Office 2016 under Microsoft Clip Gallery. The moment we right-click the picture box, the computer will show an option to "Insert Object". Then select the Microsoft Clip Gallery as seen in figure 19.6:

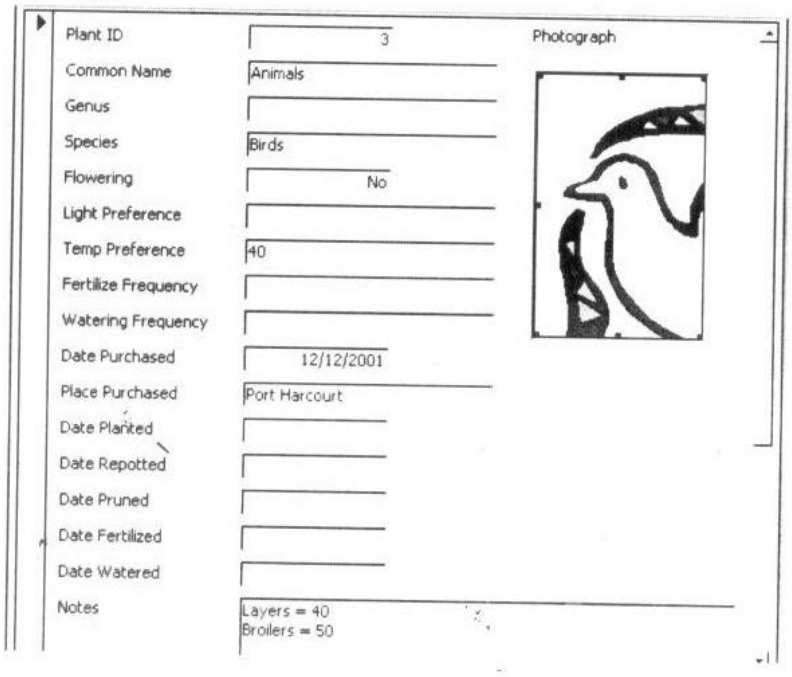

Figure 19.6: Inserted Object

Now, look at the next figure below:

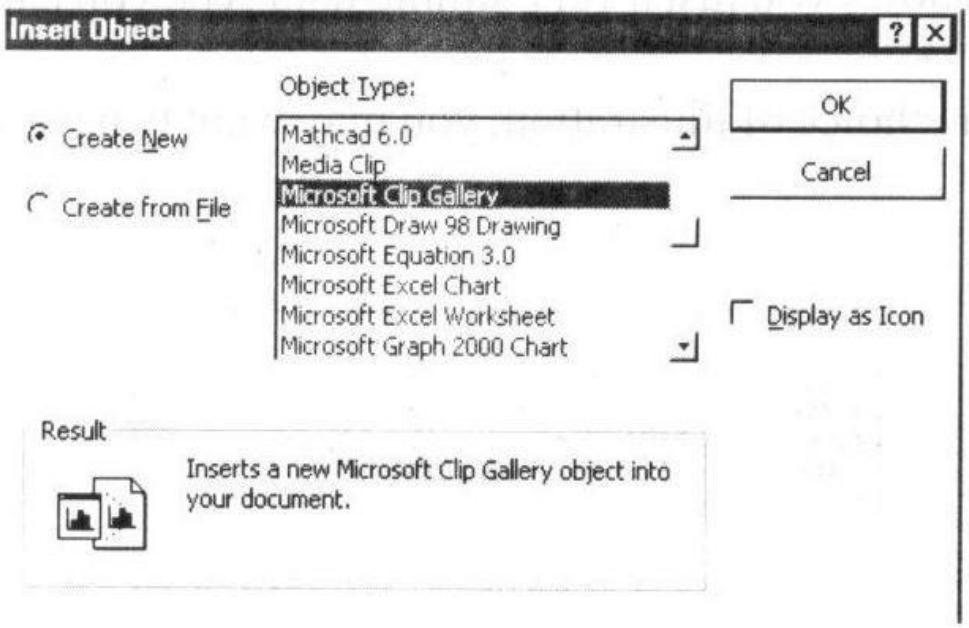

Figure 19.7: Object with Microsoft chip Gallery

As seen in figure 19.7, we can enter our data on animals into the same database, but that means you wouldn't have called the table "Plants" for easy identification. We can decide to add more relevant fields to your database and then give the table a broader name or create a different table for animals.

We will now move to the next section of this unit after attempting the following question.

SELF-ASSESSMENT EXERCISE 19.1

What are the irrelevant fields in the above table for animal-group records?

ANSWER TO SELF-ASSESSMENT EXERCISE

i Plant ID
ii Flowering
iii Fertilizer Frequency
iv Watering Frequency
v Date Planted

vi Date Replanted
vii Date Pruned
viii Date Fertilized
ix Date Watered

You can modify the above fields by using your Design View option.

3.2 Data Analysis of Agricultural Products

There are various types of data related to Agriculture that the Computer can help you to analyze a part from keeping a database for them as seen in the last section.
Look at figure 19.8 to see an example:

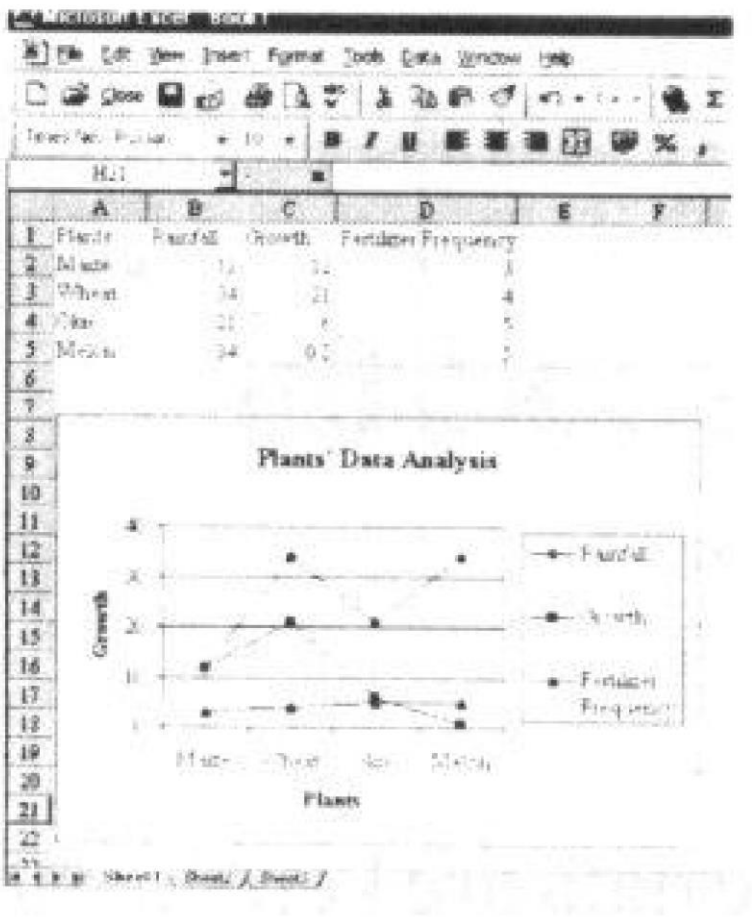

figure 19.8: Sample Data Analysis
figure 19.8 shows us a very simple data type we can keep in relation to agriculture.

Depending on our choice of illustration you may wish to have something as shown in figure 19.8 and 19.9:

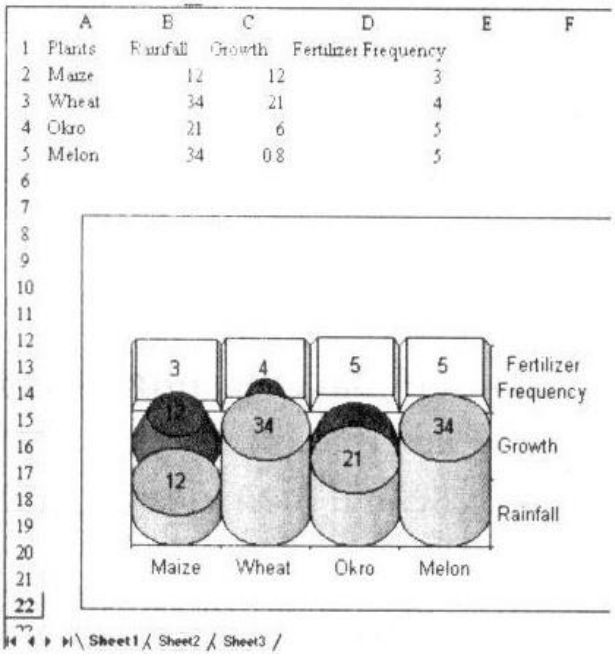

figure 19.9: Change Gallery

To change the choice of the chart type, simply right-click the mouse to get the screen as shown in figure 19.10.

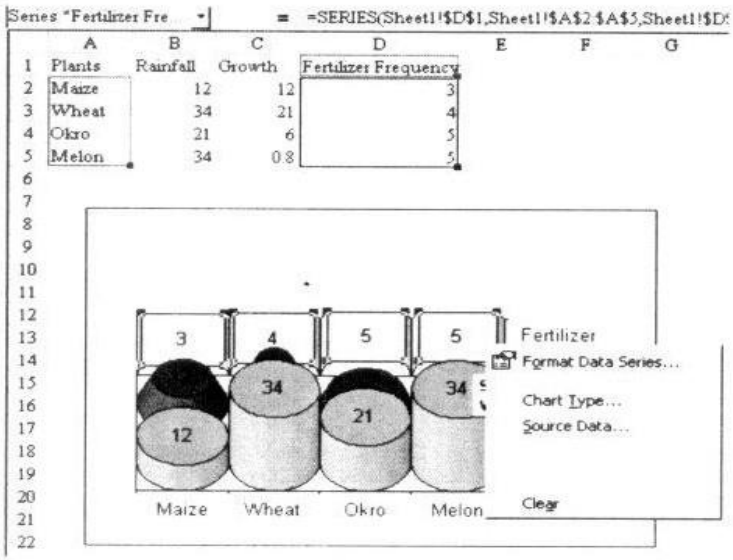

Figure 19.10: Change of chart choice process

Remember that the moment we change our data, the graph will be updated automatically.

For example, we may decide to keep another set of data in a new sheet within the workbook as shown in figure 19.11:

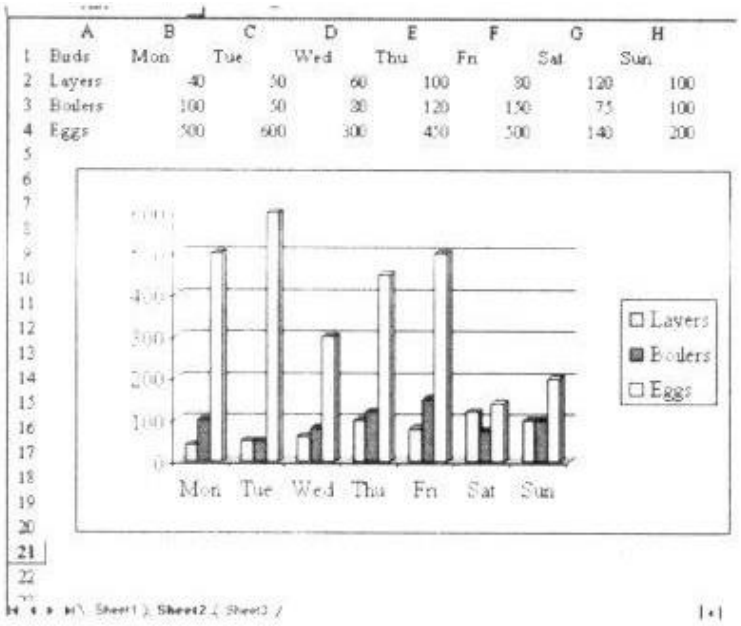

Figure 19.11: New Chart for the same data

As we will observe from in figure 19.11, the data above are kept in sheet 2 of the workbook.

SELF-ASSESSMENT EXERCISE 19.2

How do we rename the worksheet to appropriately identify the records in it?

ANSWER TO SELF-ASSESSMENT EXERCISE

Double-click the sheet tab name below the worksheet and type the new name. Remember, any calculation we need to carry out in respect of the data values can be done by using the appropriate Microsoft Excel built- in functions.

We shall now round up this unit.

4.0 CONCLUSION

In this unit, we been taken through various types of areas you can use any of the computer applications to manage any data in Agriculture.
Just as we did in the last unit under computer applications in Nursing, our Agricultural data can be kept in a database. This is essential for a very large and organized industrial farm.

Microsoft Excel can be a very good tool for us to analyze or illustrate our agricultural data as we have shown in this unit.

5.0 SUMMARY

This unit has given us another opportunity to perfect the use of Microsoft Access and Microsoft Excel. For example, we have learnt how to insert picture into a form.

In Microsoft excel, we have also how to change your chart type. You need to carry out more exercises on your own to improve your skills on the use of all the applications you have learnt in this course.

Later in this studies, we will be need to use also SPSS to carry out more complex Statistical Data Analysis. We have learnt so much in this course on various computer applications. Nevertheless, before we round up the course, will observe in the next unit how we can manage your computer system with a major component of the Operating System.

6.0 TUTOR-MARKED ASSIGNMENTS 18

Attempt the following assignments and submit the answers to your Tutor.

i. State two important areas of Agricultural data management computer applications can be very useful.

ii. Assuming you want to find out how two sets of data of agricultural products relate, what type of analysis will be appropriate and what tool will you use for the purpose

iii. Discuss the appropriate way of keeping a database for different types of agricultural products in an industrialized farm.

7.0 REFERENCES/FURTHER READING

Microsoft Corporation, Microsoft Excel 2016, 2016.

Microsoft Corporation, Microsoft access 2016, 2016.

SPSS Inc., SPSS for Windows, 2018.

ANSWER TO TMA

i. (a) For keeping a computer database of agricultural products.
(b) For proper analysis and monitoring of variable data of agricultural products

ii. Regression analysis or Correction analysis will be appropriate. Microsoft Excel or SPSS will be good tools.

iii. You can create a single database but with different tables for the different agricultural products.

UNIT 20: MANAGING YOUR COMPUTER USING THE CONTROL PANEL

CONTENTS

1.0 INTRODUCTION

Having just gone through the previous units that introduced us to various applications, it is essential for us to know how Windows OS will assist us to also manage your Computer devices. The major component of Windows that has the tools for doing this is the control Panel.

The Control Panel is also where you have the facility to install other applications and new hardware devices. We shall consider below our study objectives for this unit.

2.0 OBJECTIVES

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

i. identify the main components of the windows Control Panel
ii. explain some settings that can only be done within the Control Panel.

3.0 MAIN CONTENT

3.1 Introducing the Control Panel

The figure 20.1 screen is what we call the Control Panel Window:

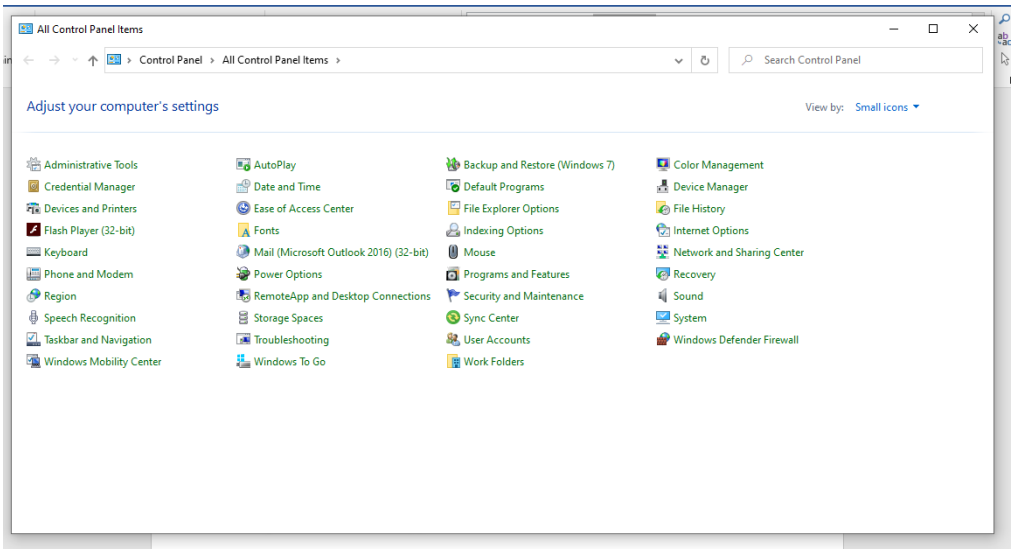

Figure 20.1: Control Panel Window

We can open Control Panel window by performing any of the following operation:

i By using the Start Bar.

To do this, we will click the start button, then select "Settings" and then click Control Panel if you are using windows XP or Windows 7, if not type “Control Panel” in the search box in Windows 10. The procedure is confirmed below:

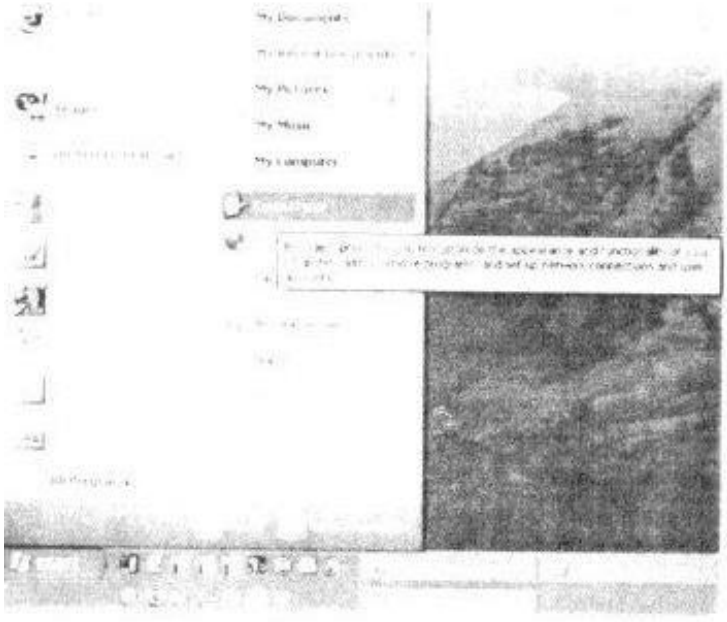

Figure 20.2a: Start menu showing control panel for windows XP or 7

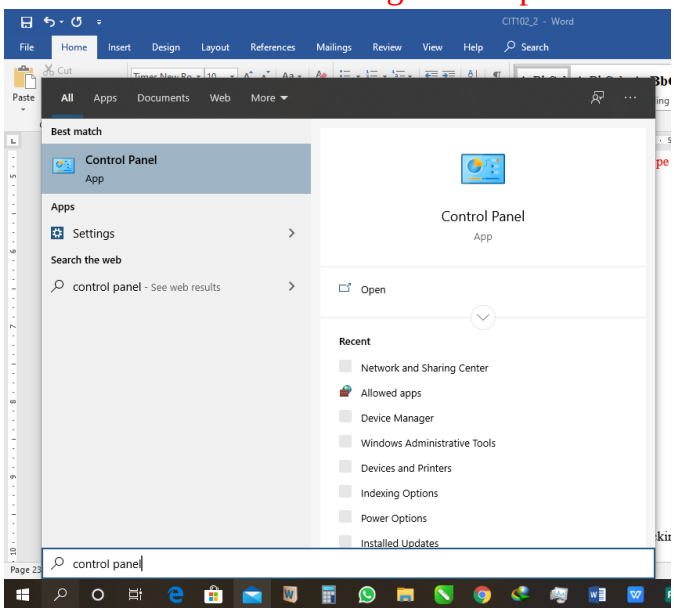

Figure 20.2b: Start menu showing control panel for windows 8.1 or 10

By opening "My Computer" on the Desktop and then Double-clicking (depending on the configuration of your desktop) the icon on "My Computer, we will have access to the control Panel for windows XP and 7 but for windows 10, two more steps need to be taken, which is;

i. click on settings from the computer tab on explorer then
ii. type control panel in the search box. This is shown in figure 20.3a, b,c:

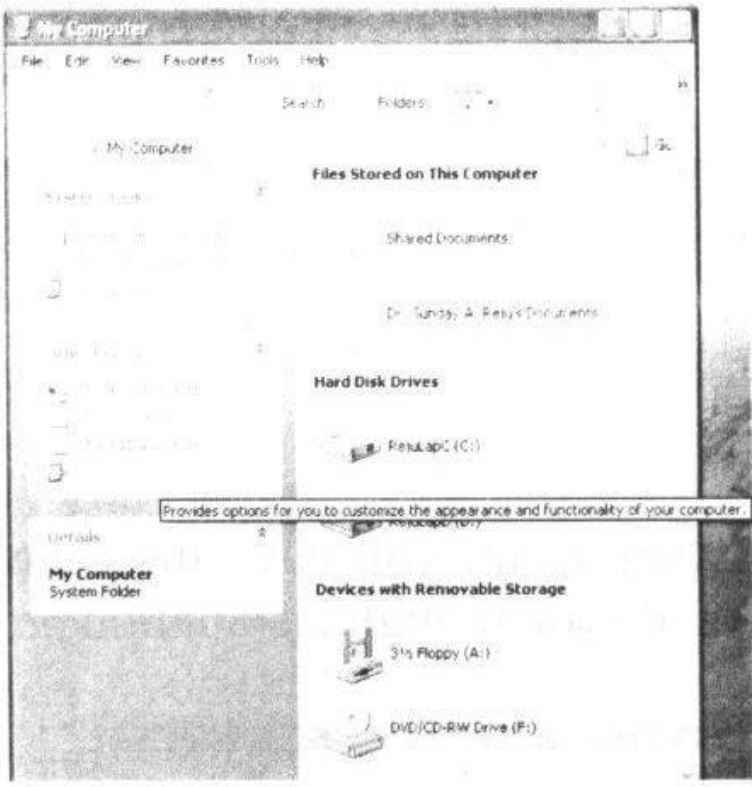

Figure 20.3a: Getting to Control Panel through Explorer for windows XP and 7

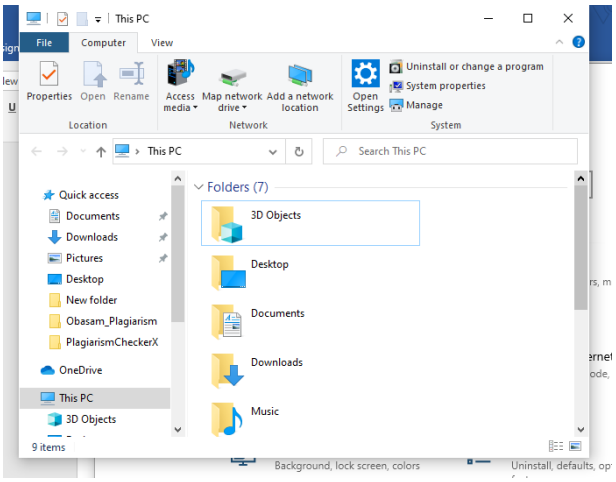

Figure 20.3b: Step 1, Getting to Control Panel through Explorer for windows 10

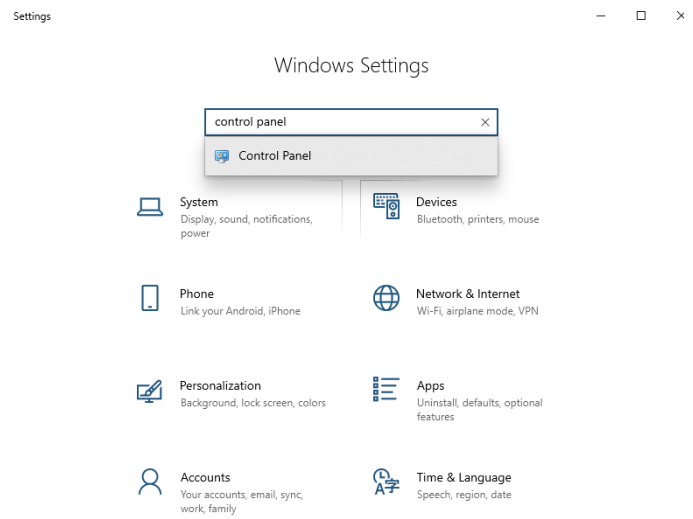

Figure 20.3b: Step 2, Getting to Control Panel through Explorer for windows 10

By using the Windows Explorer bar.

Down the "Folders" column or what we have seen in the last unit as the Windows Explorer bar, you have again access to the Control Panel as shown 20.4:

Figure 20.4: Access to Control panel through Explorer for Windows XP and 7

We have observed from the figure 20.4, the Control Panel has all the utilities to configure your computer devices and also to carry out some essential settings we need to activate on your computer machine. We shall introduce you to some common basic components of the Control Panel we are

likely to frequently encounter. In our day to day application of the procedures specified in some sections of the unit discussed.

3.2 Frequently Used Components

In brief, some components you are likely going to use as it is common with other computer users are as follows:

i Add New Hardware
ii Add/remove Programs
iii Date/Time
iv Display
v Folder Options
vi Internet Options
vii Keyboard
viii Modems
ix Mouse
x Printers
xi Regional Settings
xii Sounds and Multimedia
xiii System
xiv Desktop Themes

3.2.1 Add New Hardware

By double-clicking this component, you have the figure 20.5 screen and you can follow the screen instructions to guide you through installation process of any new hardware device.

Figure 20.5: Adding new Hardware in Windows XP

However, it is good to let you know that every hardware device you need to install must have alongside its DRIVER. A Driver is simply a software that works with the OS and ensures that there is consistency in the way a device works with the computer machine. A Driver actually acts as a translator of the meaning of the signals received by the OS from the device.

3.2.2 Add/Remove Programs

The screen for this component is as found below with its various options:

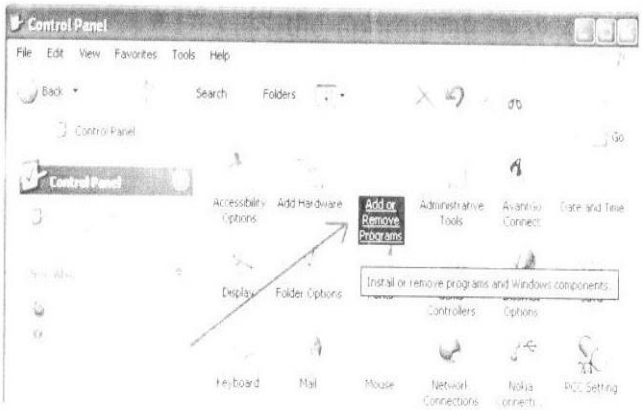

Figure 20.6a: Add/remove Screen on Windows XP

But for higher windows such as windows 7, 8.1 and 10 it is called “Programs and Features”

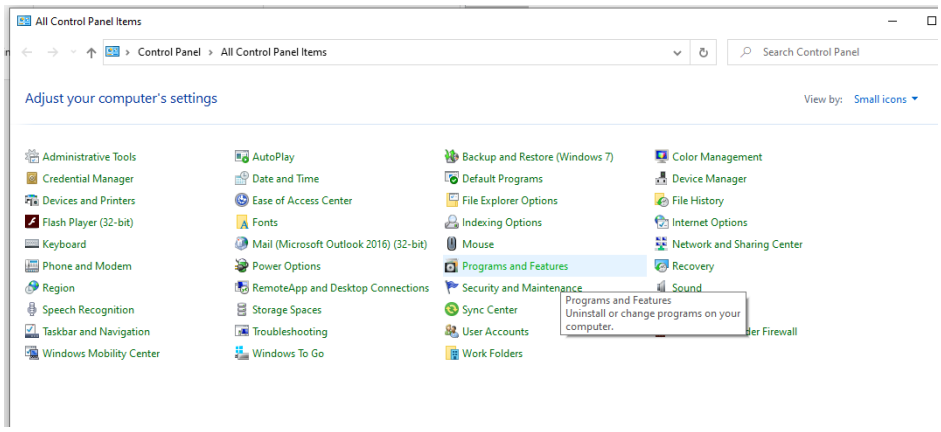

Figure 20.6a: Add/remove Screen on Windows 10

i To Install New Software
ii To Uninstall Programs already installed
iii To Install windows Components
iv To create Startup Disk

3.2.2 Date/Time

This component allows you to update the date and time settings on your Computer. The screen is as in figure 20.7:

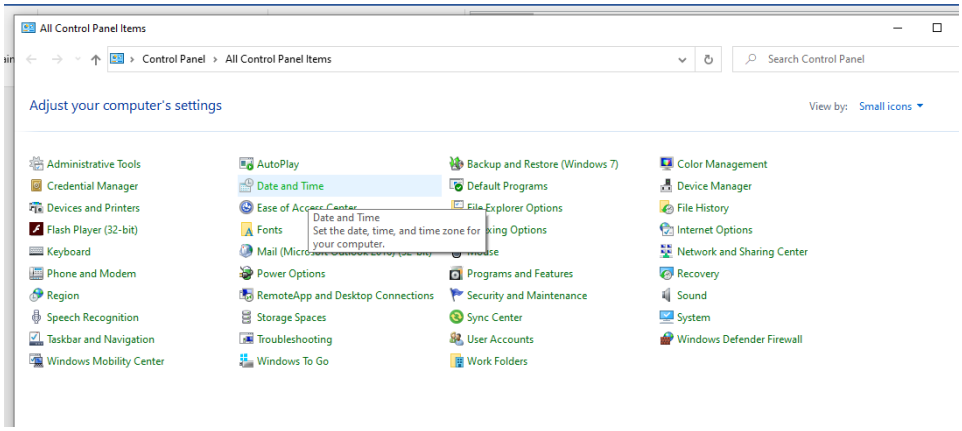

Figure 20.7: Date and Time for windows 10

3.2.4 Regional Settings

These settings are shown in the figure 20.8, and

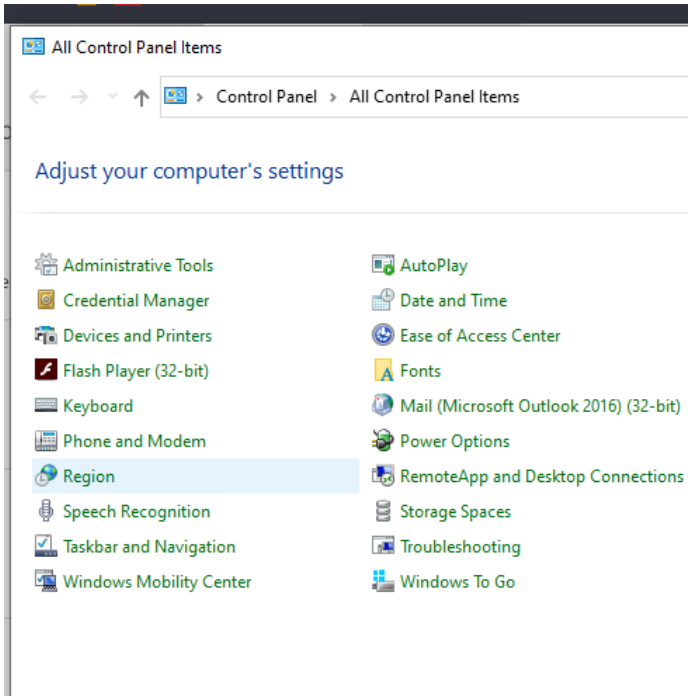

Figure 20.8: region and language Settings

Two of these options that may interest you are the "Number" and "Currency" settings. From here, we can set the currency symbol to "N" for Nigerian "Naira" for example. This enables us to show that "N" is automatically typed behind the currency values, especially when using MS-Excel, for example.

3.2.5 Mouse and Keyboard

As we observe on one of the tab options of the Mouse Properties screen as shown in figure 20.9, we can configure the Mouse buttons and speed of clicking. Moreover, we can select our own choice of pointers.

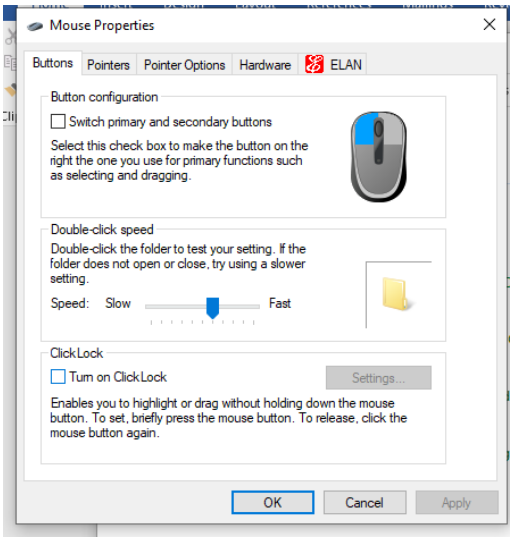

Figure 20.9: Mouse properties

For the Keyboard settings, you can configure the speed and the Language as shown in the figure below:

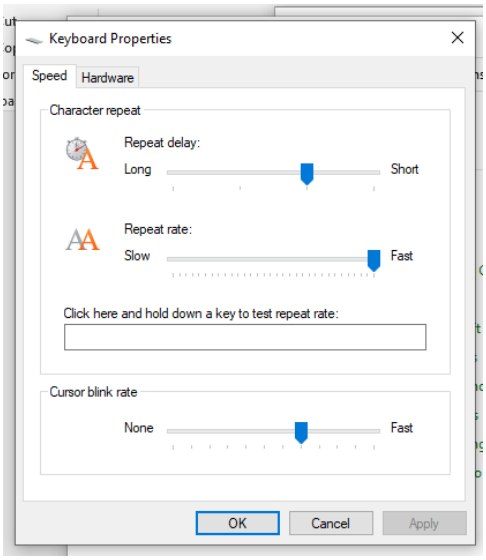

Figure 20.10: Keyboard Settings

3.2.6 File Explorer Options

Activate the screen for this Control Panel component. There are many operators we can perform on the Desktop and Folders.

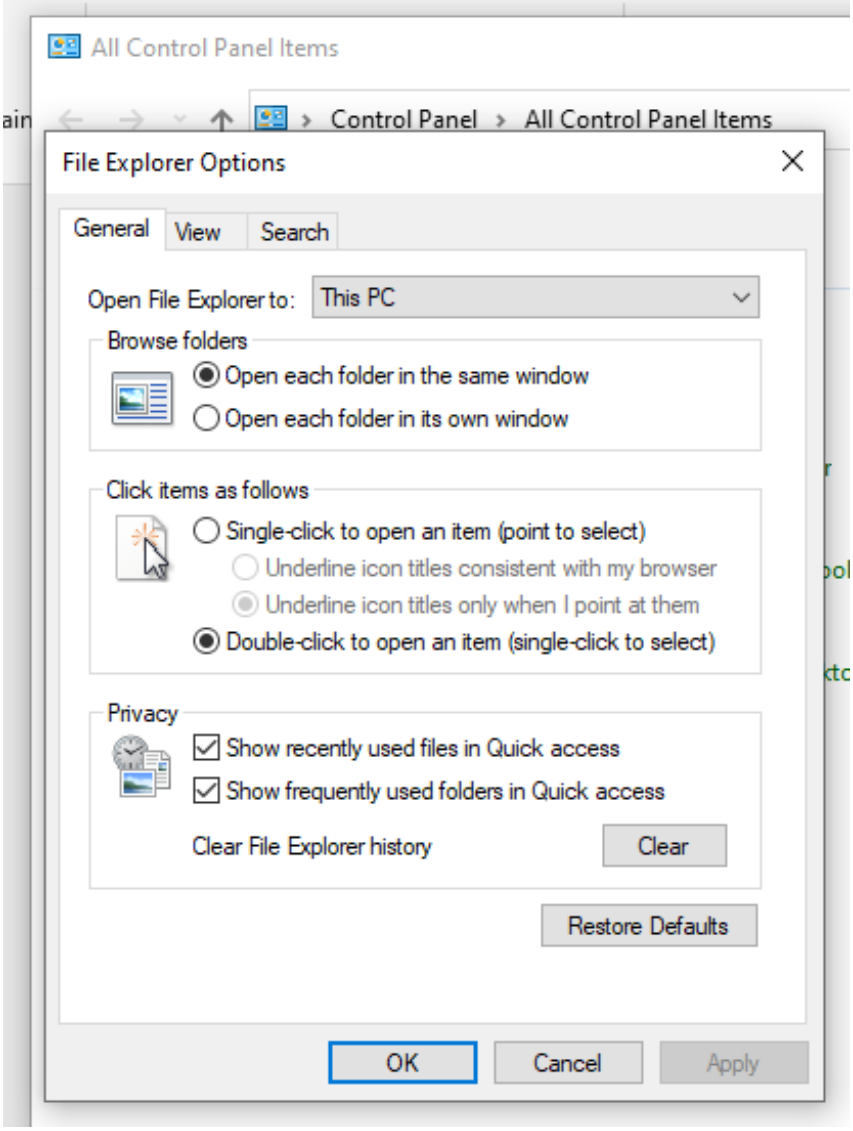

Figure 20.11: File Explorer Options

For example, you can configure you desktop and Folders or Files in such a way that a single click of the Primary button instead of double- clicking can open the selected item.

3.2.7 System

This is an important components, though to be used carefully. Look at the following screen in figure 20.12:

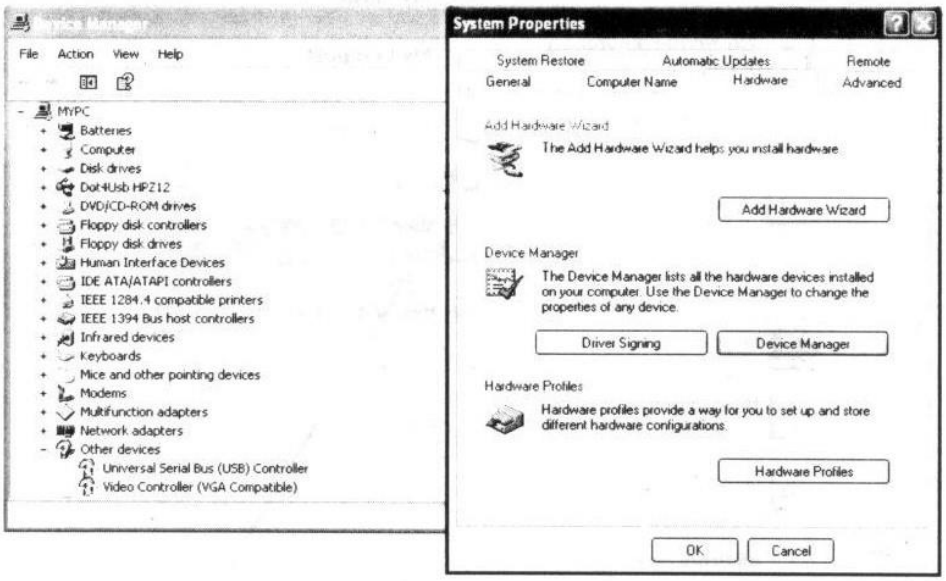

Figure 20.12: Device Manager and System Properties

This component keeps the list of all the devices installed on your computer machine.

This Control Panel component is used to configure the Desktop wallpaper and Mouse pointers with the associated sound effects. Already, there are a number of themes for us to select from.

Now, as we round up this unit, system please be advised to interact with other components of the Control Panel such as Modems, and Internet Options. For example, the Modem should be properly installed in order to be able to send fax with the computer or to have it connected to the Internet via a telephone line.
However, apart from the modem, modern phones has the Internet connectivity capacity.

Important Comment

The items within the Control Panel are not all the same for all computer systems apart from the standard components that Windows installs for all machines. Some components are added by Windows when you install a new device or depending what devices are available on the particular Computer Hardware system.

Finally, the "Printers" component of the Control Panel is like the screen in figure 20.13:

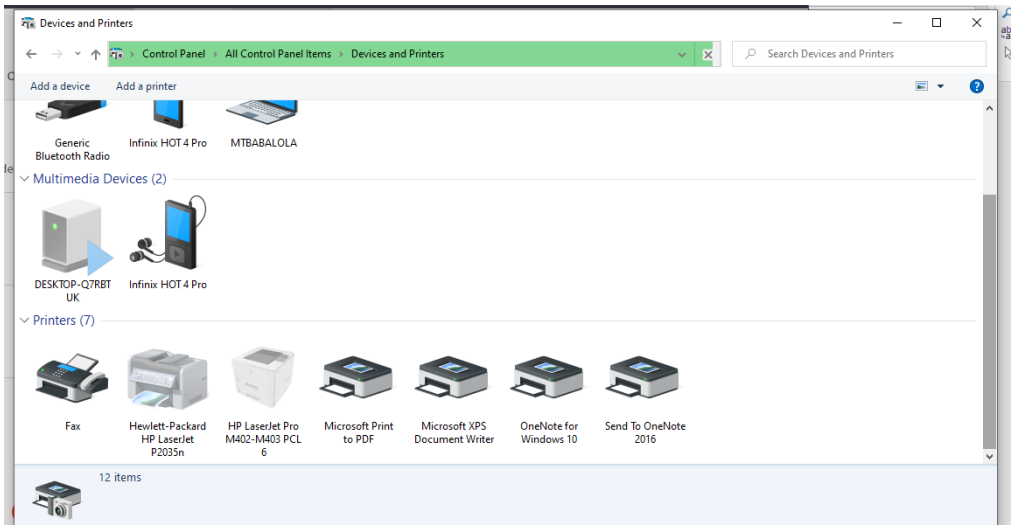

Figure 20.13: Printer Component of the Control Panel in windows 10

The printers window can also be opened as seen in figure 20.14:

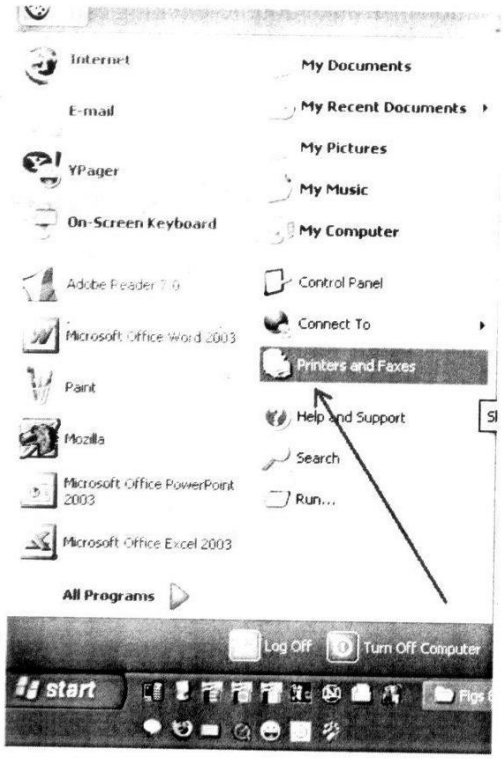

Figure 20.14: Printer Window for windows XP and 7

This important component helps you to properly install the printer and use your printer, else windows will not identify it.

4.0 CONCLUSION

This unit has taken us through the common components of the Control Panel. As we have learned in this unit, the Control Panel helps us to configure the devices that has been installed on our computer. The Control Panel also provides us with the software tool to install or remove other programs on our computer system.

5.0 SUMMARY

As we have learned in this unit, the Control Panel keeps the list of all the devices and software properly installed on our computer system. When some devices are not working properly, we need to go through some troubleshooting procedure or identify the problems via the Control Panel in addition to physical inspection.

6.0 TUTOR-MARKED ASSIGNMENTS 19

You should do the following assignments and submit your answers to your Tutor for marking.

i. Identify two major components of the Control Panel that help you to install new hardware and software.
ii. Explain the various ways of opening the Control Panel Window iii. Mention the Control Panel components you will use to do the following:
   (a) Setting the computer to use "N" as your currency symbol for your currency values.
   (b) Configuring your Monitor
   (c) Configuring your desktop so as to use a single click of the mouse button to open the items.

7.0 REFERENCES/FURTHER READING

Microsoft Corporation, Windows 10, 2020 upgrade

ANSWER TO TMA

1. They Are
   Add New Hardware, and
   Add/remove programs
2. (a) By opening “My Computer" on the Desktop

(b) Click start button and select "Settings"

(c) Open the windows Explorer Window and scroll down the Folders Column.

3. (a) "Regional settings" and then the "Currency" Option

(b) Display

(c) Folder Options

Notes

NATIONAL OPEN UNIVERSITY OF NIGERIA

Form QST1

Questionnaire

Dear Student,

While studying the units of this course, you may have found certain portions of the text difficult to comprehend. We wish to know your difficulties and suggestions, in order to improve the course. Therefore, we request you to fill out and send us the following questionnaire, which pertains to this course. If you find the space provided insufficient, kindly use additional sheet.

Course Code: _____ Course Title:_

1. How many hours did you need for studying each of these units?

Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
No. of hours															
Unit	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
No. of hours															

2. Which of these units do you find most difficult to understand?

3. Please give specific problem you find difficult with the unit

_____
_____
_____
_____

4. How would you like the unit improved?

_____
_____
_____

Please Mail to
The Course Coordinator……. THROUGH the Study Centre Manager
National Open University of Nigeria Victoria Island Lagos.

NATIONAL OPEN UNIVERSITY OF NIGERIA

Form QST2

Questionnaire

In the questions below, we ask you to reflect on your experience of the course as a whole.

1	Course Code and Title.....
2	Mother tongue .....
3	I am registered for a ..... Degree/Programme
4	Why did I choose to take this course? .....
5	Which study unit did I enjoy the most and why?.....
6	Which study unit did I enjoy the least and why?.....
7	Was the course material easy to understand or difficult?.....
8	Which particular topic do I understand better than before and how?..... .....
9	Does the course have any practical applications in the real world, e.g. for the work I currently do?...YES/NO? EXPLAIN..... .....
10	What aspects would I like to know more about or study further?.....
11	How could the course be improved?.....
12	Other comments about the course (***Please Tick***).....

Items	**Excellent**	**Very Good**	**Good**	**Poor**	Give specific examples, if poor
Presentation Quality	☐	☐	☐	☐	_____
Language and Style	☐	☐	☐	☐	_____
Illustrations Used (diagrams, tables, etc.)	☐	☐	☐	☐	_____
Conceptual Clarity	☐	☐	☐	☐	_____
Self Assessment Questions	☐	☐	☐	☐	_____
Facilitators response to TMA Questions	☐	☐	☐	☐	_____