

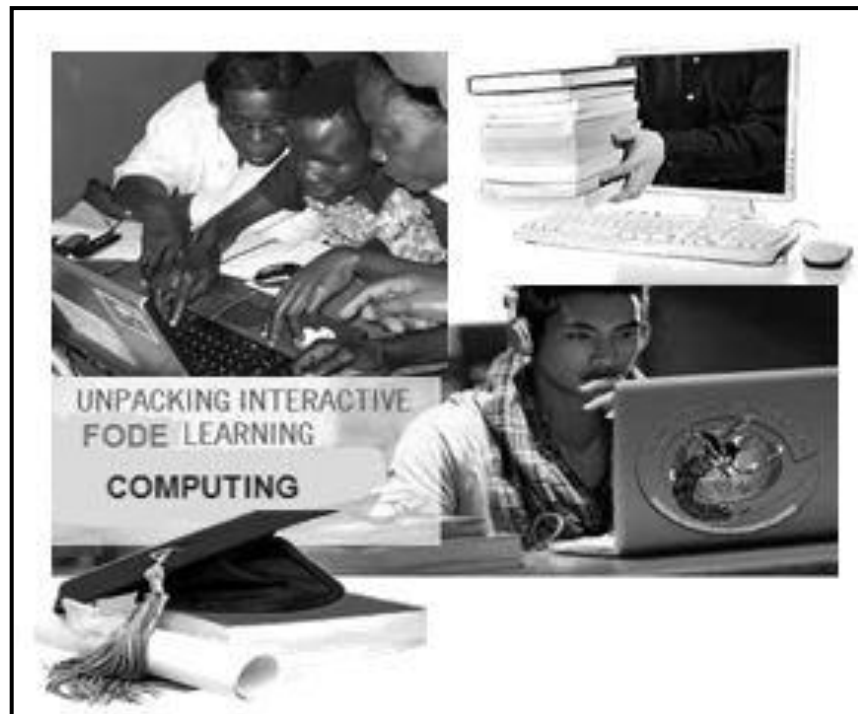


DEPARTMENT OF EDUCATION

GRADE 10

DESIGN AND TECHNOLOGY COMPUTING

UNIT 1



COMPUTER BASICS

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FLEXIBLE OPEN AND DISTANCE EDUCATION
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FOR DEPARTMENT OF EDUCATION
PAPUA NEW GUINEA

GRADE 10 DESIGN AND TECHNOLOGY-COMPUTING

UNIT 1

COMPUTER BASICS

- **THE COMPUTER**
- **WORKING WITH THE COMPUTER**
- **FILE MANAGEMENT**
- **BASIC SOFTWARE APPLICATIONS REVIEW**

Acknowledgments

We acknowledge the contributions of all Secondary Teachers who in one way or another helped to develop this Course.

Our profound gratitude goes to the former Principal of FODE, Mr. Demas Tongogo for leading FODE team towards this great achievement. Special thanks to the FODE IT Edit Team and SRC Members who played an active role in critiquing and editing to ensure quality control for this Unit.

We also acknowledge the professional guidance provided by the Curriculum Assessment Division throughout the process of writing especially to the late Mr. Tobias Gena.

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DIANA TEIT AKIS
PRINCIPAL

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TABLE OF CONTENTS**Page**

TITLE	1
ACKNOWLEDGMENTS	2
CONTENTS	3
SECRETARY'S MESSAGE.....	4
COURSE INTRODUCTION.....	5
UNIT INTRODUCTION.....	6
☐ Lesson 1 Definition and Characteristics of Computer	10
☐ Lesson 2 Generations of Computers	22
☐ Lesson 3 Computer Hardware	34
☐ Lesson 4 The Computer Peripherals	47
☐ Lesson 5 Input and Output Devices	54
☐ Lesson 6 The Computer Software	75
Answers to Practice Exercises 1 – 6	84
TOPIC 2: WORKING WITH THE COMPUTER.....	89
☐ Lesson 7 Starting the Computer	90
☐ Lesson 8 Basic Keyboarding Review	99
☐ Lesson 9 The Graphical User Interface	104
☐ Lesson 10 Data Handling	112
☐ Lesson 11 Storage Devices	120
☐ Lesson 12 Data Security	128
Answers to Practice Exercises 7 – 12.....	136
TOPIC 3: FILE MANAGEMENT	142
☐ Lesson 13 File Management	144
☐ Lesson 14 How to Open a File	156
☐ Lesson 15 How to Copy a File	163
☐ Lesson 16 How to Name and Rename Files.....	172
☐ Lesson 17 How to Delete Files	181
☐ Lesson 18 How to Create Back Up for Files.....	188
Answers to Practice Exercises 13 – 18.....	195
TOPIC 4: BASIC SOFTWARE APPLICATIONS REVIEW.....	203
☐ Lesson 19 Review on Word Processing 1	205
☐ Lesson 20 Review on Formatting Documents.....	214
☐ Lesson 21 Review on Basic Presentation Skills.....	229
☐ Lesson 22 Adding Basics to the Presentation.....	242
☐ Lesson 23 Review on Spreadsheet 1.....	254
☐ Lesson 24 Review on Creating and Formatting Spreadsheet	264
Answers to Practice Exercises 19 – 24.....	274
Bibliography	280
Glossary of Terms	281

SECRETARY'S MESSAGE

Achieving a better future by individual students and their families, communities or the nation as a whole, depends on the kind of curriculum and the way it is delivered.

This course is a part of the new Flexible, Open and Distance Education curriculum. The learning outcomes are student-centred and allows for them to be demonstrated and assessed.

It maintains the rationale, goals, aims and principles of the national curriculum and identifies the knowledge, skills, attitudes and values that students should achieve.

This is a provision by Flexible, Open and Distance Education as an alternative pathway of formal education.

The course promotes Papua New Guinea values and beliefs which are found in our Constitution, Government Policies and Reports. It is developed in line with the National Education Plan (2005 -2014) and addresses an increase in the number of school leavers affected by the lack of access into secondary and higher educational institutions.

Flexible, Open and Distance Education curriculum is guided by the Department of Education's Mission which is fivefold:

To facilitate and promote the integral development of every individual

To develop and encourage an education system satisfies the requirements of Papua New Guinea and its people

To establish, preserve and improve standards of education throughout Papua New Guinea

To make the benefits of such education available as widely as possible to all of the people

To make the education accessible to the poor and physically, mentally and socially handicapped as well as to those who are educationally disadvantaged.

The college is enhanced to provide alternative and comparable pathways for students and adults to complete their education through a one system, many pathways and same outcomes.

It is our vision that Papua New Guineans' harness all appropriate and affordable technologies to pursue this program.

I commend all those teachers, curriculum writers, university lecturers and many others who have contributed in developing this course.



UKE KOMBRA, PhD
Secretary for Education

COURSE INTRODUCTION



Dear Student,

Welcome to the FODE Grade 10 Design and Technology-Computing Course. The Course consists of four units:

UNIT 1: COMPUTER BASICS
UNIT 2: WORD PROCESSING 2
UNIT 3: SPREADSHEET 2
UNIT 4: DATABASE 1

Each unit is divided into 4 Topics which include all of the information you will need for this Course. You must have a functional computer with Microsoft Windows Application programs to fully apply all knowledge, skills and attributes necessary to gain full understanding and efficient transfer of learning for this course. A printer is needed for some assignments require printouts.

Studying Design and Technology-Computing lays the basic foundation of necessary knowledge and aptitudes to contribute to future careers as technicians, programmers, analysts, administrators, managers and developers in the Information Communication Technology world.

Assessments

- **Practice Exercises**

Each lesson in each Unit Book has a Practice Exercise for you to do after the Summary. Answers to the Practice Exercises are found at the end of each Topic in the unit.

- **Assignments**

Each Unit has an Assignment booklet which you will send to FODE Provincial Center for marking. The marked Assignment will be returned to you with comments and advice from your tutor. A mark will be given. This mark is counted towards your final mark in the exam.

- **Examinations**

The FODE national exams are given at the end of the year just like the exams given at secondary schools.

For more information refer to the **Study Guide**.

UNIT INTRODUCTION

Unit 1 is Computer Basics where you will learn about the basic concepts of a computer. It also includes a comprehensive review of the application softwares discussed in Grade 9 Design and Technology-Computing to refresh your skills and memory to enable you more in handling the lessons in this unit. The Unit consists of the following topics.

- | | |
|-----------------|---|
| Topic 1: | The Computer |
| Topic 2: | Working with the Computer |
| Topic 3: | File Management |
| Topic 4: | Basic Software Applications Review |

By the end of this Unit you will have identified and demonstrated appropriate use of a range of hardware components and peripheral devices and use a range of computer skills and techniques. This understanding of the fundamentals of computer will enable you to move a step higher in gaining the necessary knowledge, skills and attributes in computing.

STUDY GUIDE

Below are the steps to guide you in your course study.

Step 1: Read each lesson in the Unit Book carefully. In most cases, reading through a lesson once is not enough. It helps to read something over several times until you understand it. You are not expected to memorise the information in the Unit Book. You should use it as a reference and to learn from the examples given to illustrate important points.

Step 2: After reading the summary of the lesson, start doing the Practice Exercise. You must do only one practice exercise at a time. Then mark it according to the following instruction.

CHECK YOUR ANSWERS AT THE END OF TOPIC 1.

Step 3: After marking your answers, go back to the lesson and correct any mistakes you may have made. Then move on to the next lesson.

Step 4: After completing all the Practice Exercises, do Assignment 1.

Step 5: Now send the completed Assignment booklet to your FODE Provincial Centre for marking.

Follow all these steps 1 - 5 when completing all Unit Books.

Be honest with yourself when you are doing and marking your Practice Exercises as well as completing your Assignment Booklets.

This Unit has a separate assignment booklet for you to use. The information at the end of the last lesson in every Topic will let you know what to do with the assignment exercises. Whenever you need help and advice, contact your tutor or your Provincial Coordinator for assistance. If you are in the NCD or Central Province, we are available on Mondays to Fridays. You can call in anytime between 8 a.m. and 4 p.m. We would be glad to help you. The following icons are used in each Lesson in this Unit. Icons are the symbols used in this book to indicate the parts of your lessons. The following are the meanings of these icons.



Whenever you need help and advice, contact your tutor in the Information Technology Department at FODE.

We hope you enjoy learning this course. All the best!

Information Technology Department

TOPIC 1

THE COMPUTER

Lesson 1: Definition and Characteristics of Computer

Lesson 2: Computer Generations

Lesson 3: Computer Hardware

Lesson 4: The Computer Peripherals

Lesson 5: Input and Output Devices

Lesson 6: The Computer Software

TOPIC 1: DEFINITION AND CHARACTERISTICS OF COMPUTER

In this topic you will learn the basic concepts of a computer. The Topic is designed to familiarise you with computer fundamentals. It aims at enabling you to gain basic understanding of facts and concepts necessary to have a head start in the study of computing.

We are all familiar with the use of calculations in our everyday life. We apply mathematical operations like addition, subtraction, multiplication and many other formulae for calculations. Simpler calculations take less time while complex calculations take a much longer time. So man explored with the idea to develop a machine which can perform this type of arithmetic calculation faster and with full accuracy. This led to the innovation of a device or machine called „**computer**“.

In this topic, you will study about the following:

Lesson 1 defines and state the characteristics of computer. You will be introduced to a computer.

Lesson 2 focuses on the history of computers where you will learn how the current computing devices have evolved.

Lesson 3 details and describes the different computer parts, functions and their locations.

Lesson 4 discusses common computer peripherals useful for computing.

Lesson 5 explains the difference between the output and input devices used in a computer.

Lesson 6 defines the kinds of computer software and explains their uses.

By the end of Topic, you will have some basic knowledge why computers are valued and commonly used today. Appreciating the importance of the computer, we will be looking forward to learn more in the other three topics.

Lesson 1: Definition and Characteristics of Computer



Welcome to Lesson 1 of Unit 1. Lesson 1 starts with the most basic lesson on computer.

In this lesson you shall learn about the definition, purpose, characteristics, strengths and limitations of a computer.



Your Aims:

- define "computer"
 - identify the purpose of computers
 - identify the characteristics of a computer
 - identify the strengths and limitations of a computer
-

What is a Computer?

Technically, a computer is a programmable device. It can execute a programmed list of instructions and respond to new instructions that it is given.

In today's world, the term "computer" is most often used to refer to the desktop and laptop computers that most people use. When referring to a desktop model, the term "computer" technically only refers to the computer itself - not the monitor, keyboard, and mouse. Still, it is acceptable to refer to everything together as the computer. If you want to be really technical, the box that holds the computer is called the "system unit."



The desktop computer



The laptop computer

You will learn more about the different uses of computers from the discussion below.

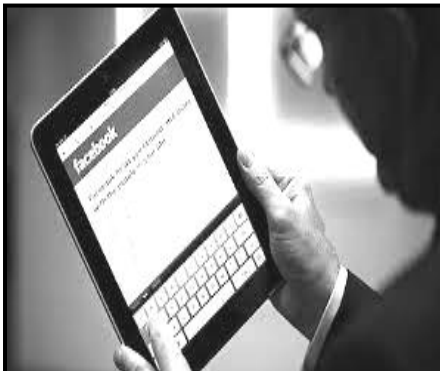
Purposes of Computers

In Unit 1 Lesson 1 of Grade 9 Design and Technology – Computing, you have learnt the different uses of computers.

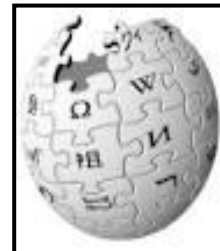
The computer we see today is quite different from the one made in the beginning. Its uses have increased from a simple machine doing mathematical calculations to the modern computer we see today. The computers today are used in various ways. Study the list on the next page showing some of the ways computers are used.

- It keeps people connected
- It provides free flow of information
- It is used by every business and government agency for record keeping, computations and personnel use
- It controls your house from a computer you can control
- One can make money from a computer
- One can do illegal things with a computer

Computers are everywhere and are here to stay whether you like it or not. The following are some illustrations of what computers are used for today.



Social networking sites allow people to communicate online. It keeps people connected.



Wikipedia is a popular source of online information.

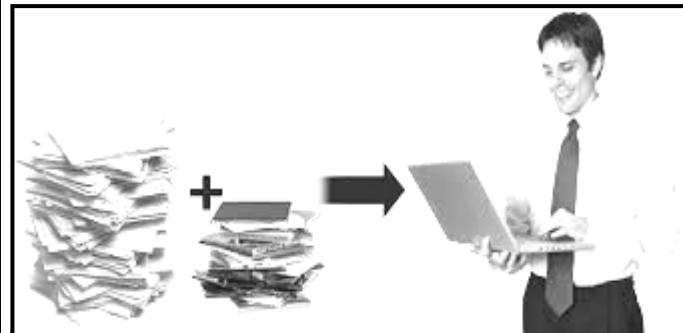


Google is only one of the available search engines in the internet





Computers are used for education, business, defense, medical, and entertainment puposes.



Filing with computers

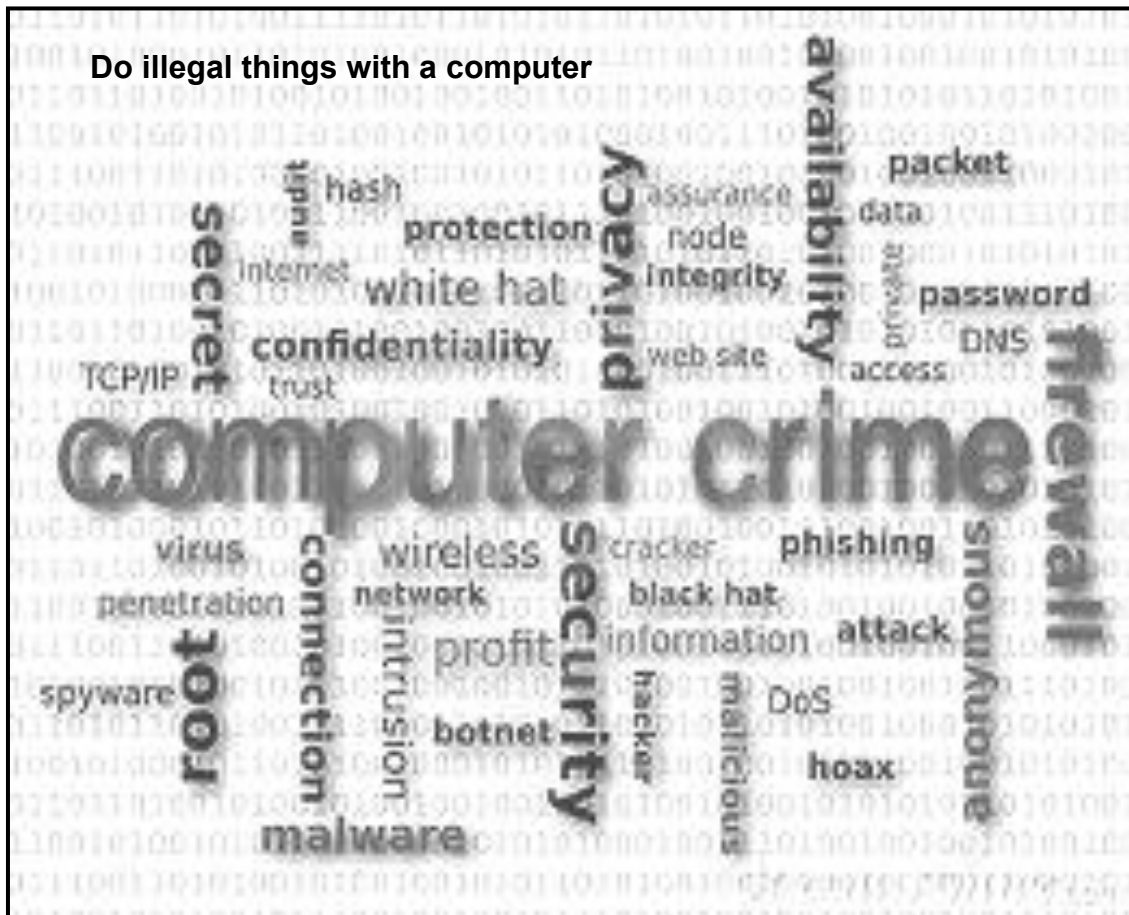
Filing before the existence of computers

Computers are used by business and government agencies for record keeping, computations and personnel use. Before, file keeping involves keeping boxes after boxes of papers. With the use of electronic record, file keeping becomes easier and consumes less space and resources for companies.



Computer software controls the different areas of the house that has electronic devices. We can now turn off the light or fan without having to be actually inside the house.





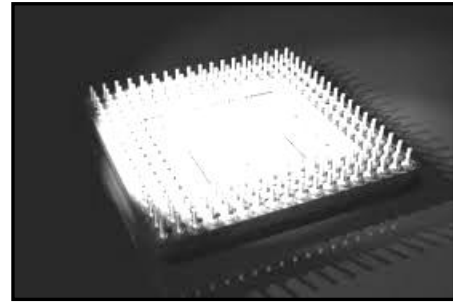
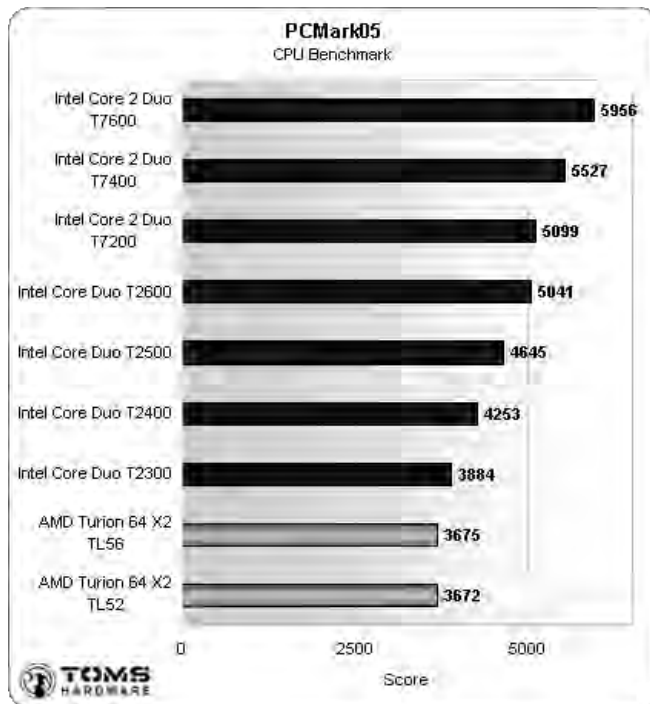
Though computers are beneficial, these also are causes of "computer crimes". Computer crimes is also known as Cybercrime which refers to any crime that involves a computer and a network. The computer may have been used in the commission of a crime, or it may be the target. Computer crimes are everywhere and done in different ways. People must be responsible and alert so as not to be victim of any computer crimes.

Characteristics of a Computer

All computers regardless of type, model and brand share common characteristics that sets it apart from each other. You have learnt some of these in Unit 1 Lesson 2 of your Grade 9 Computing course.

A. Speed

A computer is a very fast device. It can perform in a few seconds the amount of work that a person can do in a day or even weeks. Some calculation that would have taken hours and days to complete can be completed in seconds using the computer. Computer speed is megahertz (MHz or one million instructions per second). From 1996 onwards computer technology has done tremendous technological advancement resulting in increase in speed.



The **Processor**. Main part of the computer that controls the speed of a computer.

The chart presents a comparison of speed for different existing processors like Intel and AMD Turion.

B. Accuracy

The accuracy of a computer depends on the instructions given by the user and the type of processor it is using. A computer can accurately give the result of division of any number up to 10 decimal places. The Super Computer is no ordinary computer. Housed inside this room are numerous computers that can do mathematical calculations with accuracy and precision.



The Super Computer

C. Versatility

Versatility in a computer means it can easily shift from one task to another. You can shift from working in two tasks simultaneously without closing the other program. You can also run a virus scan while working on your project paper.



Quad Screen Display Rackmount LCD Monitor enables users to monitor and display four different video feeds on to a Single monitor. These units are most commonly used for remote and data monitoring, CCTV security, industrial control, military, and applications.

D. **Reliability**

Computers provide very high speed accompanied by an equally high level for reliability. Thus computers never make mistakes of their own accord. A computer does not make mistakes. Errors are done by the people using the computer. It produces result based on the information stored inside. An analogy of this is **GIGO “Garbage In – Garbage Out.”**

E. **Power of Remembering**

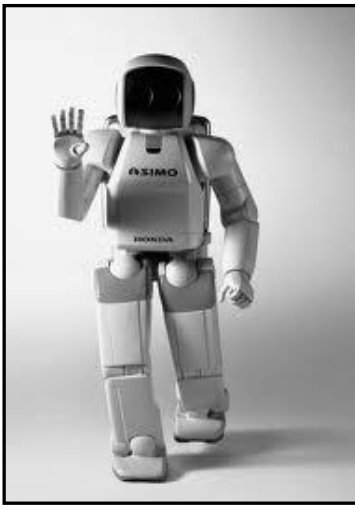
A computer can store and recall any amount of information because of its secondary storage capability. Any information can be stored and retrieved by users instantly. It has the capability to store information and retrieve those information even after years of storage. For example, a library contains thousands of information stored in books and printed materials. With the introduction of computers people are now switching to electronically stored information which can be used again and again.



How computers are used in the library

F. No Intelligence Quotient (I.Q)

A computer can perform any task that a human being can do. The only difference is that it performs a task with amazing speed and accuracy. It has no intelligence because it can only perform what it is programmed to do.



Intelligence is measured by how a person logically thinks and analyses information. A robot, however does not think but produces an action based on the information stored inside its memory.



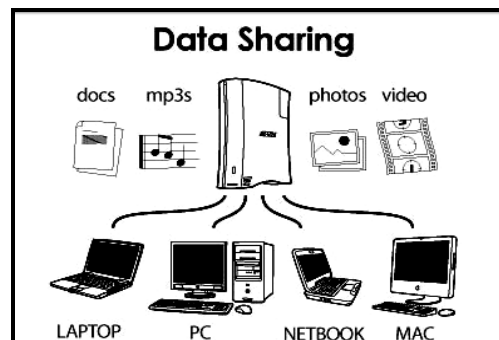
Computers cannot replace human intelligence.

G. Common Data Used

Computers share common resources. A host computer can store all the information with multiple computers accessing data stored inside. The photos below show how computers share common resources. The first picture uses a server in a network for computers to share data while the second picture shows how a LinkStation Pro enables all other machines to share data.



All the information inside the server where other computers store and retrieve information for processing.



Allow multiple users/ family members to store and access data on your LinkStation Pro.

H. Diligence

The computer is a machine so it does not get tired and does not lose its concentration. This is very useful for jobs that are done again and again. It can perform long and complex calculations with same speed and accuracy from the start till the end.

A computer does not get tired unlike humans that need sufficient amount of rest.



I. Storage

Data storage is an essential function of the computer. A computer can have huge amount of storage capacity to store a tremendous amount of data. Secondary storage devices like flash drives and external hard disk/ drives can store a large amount of data permanently. Recall that Grade 9 Design and Technology-Computing Unit 1 Lessons 15-16 discussed about primary and secondary storage devices, go over these lessons to refresh more about storage devices. The pictures below show examples of external storage devices commonly used to store data.



Flash drive



Hard disk

Limitations

Even a computer, with its numerous capabilities, has limitations. Some were discussed in Unit 1 Lesson 2 of Grade 9 Design and Technology – Computing. Let us add some more.

1. **It cannot correct any incorrect data placed by the user.** The computer term GIGO or Garbage In, Garbage Out means a computer given wrong data will produce wrong information.
2. **It can only do what it is programmed to do.** The computer performs and follows only the set of instructions that has been entered by the user.
3. **It cannot generate information on its own.** A computer cannot produce information without any correct data and instructions entered by the user.
4. **It is subject to occasional breakdown.** Computer is just a machine and like any machine, a computer malfunctions due to wear and tear, viruses and environmental factors like power failure.

Now do the activity below to check your learning.



Activity 1: Answer following questions. Write your answers on the spaces provided.

- A. Choose any two purposes of computers and discuss how each directly affects your everyday life.

1. _____

2. _____

B. Write a positive and a negative effect of computers to your daily life.

Positive

Negative

Thank you for completing this activity. Now, you may go to the end of this lesson to check your answers. Make sure you do the necessary corrections before moving on to the next part of this lesson.



Summary

You have come to the end of Lesson 1. In this lesson you learnt the different purpose, characteristics, strengths and limitations of computer.

NOW DO PRACTICE EXERCISE 1 ON THE NEXT PAGE.

Practice Exercise 1

A. Write True if the statement is correct and False if it is incorrect on the space provided.

1. Computers can perform one task at a time. _____
 2. A computer can shift from one task to another. _____
 3. Computers can perform all things a human being can do. _____
 4. It is easy to retrieve stored information in a computer. _____
 5. A computer can perform complex calculations in a long period of time. _____
 6. Computers can produce correct result from wrong information. _____
 7. Computer speed is measured in Mhz. _____
 8. Information can only be stored in the computers' hard disk. _____
 9. Computers can share common resources. _____
 10. Computers can perform task without specific instruction. _____
-

B.**1. List the different characteristics of a computer**

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____
- f. _____
- g. _____
- h. _____
- i. _____

2. List the limitations of computers

- a. _____
 - b. _____
 - c. _____
 - d. _____
-

CHECK YOUR WORK. ANSWERS ARE AT THE END OF TOPIC 1.
--

Answers to Activity 1

1. **It keeps people connected.** With the use of social networking sites, it is now easier to connect and keep in touch with friends and relatives living in far away places.
2. **Free flow of information.** Information is readily available on the internet. You do not have to spend large amount of money to buy encyclopaedia and dictionary to collect information.
3. **Stores information.** Allows you to save information and retrieve this easily. Files are kept intact even after years of storage.
4. **Remote devices** can be used to access computer and electronic device from your house and offices without actually having to be there.
5. Various computer related jobs and business are available for any job seekers.
6. **Computer crimes are rampant.** One must be careful or people abusing the technology to do illegal and criminal acts.

Note: You may give other explanations aside from the ones mentioned above.

- B. Think of Positive and Negative effects of a computer as it relates to your life.

There are many ways computers affects our daily life. Among the positives effects are:

- Makes learning easier. Information are readily available online.
- Communication. Networking sites makes communicating easy and fun
- Information can be stored and retrieved anytime you need it.

Among the negatives effects are:

- Possibility of getting addicted to the use of internet.
- Laziness develops because information are readily available
- Plagiarism. Students tend to download information and passing the work as their own.
- Lessen human interaction
- Harmful effect to the body after prolong use.

Note: You may give other explanations aside from the ones mentioned above.

Lesson 2: Generation of Computers



Welcome to Lesson 2 of Unit 2. In Lesson 1, you were introduced to the definition, purpose, characteristics, strengths and limitations of a computer.

In this lesson, you shall learn about the history and generation of computers. Some of the topics discussed here were discussed in detail in your Unit 1 of Grade 9 Design and Technology – Computing handout.



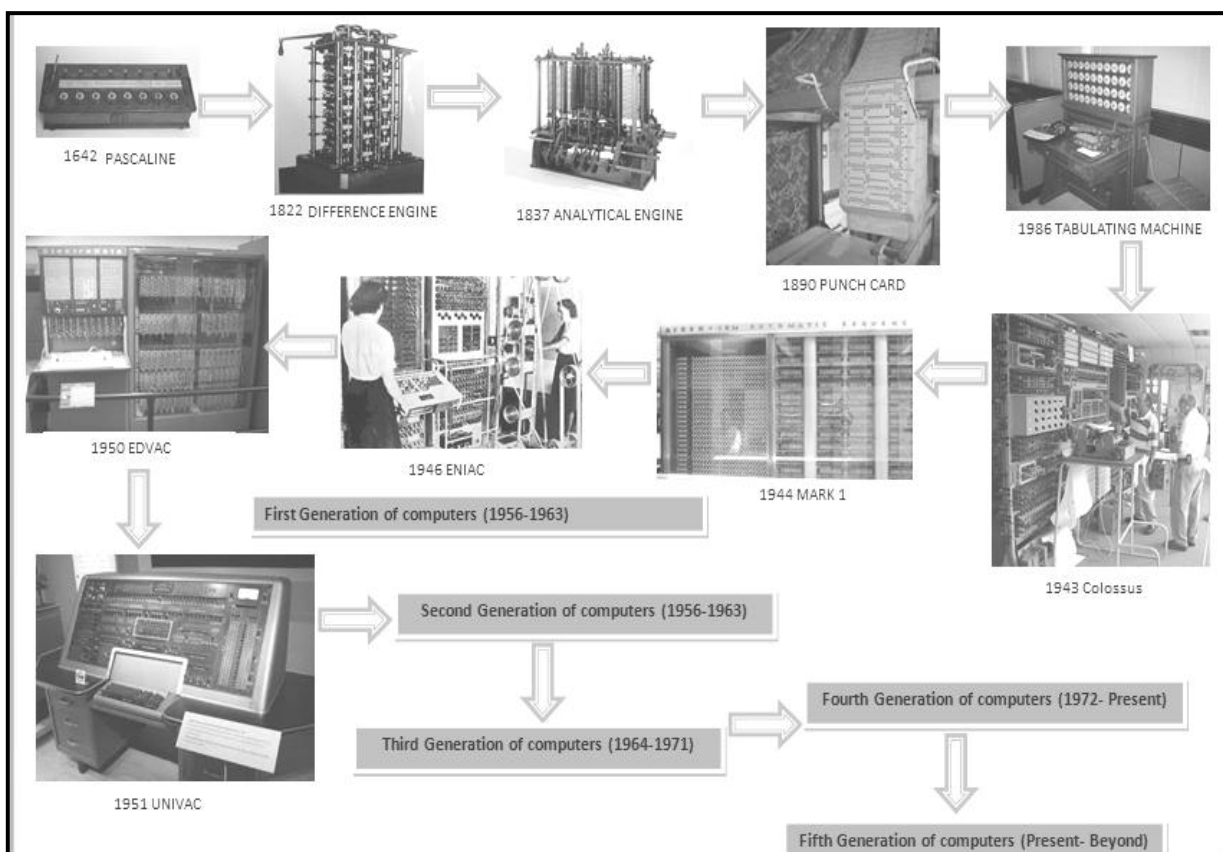
Your Aims:

- explain the origin and evolution of computer
- identify the five generation of computers

Evolution of Computers

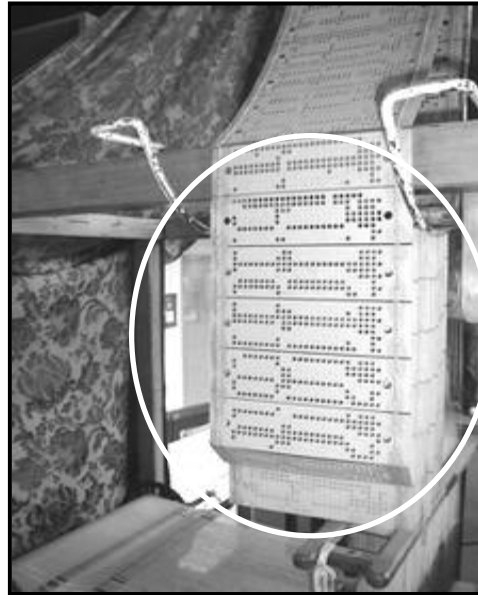
"Who invented the computer?" is not a question with a simple answer. The real answer is that many inventors contributed to the history of computers and that a computer is a complex piece of machinery made up of many parts, each of which can be considered a separate invention. Computers started from a simple computing device. Refer to Lesson 3 of your Grade 9 Design and Technology – Computing for more information. The evolution of computers shows the early computing devices to the early computers and to the present day computers that we have.

Study the timeline below to trace the evolution of computers.



The Evolution of Computers

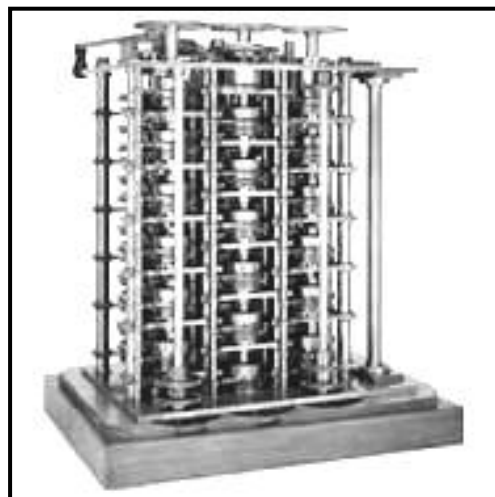
2. The **Punch Card** (1890) is a stiff card with a series of holes. The technology of using punched card was perfected by the by Joseph-Marie Jacquard in an automatic looming machine. A punched card, punch card, IBM card, or Hollerith card is a piece of stiff paper that contained either commands for controlling automated machinery or data for data processing applications.



A punched card containing pattern of hole used in Jacquard loom.

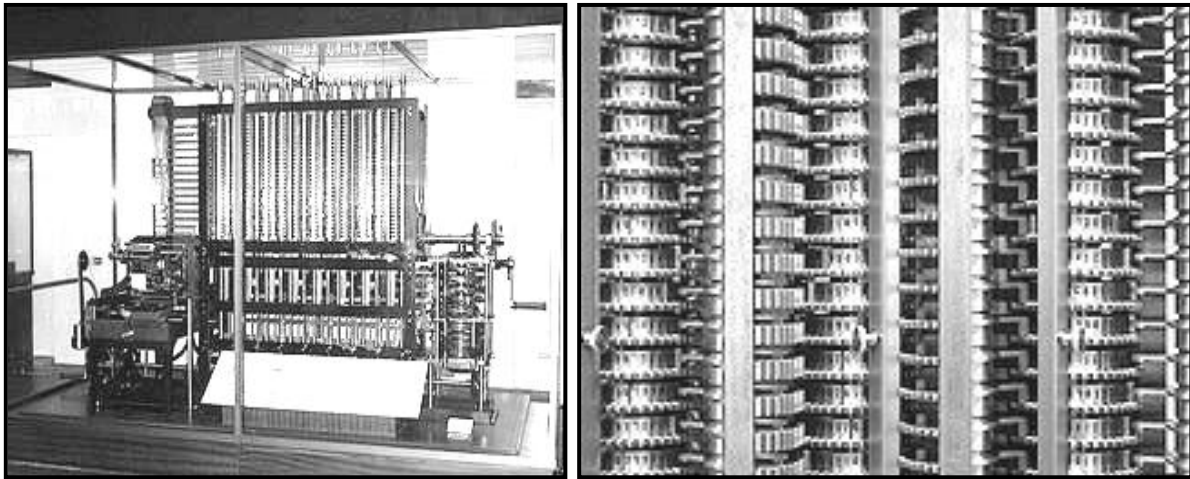
3. **Difference Engine and Analytical Engine** designed by Charles Babbage is an automatic mechanical calculator used to tabulate polynomial functions.

The Analytical Engine was a proposed mechanical general-purpose computer designed by English mathematician Charles Babbage. It was first described in 1837 as the successor to Babbage's Difference engine, a design for a mechanical computer.



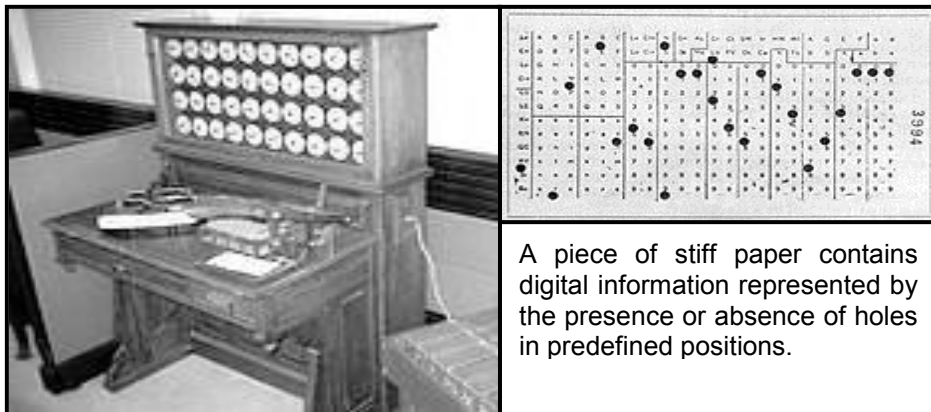
The Analytical Engine

The London Science Museum's difference engine, built from Babbage's design. The design has the same precision on all columns, but when calculating polynomials, the precision on the higher-order columns could be lower. The Engine is not a replica (one was never built during Babbage's lifetime); therefore this is the first one - the original.



The Difference Engine. Close-up of the London Science Museum's difference engine showing some of the number wheels and the sector gears between columns. The sector gears on the left show the double-high teeth very clearly. The sector gears on the middle-right are facing the back side of the engine, but the single-high teeth are clearly visible. Notice how the wheels are mirrored, with counting up from left-to-right, or counting down from left-to-right. Also notice the metal tab between "6" and "7". That tab trips the carry lever in the back when "9" passes to "0" in the front during the add steps (Step 1 and Step 3).

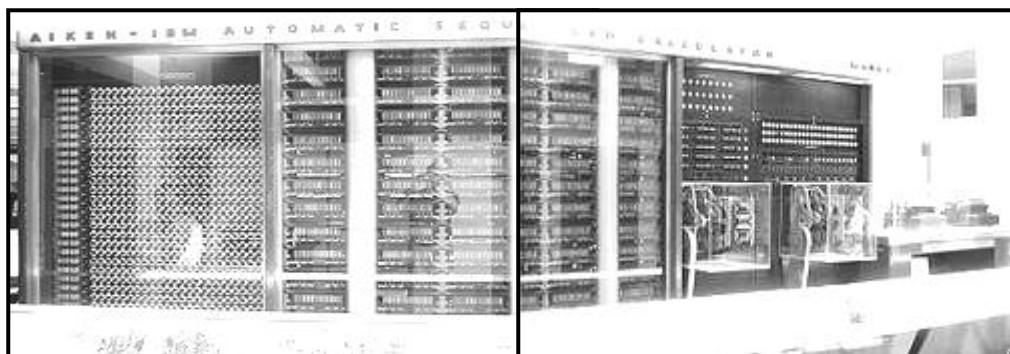
4. **Tabulating Machine (1896)** was invented by Herman Hollerith. It is an electromechanical machine designed to assist in summarizing information and later it was used in accounting.



The Tabulating Machine

A piece of stiff paper contains digital information represented by the presence or absence of holes in predefined positions.

5. The **Automatic Calculator** (Mark 1, 1944) was an electro-mechanical computer developed by Howard Aiken at Harvard University.



The Mark 1 – the first Automatic Calculator



Activity 1: Describe the following early computing devices. Write your answers on the space provided.

1. Pascaline

2. Mark 1

3. Tabulating Machine

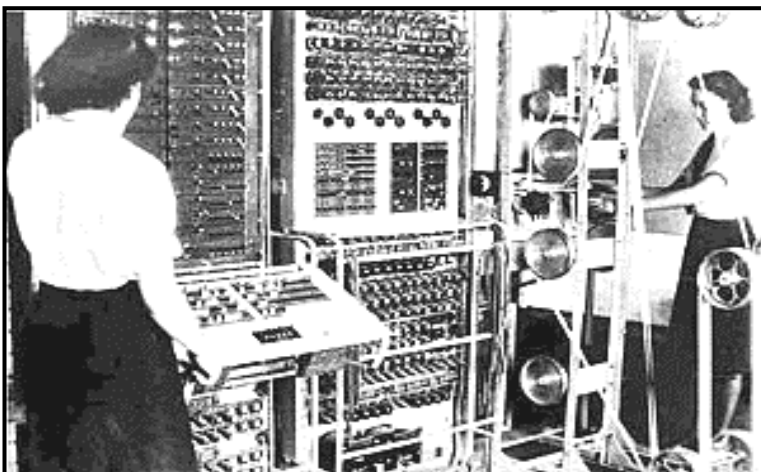
4. Analytical Engine

Thank you for completing this activity. Now, you may go to the end of this lesson to check your answers. Make sure you do the necessary corrections before moving on to the next part of this lesson.

The Early Electronic Computers

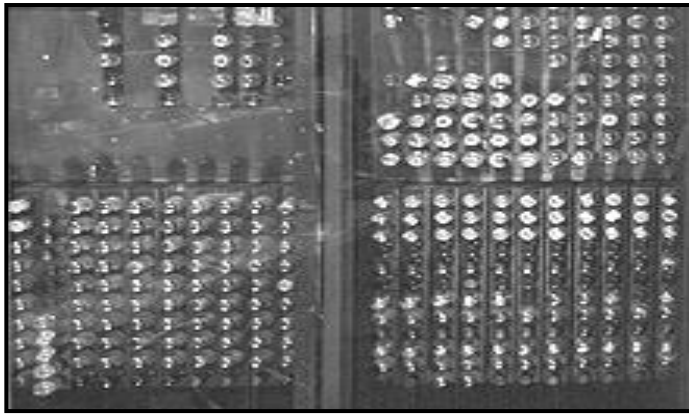
The computers that we know today have passed stages until it had reached how it is today. Study the following early electronic computers.

1. The Colossus (1943) was the world's first electronic digital computer that was at all programmable was developed by a team of mathematicians led by Alan Turing.



Used by British code breakers in WW II Without them, the Allies would have been deprived of the very valuable intelligence that was obtained from reading the vast quantity of encrypted high-level telegraphic messages between the German High Command (OKW) and their army commands throughout occupied Europe.

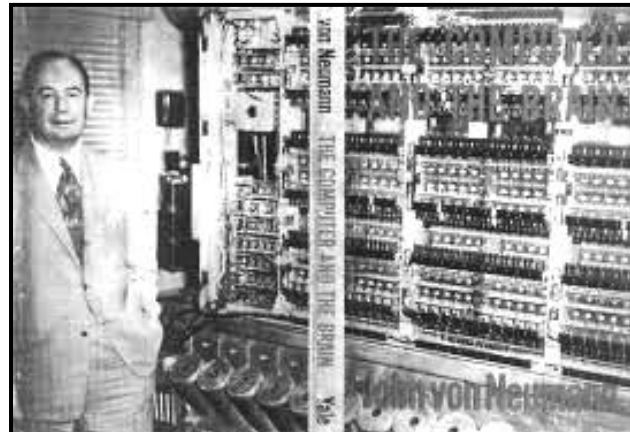
2. **ENIAC** (Electronic Numerical Integrator and Calculator, 1946) was the first electronic general-purpose computer by John Presper Eckert and John William Mauchly.



The backside of the ENIAC containing vacuum tubes

ENIAC contained 17,468 vacuum tubes, 7,200 crystal diodes, 1,500 relays, 70,000 resistors, 10,000 capacitors and around 5 million hand-soldered joints. It weighed more than 30 short tons (27 t), was roughly 8 by 3 by 100 feet (2.4 m × 0.9 m × 30 m), took up 1800 square feet (167 m²), and consumed 150 kW of power

3. **EDVAC** (Electronic Discrete Variable Automatic Computer, 1950) was one of the earliest electronic computers to use a binary serial computer with automatic addition, subtraction, multiplication, programmed division and automatic checking. It has a capacity of 1,000 44-bit words (later set to 1,024 words, thus giving a memory, in modern terms, of 5.5 kilobytes).



4. **UNIVAC** (Universal Automatic Computer, 1951) is the name of a line of electronic digital stored-program computers starting with the products of the Eckert-Mauchly Computer Corporation.





Activity 2: Write **TRUE** if the statement is correct and write **FALSE** if it is incorrect. Write your answers on the space provided.

1. UNIVAC was used by British code breakers during the World War II. _____
2. The Colossus is the first electronic general-purpose computer. _____
3. EDVAC is the universal automatic computer. _____
4. The ENIAC and UNIVAC used vacuum tubes. _____
5. Allan Turing led a group of mathematicians to develop the UNIVAC. _____

Thank you for completing this activity. Now, you may go to the end of this lesson to check your answers. Make sure you do the necessary corrections before moving on to the next part of this lesson.

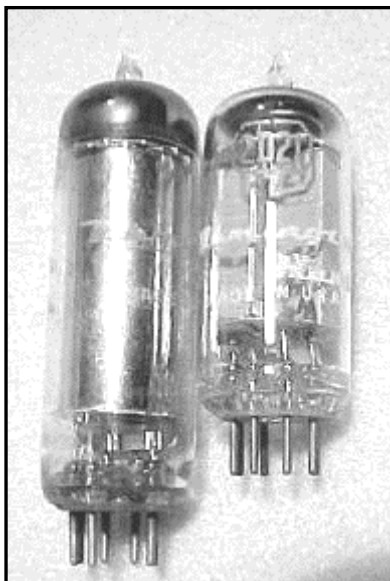
Computer Generations

The Generation of Computers refers to the major technological developments in computing history that led to the development of computers as we know it today. It is classified into five distinct categories:

1. First Generation (1940-1956) Vacuum Tubes

The first computers used vacuum tubes (invented by John Ambrose Fleming) for circuitry and magnetic drums for memory, and were often enormous, taking up entire rooms. They were very expensive to operate and in addition to using a great deal of electricity, generated a lot of heat, which was often the cause of malfunctions.

First generation computers relied on machine language, the lowest-level programming language understood by computers, to perform operations, and they could only solve one problem at a time. Input was based on punched cards and paper tape, and output was displayed on printouts.



The UNIVAC and ENIAC computers are examples of first-generation computing devices. The UNIVAC was the first commercial computer delivered to a business client, the U.S. Census Bureau in 1951.

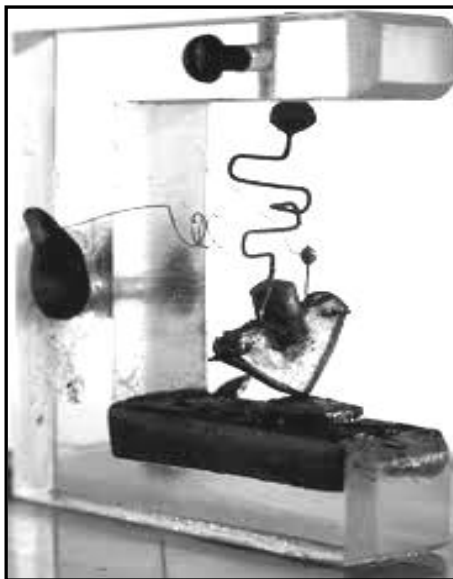
Vacuum tube is a device controlling electric current through a vacuum in a sealed container. When the bulb's filament is heated white-hot, electrons are "boiled" off its surface and into the vacuum inside the bulb. If the electrode -- called a "plate" or "anode" -- is made more positive than the hot filament, a direct current flows through the vacuum to the electrode. As the current only flows in one direction, it makes it possible to convert an alternating current applied to the filament to direct current.

2. **Second Generation (1956-1963) Transistors**

Transistors replaced vacuum tubes and ushered in the second generation of computers. The transistor was invented in 1947 by Walter Houser Brattain, William Shockley and John Bardeen, but did not see widespread use in computers until the late 1950s. The transistor was far superior to the vacuum tube, allowing computers to become smaller, faster, cheaper, more energy-efficient and more reliable than their first-generation predecessors. Though the transistor still generated a great deal of heat that subjected the computer to damage, it was a vast improvement over the vacuum tube. Second-generation computers still relied on punched cards for input and printouts for output.

Second-generation computers moved from cryptic binary machine language to symbolic, or assembly, languages, which allowed programmers to specify instructions in words. High-level programming languages were also being developed at this time, such as early versions of COBOL and FORTRAN. These were also the first computers that stored their instructions in their memory, which moved from a magnetic drum to magnetic core technology.

The first computers of this generation were developed for the atomic energy industry.



The modern day transistor

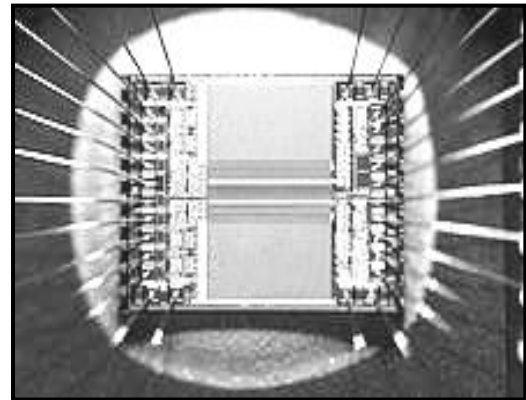
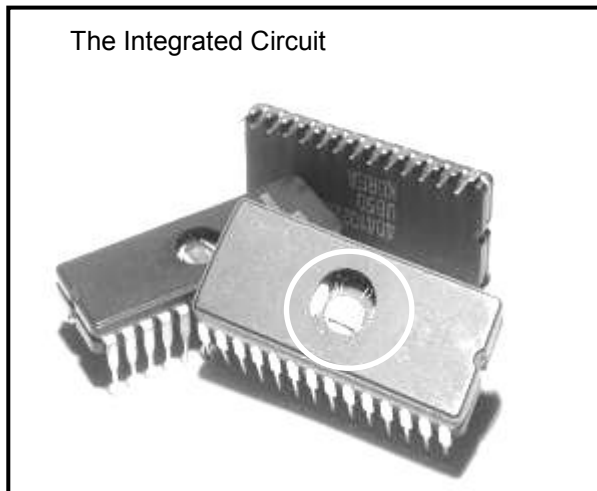
Transistor is a semiconductor device used to amplify and switch electronic signals and electrical power.

3. **Third Generation (1964-1971) Integrated Circuits**

The development of the integrated circuit was the hallmark of the third generation of computers. It was invented by Jack Kilby & Robert Noyce. Transistors were miniaturized and placed on silicon chips, called **semiconductors**, which drastically increased the speed and efficiency of computers.

Instead of punched cards and printouts, users interacted with third generation computers through keyboards and monitors and interfaced with an operating system, which allowed the device to run many different applications at one time with a central program that monitored the memory. Computers for the first

time became accessible to a mass audience because they were smaller and cheaper than their predecessors.



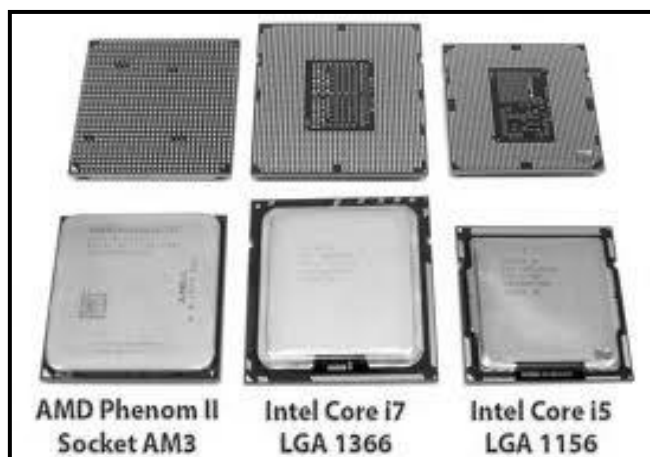
Enlarged image of what is inside the IC (integrated circuit)

4. **Fourth Generation (1971-Present) Microprocessors**

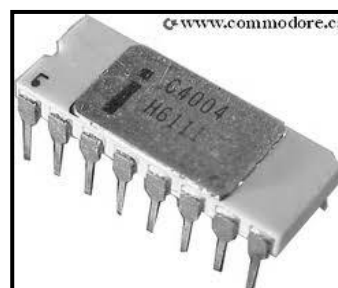
The microprocessor brought the fourth generation of computers, as thousands of integrated circuits were built onto a single silicon chip. What in the first generation filled an entire room could now fit in the palm of the hand. The Intel 4004 chip, developed in 1971, located all the components of the computer—from the central processing unit and memory to input/output controls—on a single chip.

In 1981 IBM introduced its first computer for the home user, and in 1984 Apple introduced the Macintosh. Microprocessors also moved out of the realm of desktop computers and into many areas of life as more and more everyday products began to use microprocessors.

As these small computers became more powerful, they could be linked together to form networks, which eventually led to the development of the Internet. Fourth generation computers also saw the development of GUIs, the mouse and handheld devices.



The microprocessor used in today's modern computers



The first microprocessor

5. **Fifth Generation (Present and Beyond) Artificial Intelligence**

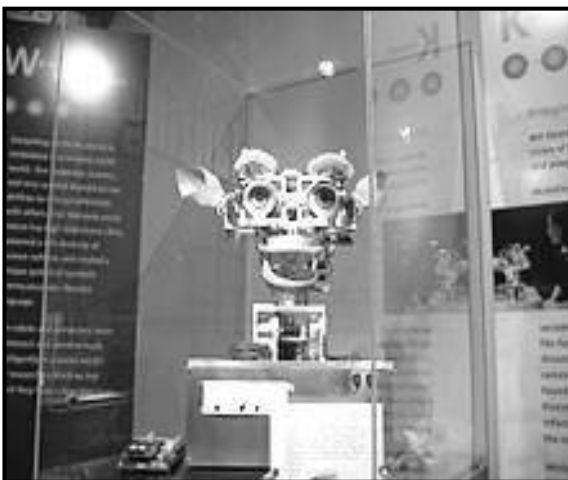
Fifth generation computing devices, based on artificial intelligence, are still in development, though there are some applications, such as voice recognition, that are being used today. The use of parallel processing and superconductors is helping to make artificial intelligence a reality. Quantum computation and molecular and nanotechnology will radically change the face of computers in years to come. The goal of fifth-generation computing is to develop devices that respond to natural language input and are capable of learning and self-organization.

Currently, no computer exhibit full artificial intelligence (or is able to simulate human behaviour). The best computer chess programs are now capable of beating humans. In May, 1997, an IBM super-computer called Deep Blue defeated world chess champion Gary Kasparov in a chess match.



Robot with artificial intelligence plays chess with human.

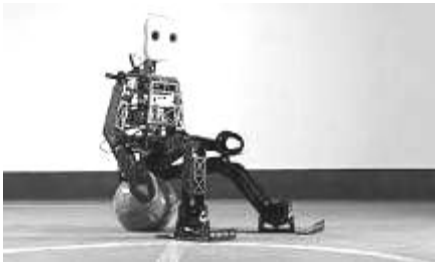
Artificial Intelligence is the branch of computer science concerned with making computers behave like humans. The term was coined in 1956 by John McCarthy at the Massachusetts Institute of Technology.



Kismet was the first robot to mimic some facial features of humans.



Activity 3: Write the name of the device as shown by the picture on the space provided.

Major Technology	Name of Device
1. 	
2. 	
3. 	
4. 	
5. 	

Thank you for completing this activity. Now, you may go to the end of this lesson to check your answers. Make sure you do the necessary corrections before moving on to the next part of this lesson.



Summary

You have come to the end of Lesson 2. In this lesson, you learnt about the history of computer and the five generations of computer. Each generation is categorized by the important technological development that shaped the history of computing.

NOW DO PRACTICE EXERCISE 2 ON THE NEXT PAGE.

Practice Exercise 2

Following are lists of inventions and inventors. Match each invention to the inventor below. You may have two inventions to an inventor or vice versa.

A. Inventions

- a. Punch card for looming device
- b. Automatic calculator
- c. ENIAC
- d. Pascaline
- e. Colossus
- f. Vacuum Tube
- g. Difference Engine
- h. Transistors
- i. Integrated Circuits
- j. Tabulating Machine

B. Inventors

- | | |
|----------------------------------|-------|
| 1. Charles Babbage | _____ |
| 2. Alan Turing | _____ |
| 3. John Ambrose Fleming | _____ |
| 4. Blaise Pascal | _____ |
| 5. Herman Hollerith | _____ |
| 6. Steve Jobs | _____ |
| 7. Joseph Marie Jacquard | _____ |
| 8. Kilby & Noyce | _____ |
| 9. ckert & Mauchly | _____ |
| 10. Kemeny & Kurtz | _____ |
| 11. Howard Aiken | _____ |
| 12. Brattain, Shockley & Bardeen | _____ |

CHECK YOUR WORK. ANSWERS ARE AT THE END OF TOPIC 1.
--

Answers to Activities**Activity 1**

1. Pascaline is the first mechanical calculator used to automatically perform the basic operations of arithmetic.
2. Mark 1 is an electro mechanical computer and the first automatic calculator.
3. Tabulating Machine is an electromechanical machine that assisted in summarising information and was used later in accounting.
4. Analytical Engine is a mechanical general purpose computer.

Activity 2

1. FALSE
2. FALSE
3. FALSE
4. TRUE
5. FALSE

Activity 3

1. Integrated Circuit
2. Vacuum Tube
3. Microprocessor
4. Transistor
5. Artificial Intelligence

Lesson 3: Computer Hardware



Welcome to Lesson 3 of Unit 1. In Lesson 2, you learnt about the history and generation of computers.

In this lesson you shall learn more about hardware concepts and what it does to the hardware system.



Your Aims:

- define computer hardware
 - identify the parts of a computer
 - differentiate the functions of each parts of the computer
 - locate the different parts of a computer
-

Computer Hardware

In Unit 1 Lesson 2 of Grade 9 Design and Technology – Computing you learnt all about the functions of computer hardware.

Computer hardware refers to the physical parts of a computer and related devices. Internal hardware devices include motherboards, hard drives, and RAM. External hardware devices include monitors, keyboards, mice, printers, and scanners.

The internal hardware parts of a computer are often referred to as components, while external hardware devices are usually called peripherals. Together, they all fall under the category of computer hardware.

A. The External Hardware (Peripherals)

The mouse, keyboard, and monitor are examples of the external hardware. Although a peripheral, this hardware is essential for a desktop computer to function. A peripheral device is generally defined as any auxiliary device such as a computer mouse or keyboard, that connects to and works with the computer in some way. When referring to a desktop model, the term "computer" technically only refers to the computer itself -- not the monitor, keyboard, and mouse. Still, it is acceptable to refer to everything together as the computer. If you want to be really technical, the box that holds the computer is called the "system unit."



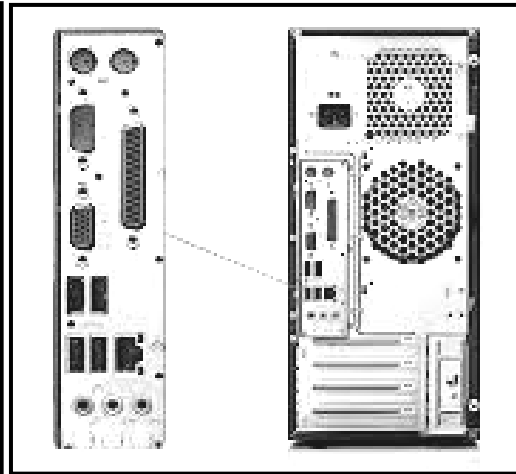
The Desktop Computer

Most personal computers have a system unit based on the following designs:

1. **Tower system** - vertical box that is often kept under the desk. Towers usually have more expansion slots and bays compared to the other designs. An example of tower is shown below.

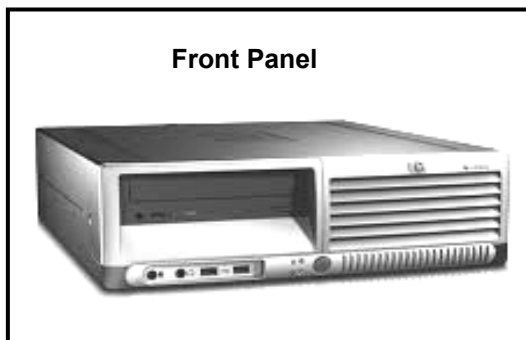


Front Panel

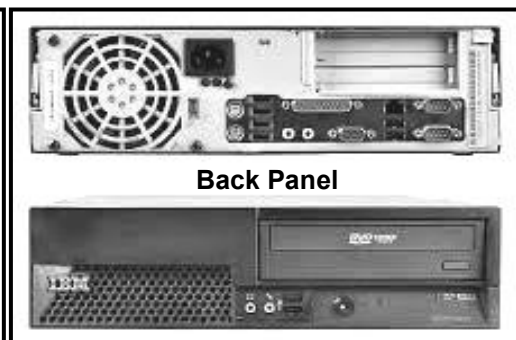


Back Panel

2. **Desktop system** - horizontal box designed to sit under the monitor like a platform.



Front Panel



Back Panel

3. **All-in-one system** - combine the monitor and system unit into a single casing such as the iMac.



Front Panel

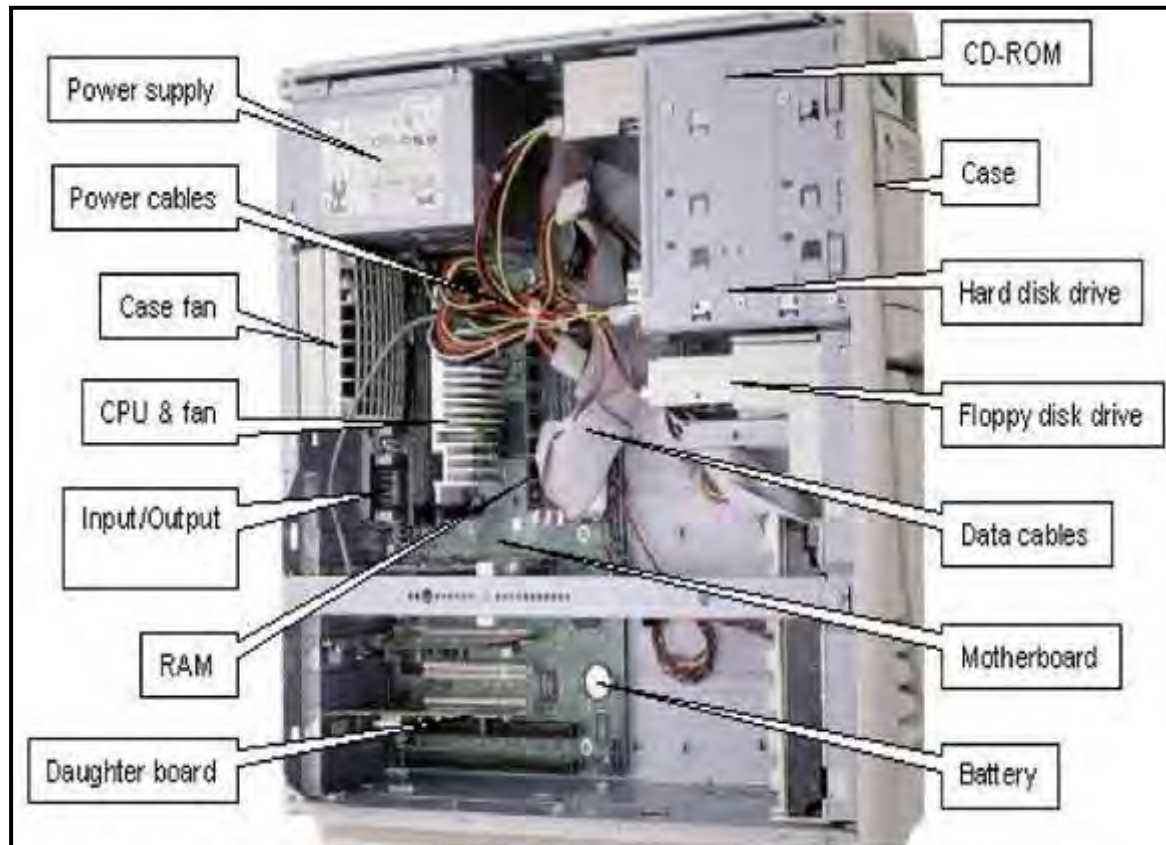


Back Panel

B. The Internal Hardware (Components)

Internal hardware or components refers to anything inside the system unit. This lesson focuses on the physical representation of the parts of the system unit and a brief description of its parts. This lesson covers only the parts that are present in any type of system unit.

Note that not all computers have the same components. The following items presented below are the common hardware components found in most computers.

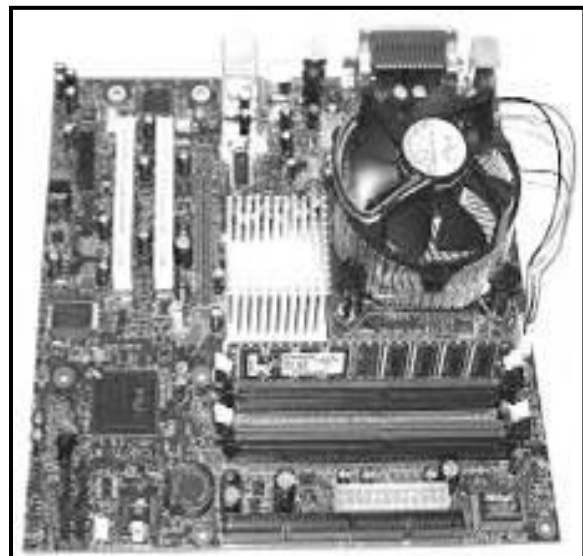


The System Unit

The following itemised discussions describe the common components of a system unit.

1. The Motherboard

The motherboard is the main circuit board of your computer and is also known as the **mainboard or logic board**. If you ever open your computer, the biggest piece of silicon you see is the motherboard. Attached to the motherboard, you'll find the CPU, ROM, memory RAM expansion slots, PCI slots, and USB ports. It also includes controllers for devices like the hard drive, DVD drive, keyboard, and mouse. Basically, the motherboard is what makes everything in your computer work together.



The Motherboard

Each motherboard has a collection of chips and controllers known as the chipset. When new motherboards are developed, they often use new chipsets. The good news is that these boards are typically more efficient and faster than their predecessors. The bad news is that older components often do not work with new chipsets. Of course, if you are planning on upgrading multiple components, it may be more cost-effective to just buy a new computer.

2. **Integrated Circuit**

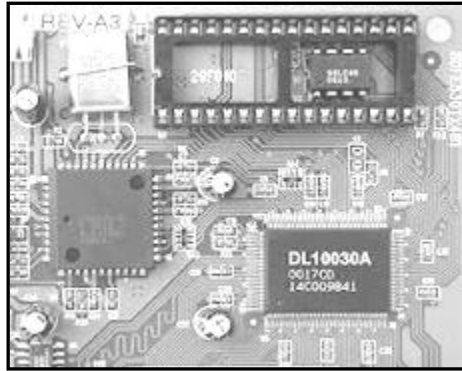
An integrated circuit, or IC, is small chip that can function as an amplifier, oscillator, timer, microprocessor, or even computer memory. An IC is a small wafer, usually made of silicon, that can hold anywhere from hundreds to millions of transistors, resistors, and capacitors. These extremely small electronics can perform calculations and store data using either digital or analog technology.

Digital ICs use logic gates, which work only with values of ones and zeros. A low signal sent to a component on a digital IC will result in a value of 0, while a high signal creates a value of 1. Digital ICs are the kind you will usually find in computers, networking equipment, and most consumer electronics.

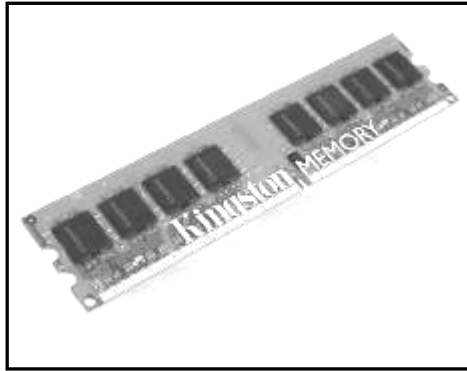
Analog, or linear ICs work with continuous values. This means a component on a linear IC can take a value of any kind and output another value. The term "linear" is used since the output value is a linear function of the input. For example, a component on a linear IC may multiply an incoming value by a factor of 2.5 and output the result. Linear ICs are typically used in audio and radio frequency amplification.



Different Types of Integrated Circuit



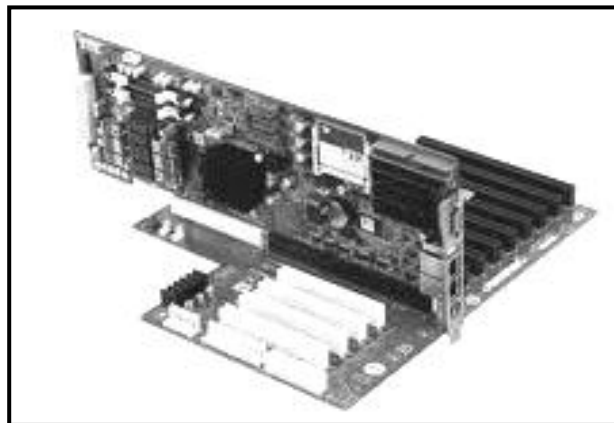
IC chip on a motherboard



IC chip on a Random Access Memory (RAM) card

3. Expansion Slot / Expansion Card

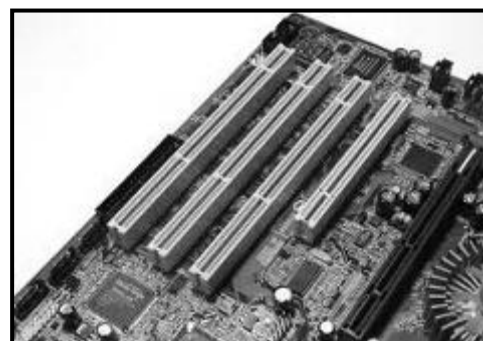
An expansion card is a printed circuit board that can be installed in computer to add functionality to it. For example, a user may add a new graphics card to his computer to give it more 3D graphics processing power. An audio engineer may add a professional sound card to his machine to increase the computer's audio input and output connections. Users that need more Firewire or USB ports can add Firewire or USB expansion cards, which provide additional connections.



PCI Card placed in an Expansion Slot



USB Expansion Card



PCI Expansion Slot

Most expansion cards are installed in PCI **expansion slots**. This includes variations of PCI, such as PCI-X and PCI Express. Graphics cards may also be installed in an AGP slot, which is designed specifically for video cards. Since expansion cards require open slots, they can only be installed in computers that have available expansion slots. Therefore, computers like the

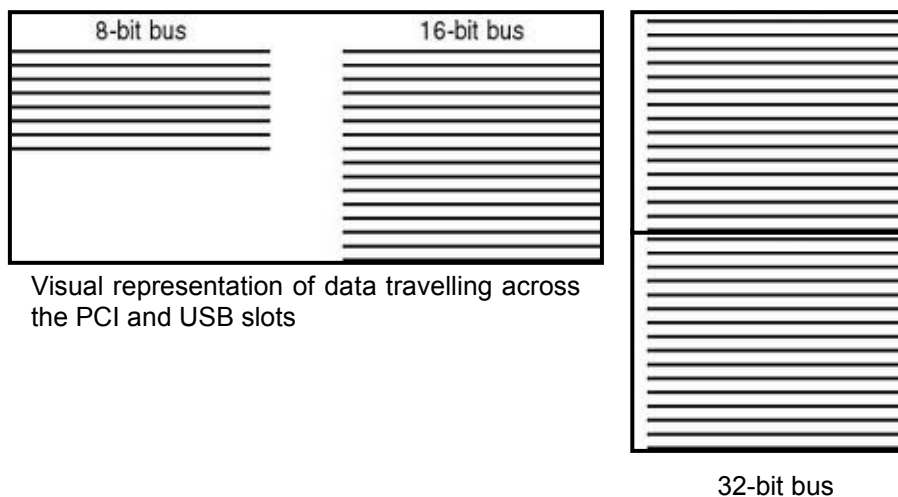
Apple iMac and other all-in-one machines cannot accept expansion cards. Computer towers, however, often have two or three open expansion slots, and can accept multiple cards.

Laptops do not use traditional expansion cards because of their small form factor. However, some models can accept removable PCMCIA cards that add extra ports or other functionality to the computer.

4. **Bus**

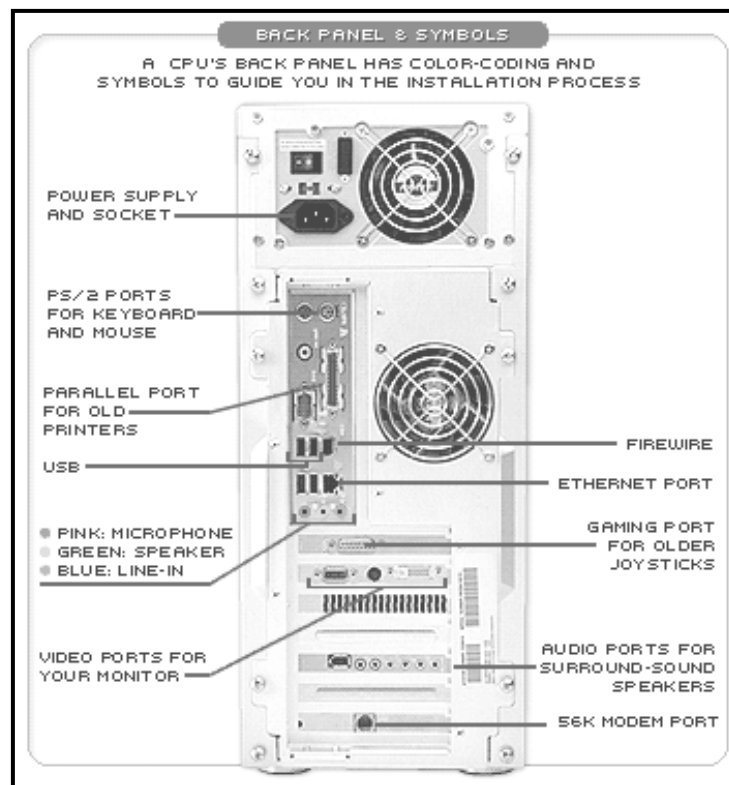
The internal bus, also known as internal data bus, memory bus, system bus or Front-Side-Bus, connects all the internal components of a computer, such as CPU and memory, to the motherboard. Internal data buses are also referred to as a local bus, because they are intended to connect to local devices. While the wheels on the bus may go "round and round," data on a computer's bus goes up and down. Each bus inside a computer consists of set of wires that allow data to be passed back and forth. Most computers have several buses that transmit data to different parts of the machine. Each bus has a certain size, measured in bits (such as 32-bit or 64-bit), that determines how much data can travel across the bus at one time. Buses also have a certain speed, measured in megahertz, which determines how fast the data can travel.

The computer's primary bus is called the frontside bus and connects the CPU to the rest of the components on the motherboard. Expansion buses, such as PCI and AGP, allow data to move to and from expansion cards, including video cards and other I/O devices. While there are several buses inside a computer, the speed of the frontside bus is the most important, as it determines how fast data can move in and out of the processor.



5. **Port**

Ports that are on the back of a computer where devices can be hooked up or connected (like a keyboard, mouse, printer, digital camera, etc). Some common ports found on today's computers are USB, Firewire, and Ethernet.



Types of computer ports available at the back of the system unit



Activity 1: Identify the ports of the hardware and peripherals attached to your computer.

- A.** The following are only some of the different devices attached to your computer. Name the peripheral devices below. Write your answers in the boxes. Refer to Lesson 4 and 5 to help you complete this activity.

1. 2. 3.



4.



5.



6.

B. Look at the back of your computer and identify the port where these devices are connected.

1. Check other computers available in your area. Conduct an inspection of different places using computers.
2. Inquire/Inspect if they have the same setup as your computer.
3. A port may have more than one type of device that can attached to it.
4. The type of hardware may be connected to a different port depending on the device you are using.
5. Add more row as needed.

Ethernet	Serial	USB	Parallel	VGA	Serial	PS/2

Thank you for completing this activity. Now, you may go to the end of this lesson to check your answer. Make sure you do the necessary corrections before moving on to the next part of this lesson.

Functions of the Computer Hardware

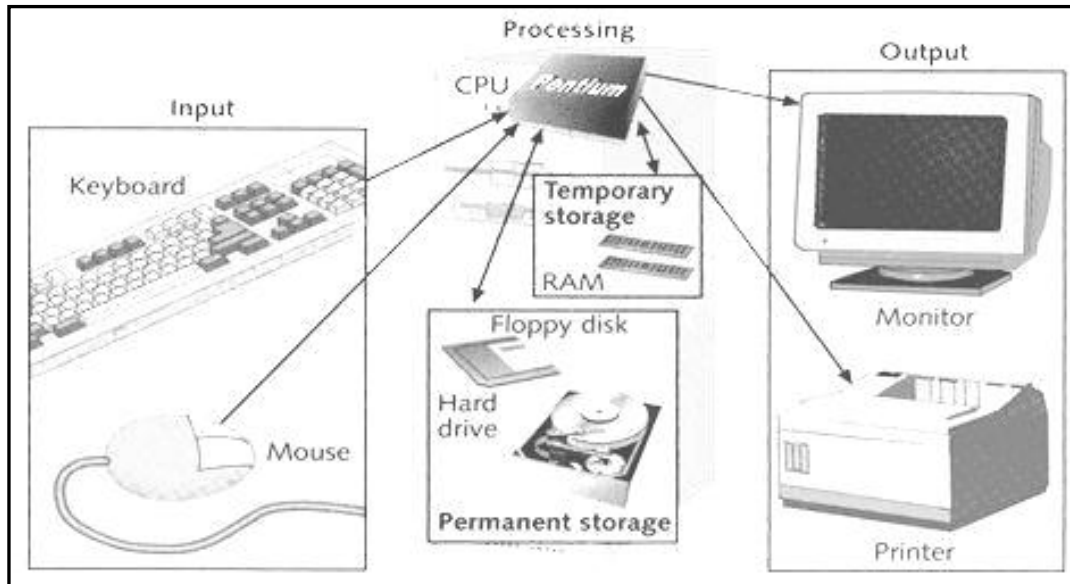
The illustration below presents the visual representation of the functions of the computer hardware.

1. Input

An input is any information or data that is entered or sent to the computer to be processed. Input or user input is most often sent to the computer using an input device such as a keyboard or mouse. This can be text typed in a word processing document, keywords entered in a search engine's search box, or data entered into a Spreadsheet. Input can be something as simple as moving the mouse or clicking the mouse button or it can be as complex as scanning a document or downloading photos from a digital camera.

Devices such as the keyboard, mouse, scanner, and even a digital camera are considered input devices. This is because they allow the user to input data

into the computer. While input generally comes from humans, computers can also receive input from other sources. These include audio and video devices that record movies and sound, media discs that install software, and even the Internet, which is used to download files and receive data such as e-mail or instant messages.



Computer activity consists of input, processing, storage and output

2. Process

A process is a program that is running on your computer. This can be anything from a small background task, such as a spell-checker or system events handler to a full-blown application like Internet Explorer or Microsoft Word. All processes are composed of one or more threads.

Since most operating systems have many background tasks running, your computer is likely to have many more processes running than actual programs. For example, you may only have three programs running, but there may be twenty active processes. You can view active processes in Windows by opening the Task Manager (press Ctrl-Alt-Delete and click Task Manager). On a Mac (refer to page 16 for a Mac picture) , you can see active processes by opening Activity Monitor (in the Applications→Utilities folder).

3. Storage

A computer storage device is any type of hardware that stores data.

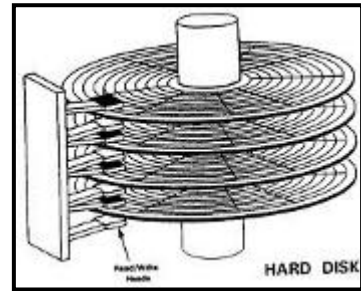
- a. **Primary Storage** - The most common type of storage device, which nearly all computers have, is a **hard drive**. The computer's primary hard drive stores the operating system, applications, and files and folders for users of the computer.



Hard disk drives inside the system unit

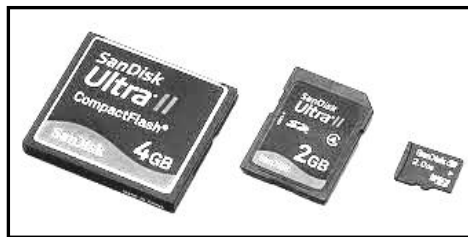


Inside the hard disk drive



Visual representation disks layered inside the hard disk

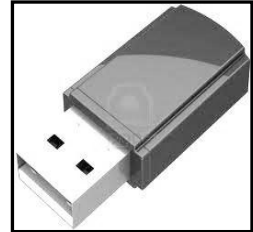
- b. **Secondary Storage** - These types of drives are often used for backing up internal hard drives, storing video or photo libraries, or for simply adding extra storage.



Secure Digital (SD) Card



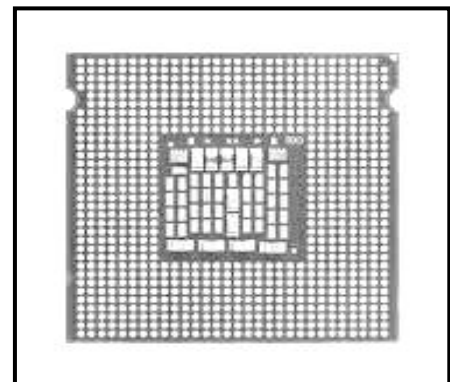
External Hard drive



Flash drive

4. **Control**

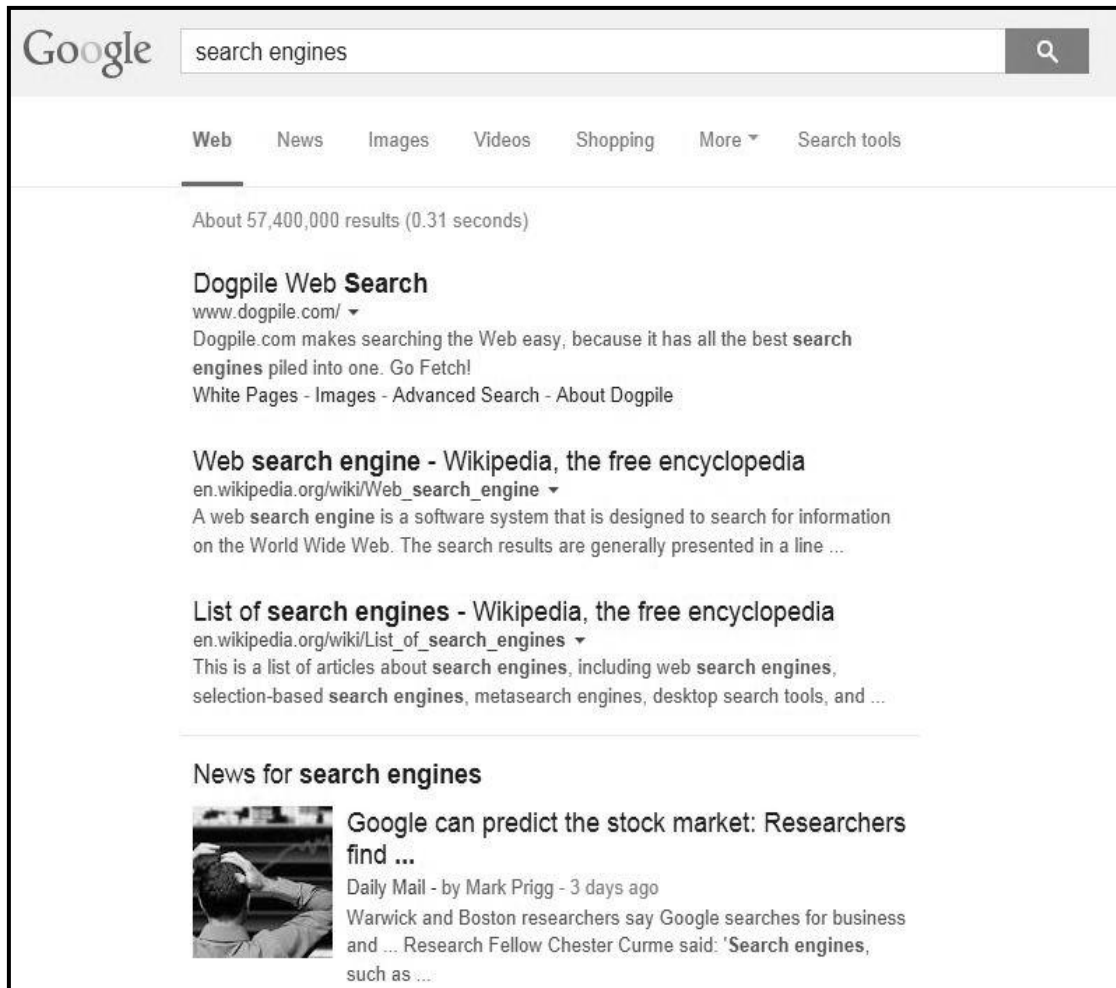
The control unit is part of the Central Processing Unit (CPU). This is pretty much the brain of your computer. It processes everything from basic instructions to complex functions. The CPU can also be referred to simply as the "processor." The control unit is the organiser that directs the flow of data in the computer in the same way as traffic lights control the flow of cars at an intersection. For example, your computer's CPU processes information sent to it by various programs.



The Central Processing Unit (CPU)

5. **Output**

Data generated by a computer is referred to as output. This includes data produced at a software level, such as the result of a calculation, or at a physical level, such as a printed document. A basic example of software output is a calculator program that produces the result of a mathematical operation. A more complex example is the results produced by a search engine, which compares keywords to millions of pages in its Web page index.



An output displayed in your screen using a search engine



Summary

You have come to the end of Lesson 3. In this lesson, you learnt about the different functions and components of the hardware of a computer. The hardware is the physical unit that makes up the computer. It has five functions which are storage, processing, input, output and control.

NOW DO PRACTICE EXERCISE 3 ON THE NEXT PAGE.

Practice Exercise 3

A. Enumerate the following.

1. Types of personal computer

a. _____

b. _____

c. _____

2. Different internal hardware component

a. _____

b. _____

c. _____

d. _____

e. _____

3. List the different types of ports

a. _____

b. _____

c. _____

d. _____

e. _____

f. _____

g. _____

4. Function of computer hardware

a. _____

b. _____

c. _____

d. _____

e. _____

CHECK YOUR WORK. ANSWERS ARE AT THE END OF TOPIC 1.
--

Answers to Activity 1

A.

1. Monitor
2. Mouse
3. Printer
4. Scanner
5. Speaker
6. Headset

B.

Ethernet	Serial	USB	Parallel	VGA	PS/2
RJ45	Mouse	Printer	Printer	LCD Monitor	Keyboard
LAN conector	CRT monitor	Speaker		CRT monitor	Mouse
	LCD monitor	Mouse			
		Scanner			
		USB			
		Keyboard			

Lesson 4: The Computer Peripherals



Welcome to Lesson 4 of Unit 1. In Lesson 3 you defined the computer hardware, identified the parts of a computer, differentiated the functions of each parts of the computer and located the different parts of a computer.

In this lesson you will be able to define computer peripherals and identifies the functions of a computer peripherals.



Your Aims:

- define computer peripherals
 - identify the functions of a computer peripherals
-

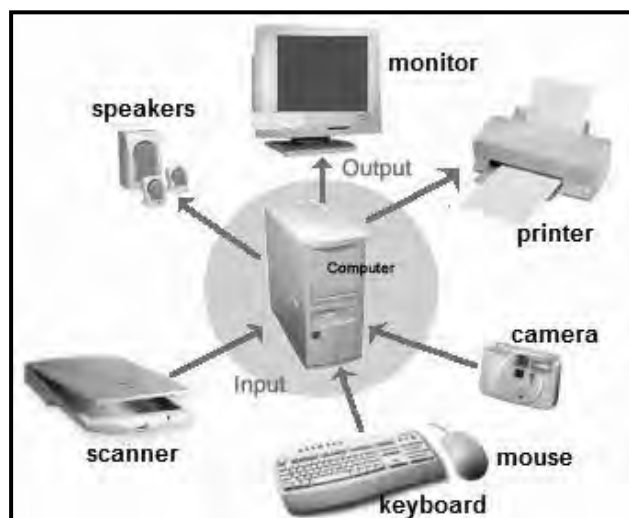
Computer Peripherals

Personal computers have advanced to the point where they can do millions or even billions of calculations per second. Yet, they are virtually useless without an assortment of peripheral devices. These additions are connected to the computer in some way, yet are not part of the computer's core. Dozens of computer peripherals exist, but only a handful are considered vital to the machine's functionality.

A **peripheral** is a device that is connected to a host computer, but not part of it. It expands the host's capabilities but does not form part of the core computer architecture. It is often, but not always, partially or completely dependent on the host.

There are three different types of peripherals:

1. Input which provides input to the computer from the user like the mice and keyboards.
2. Output which provides output to the user from the computer like the monitors and printers.
3. Storage which stores data like the hard drives and flash drives.



Here is a pictorial representation of computer peripherals.

Other examples of peripherals are expansion cards, graphics cards, computers, image scanners, tape drives, microphones, loudspeakers, webcams, and digital cameras. Random Access Memory (RAM) connects the line between peripheral and primary component. It is technically a storage peripheral, but is required for every major function of a modern computer and removing the RAM will effectively disable any modern machine. Many new devices such as smartphones and tablet computers have interfaces which allow them to be used as a peripheral by a full computer, though they are not host-dependent as other peripheral devices are. According to the most technical definition, the only pieces of a computer *NOT* considered to be peripherals are the central processing unit, power supply, motherboard, and computer case.

Usually, the word peripheral is used to refer to a device external to the computer case, like a scanner, but the devices located inside the computer case are also technically peripherals. Devices that exist outside the computer case are called external peripherals, or auxiliary components. Examples: "Many of the external peripherals, such as my scanner and printer, connect to the peripheral ports on the back of my computer.

Devices that are inside the case such as internal hard drives or CD-ROM drives are also peripherals in technical terms and are called internal peripherals, but may not be recognized as peripherals by lay people.

Look at the images of more peripherals below.



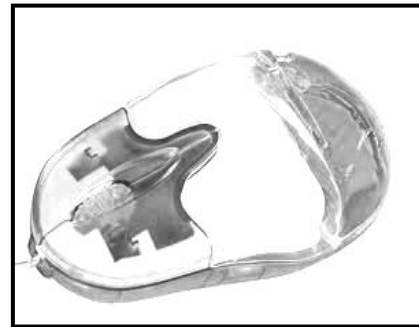
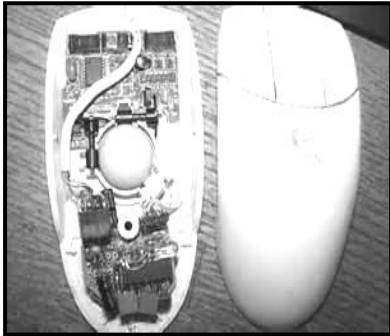
Other examples of computer peripherals

In a system on a chip, peripherals are incorporated into the same integrated circuit as the central processing unit. They are still referred to as "peripherals" despite being permanently attached to (and in some sense part of) their host processor.

The mouse is a peripheral that is known as a pointing device. It lets you point to objects on the screen, click on them, and move them.

There are two main types of mice: optical and mechanical. The optical mouse uses an electronic eye to detect movement and is easier to clean. The mechanical mouse uses a rolling ball to detect movement. Generally, a mechanical mouse is cheaper, although it may require regular cleaning to keep it working properly.

Traditionally, a mouse connects to the computer using a **USB** or **PS/2** connection. However, you can also buy a **wireless** mouse, which can reduce clutter on your desktop.



Mechanical Mice

Optical Mice (wireless mice)

While these are some of the more common peripherals, there are many other kinds as well. Just remember that any external device that provides input to the computer or receives output from the computer is considered a peripheral.

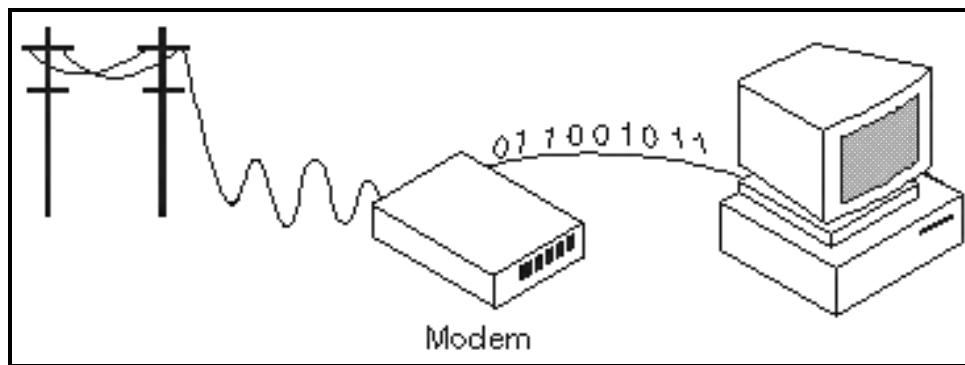
A computer device, such as a CD-ROM drive or printer, that is not part of the essential computer, i.e., the memory and microprocessor.

Peripheral devices can be external -- such as a mouse, keyboard, printer, monitor, external Zip drive or scanner -- or internal, such as a CD-ROM drive, CD-R drive or internal modem.



CD Drive

Modem



A **modem** (***mod**ulator-**dem**odulator*) is a device that modulates an analog carrier signal to encode digital information, and also demodulates such a carrier signal to decode the transmitted information. The goal is to produce a signal that can be transmitted easily and decoded to reproduce the original digital data. Modems can be used over any means of transmitting analog signals, from light emitting diodes to radio. The most familiar example is a voice band modem that turns the digital data of a personal computer into modulated electrical signals in the voice frequency range of a telephone channel. These signals can be transmitted over telephone lines and demodulated by another modem at the receiver side to recover the digital data.



Examples of a Modem

Modems are generally classified by the amount of data they can send in a given unit of time, usually expressed in bits per second (bit/s, or bps), or bytes per second (B/s). Modems can alternatively be classified by their symbol rate, measured in baud. The *baud* unit denotes symbols per second, or the number of times per second the modem sends a new signal. For example, the ITU V.21 standard used audio frequency shift keying with two possible frequencies corresponding to two distinct symbols (or one bit per symbol), to carry 300 bits per second using 300 baud. By contrast, the original ITU V.22 standard, which was able to transmit and receive four distinct symbols (two bits per symbol), handled 1,200 bit/s by sending 600 symbols per second (600 baud) using phase shift keying.

Game Consoles

A **video game** (VG) is an electronic game that involves human interaction with a user interface to generate visual feedback on a video device. The word *video* in *video game* traditionally referred to a cathode ray tube (CRT) display device, but it now implies any type of display device that can produce two or three dimensional images. The electronic systems used to play video games are known as platforms; examples of these are personal computers and video game consoles. These platforms range

from large mainframe computers to small handheld devices. Specialized video games such as arcade games, while previously common, have gradually declined in use. Video games have gone on to become an art form and industry.

The input device used to manipulate video games is called a game controller, and varies across platforms. For example, a controller might consist of only a button and a joystick, while another may feature a dozen buttons and one or more joysticks. Early personal computer games often needed a keyboard for gameplay, or more commonly, required the user to buy a separate joystick with at least one button. Many modern computer games allow or require the player to use a keyboard and a mouse simultaneously. A few of the most common game controllers are gamepads, mice, keyboards, and joysticks.

Video games typically use additional means of providing interactivity and information to the player. Audio is almost universal, using sound reproduction devices, such as speakers and headphones. Other feedback may come via haptic peripherals, such as vibration or force feedback, with vibration sometimes used to simulate force feedback.



Activity 1:

Complete the table below by filling in the information in each of the boxes.

Devices	Describe the Devices	Use of the Devices
1. Mechanical Mouse		

2. Optical Mouse		
3. CD ROM Drive		
4. Modem		
5. Xbox		

Thank you for completing this activity. Now, you may go to the end of this lesson to check your answer. Make sure you do the necessary corrections before moving on to the next part of this lesson.



Summary

You have come to the end of Lesson 4. In this lesson, you learnt about definition of peripheral and the different peripheral devices.

NOW DO PRACTICE EXERCISE 4 ON THE NEXT PAGE.

Practice Exercise 4

Enumerate the following.

1. Two types of a mouse

a. _____

b. _____

2. The Three different types of peripherals

a. _____

c. _____

b. _____

3. Examples of peripheral devices

a. _____

f. _____

b. _____

g. _____

c. _____

h. _____

d. _____

i. _____

e. _____

j. _____

CHECK YOUR WORK. ANSWERS ARE AT THE END OF TOPIC 1.

Answers to Activity 1

Devices	Describe the Devices	Use of the Devices
Mechanical Mouse	The mechanical mouse uses a rolling ball to detect movement. Generally, a mechanical mouse is cheaper, although it may require regular cleaning to keep it working properly.	Pointing device
Optical Mouse	The optical mouse uses an electronic eye to detect movement and is easier to clean.	Pointing device
CD ROM Drive	CD-ROM drives are also peripherals in technical terms and are called internal peripherals, but may not be recognized as peripherals by lay people.	Used to read Compact Disks
Modem	A modem (modulator-demodulator) is a device that modulates an analog carrier signal to encode digital information, and also demodulates such a carrier signal to decode the transmitted information.	Used for transmitting signals
Xbox	A video game (VG) is an electronic game that involves human interaction with a user interface to generate visual feedback on a video device.	Specialised video game

Lesson 5: Input and Output Devices



Welcome to Lesson 5 of Unit 1. In Lesson 4 we defined the computer peripherals and identified the functions of a computer peripherals.

In this lesson you will define the input and output devices and discuss the their functions.



Your Aims:

- define input devices
 - define output devices
 - identify the different input and output devices
 - identify the functions of input and output devices
-

Input and Output

In computing, **input/output** or **I/O** is the communication between an information processing system (such as a computer) and the outside world, possibly a human or another information processing system. Inputs are the signals or data received by the system, and outputs are the signals or data sent from it. The term can also be used as part of an action; to "perform I/O" is to perform an input or output operation. I/O devices are used by a person (or other system) to communicate with a computer.

Input is any data or instructions you enter into the memory of a computer while input is in memory, the CPU can access it and process the input into output. Four types of input are data, programs, commands, and user responses while **Output** is any information that has been processed and comes from a computer or computer device.

Data is a collection of unorganized facts that can include words, numbers, pictures, sounds, and videos. A computer manipulates and process data into information, which is useful. A **program** is a series of instructions that tells a computer how to perform the tasks necessary to process data into information. Programs are kept on storage media such as a floppy disk, hard disk, CD-ROM, or DVD-ROM. Programs respond to commands issued by a user.

A **command** is an instruction given to a computer program. Typing keywords or pressing special keys on the keyboard can issue commands. A keyword is a specific word, phrase, or code that a program understands as an instruction.

Input Devices

In computing, an **input device** is any peripheral or piece of computer hardware equipment used to provide data and control signals to an information processing system such as a computer or other information appliance. Examples of input devices include keyboards, mice, scanners, digital cameras and joysticks.

Many input devices can be classified according to:

- modality of input (e.g. mechanical motion, audio, visual, etc.)
- the input which is discrete (e.g. key presses) or continuous (e.g. a mouse's position, though digitized into a discrete quantity, is fast enough to be considered continuous)
- the number of degrees of freedom involved (e.g. two-dimensional traditional mice, or three-dimensional navigators designed for CAD applications)

Pointing devices, which are input devices used to specify a position in space, can further be classified according to:

- Whether the input is direct or indirect. With direct input, the input space coincides with the display space, i.e. pointing is done in the space where visual feedback or the pointer appears. Touchscreens and light pens involve direct input. Examples involving indirect input include the mouse and trackball.
- Whether the positional information is absolute (e.g. on a touch screen) or relative (e.g. with a mouse that can be lifted and repositioned)

Now let us take a look at these Input devices.

1. **Keyboard**

The keyboard is one of the most common types of input devices that is used with a computer. A keyboard consists of letters, numbers and other types of keys that perform different types of functions when used with a computer system. The keyboard allows the user to input text which can be used to instruct the computer to complete a number of tasks. English-language keyboards come complete with the full alphabet and number set, with special characters available to those who might need to add accents or other features to their text. Modern keyboards also come equipped with special buttons located outside the normal keys that control email function, volume and the computer's main media player. Keyboards are connected either through a hard wire or via a USB adapter.

Various keys on the keyboard let you enter information into a computer. Computer keyboards are similar to electric-typewriter keyboards but contain additional keys. The keys on computer keyboards are often classified as follows:

Alphanumeric keys:- These are the letters and number keys.

Punctuation keys:- comma, period, semicolon etc.

Special keys:- function keys, control keys, arrow keys, Caps Lock key etc.



QWERTY Keyboards

The standard layout of letters, numbers, and punctuation is known as a **QWERTY keyboard** because the first six keys on the top row of letters spell QWERTY.

2. **Mouse**

Another common input device that is used with a computer is a mouse or pointing device. A mouse displays a cursor on the screen that is used to make selections and navigate the operating system. All modern operating systems use a graphical interface which requires a mouse to open files, folders and to make selections. A mouse also connects using a cord or a wireless connection. The **mouse** is a **peripheral** that is known as a **pointing device**. It lets you **point** to objects on the screen, **click** on them, and **move** them.

There are two main types of mice: optical and mechanical. The **optical** mouse uses an electronic eye to detect movement and is easier to clean. The **mechanical mouse** uses a rolling ball to detect movement. Generally, a mechanical mouse is cheaper, although it may require regular cleaning to keep it working properly.

Traditionally, a mouse connects to the computer using a **USB** or **PS/2** connection. However, you can also buy a **wireless** mouse, which can reduce clutter on your desktop.



Wireless Mouse

Mouse with USB

3. **Webcam**

Webcams allow users to take pictures or videos of themselves and transmit them onto their computers. Webcams have the ability to broadcast live to other users through online video sites or chat rooms. Webcams connect through a hard wire or through a wireless connection via a USB adapter. In some modern laptop and netbook computers, small webcams are built into the top of the screen.



Web cameras

4. **Scanner**

A scanner is a device that is used to copy an image or document and convert it into a digital file that is used with a computer system. Scanners can be used to create digital images of family photos as well as create digital images of

important documents. A scanner is available as a flatbed device or a sheet fed device that can come bundled with many printers and fax machines.

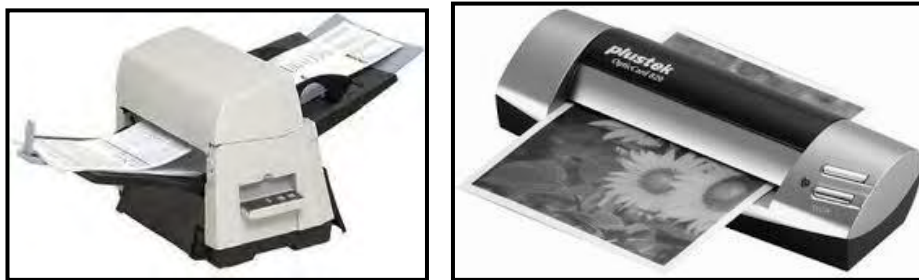
Scanners have become an important part of the home office over the last few years. Scanner technology is everywhere and used in many ways:

- a. **Flatbed scanners**, also called desktop scanners, are the most versatile and commonly used scanners. In fact, this article will focus on the technology as it relates to flatbed scanners.



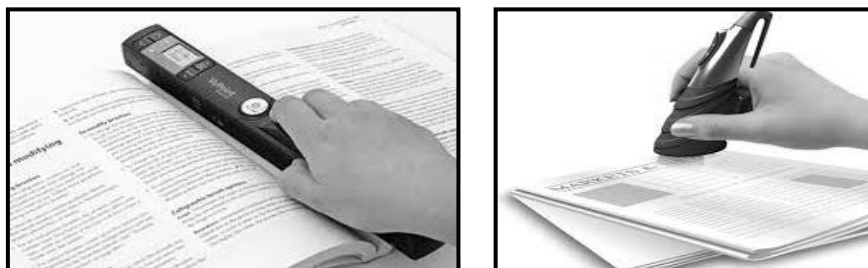
Flatbed Scanners

- b. **Sheet-fed scanners** are similar to flatbed scanners except the document is moved and the scan head is immobile. A sheet-fed scanner looks a lot like a small portable printer.



Sheet-fed Scanners

- c. **Handheld scanners** use the same basic technology as a flatbed scanner, but rely on the user to move them instead of a motorized belt. This type of scanner typically does not provide good image quality. However, it can be useful for quickly capturing text.



Handheld Scanners

- d. **Drum scanners** are used by the publishing industry to capture incredibly detailed images. They use a technology called a **photo multiplier tube** (PMT). In PMT, the document to be scanned is mounted on a glass cylinder. At the center of the cylinder is a sensor that splits light bounced from the document into three beams. Each beam is sent through a color filter into a photo multiplier tube where the light is changed into an electrical signal.



Drum Scanners

5. Microphone

A microphone is an input device that can be used in a computer for many different applications. One way to use a microphone is to record audio or video tutorials. Another use for a microphone is for performances such as karaoke or professional audio recording. A microphone is available as a hand-held model as well as a headset.



Microphones

6. Joystick

A joystick helps you control the movement of people and objects in many games. Joysticks are used for arcade-type computer games because they let you move quickly and accurately in any direction.



Joysticks

7. Digital Camera

A digital camera can be used to take pictures. It can be hooked up to a computer to transfer the pictures from the camera to the computer. Some digital cameras hold a floppy disk, and the floppy disk can be taken out of the camera and put directly into the computer.



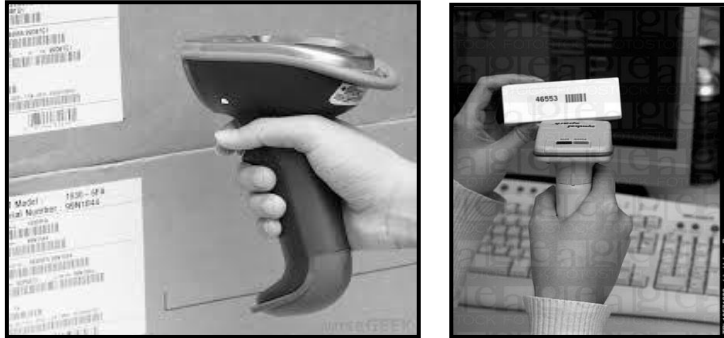
Digital Camera



Digital Video Camera

8. Bar Code Scanner

A bar code scanner scans a little label that has a bar code on it. A bar code is a machine-readable code in the form of numbers and a pattern of parallel lines of varying widths, printed on a commodity and used especially for stock control. The information is then saved on the computer. Bar code scanners are used in libraries a lot.



Barcode Scanners

9. Touch Screen

A touch screen is a computer screen or other screen that you can touch with your finger to enter information. Examples of touch screens include a smart board, a microwave, a dishwasher, or an Automated Teller Machine (ATM) at a bank.



Devices with touch screens

10. Pen Input

A pen drive, or a USB flash drive, is a portable data-storage device. Pen drives have replaced the floppy drives of old and have become the most popular data-storage devices among consumers. Micro, lightweight and handy, a pen drive can be easily carried from place to place by students, professionals, academicians and independent tech consultants. Currently available pen drives with storage capacities ranging from 8GB and 32GB can be used to store graphics-heavy documents, photos, music files and video clips.

Many input devices use an electronic pen instead of keyboard or mouse for input. Some of the devices require you to point to onscreen objects with the pen ; others allow you to input data using drawings, handwriting, and other symbols that are written with the pen on a surface.

11. Light Pen

A light pen is a handheld input device that contains a light source or can detect light. Some light pens require a specially designed monitor, while others work with a standard monitor. Instead of touching the screen with your finger to interact with the computer, you press the light pen against the surface of the

screen or point the light pen at the screen and then press a button on the pen. Light pens' use is limited such as in the health-care field or when a wide variety of people use the application, such as electronic voting. Readers should also note that you could create a very cost effective electronic whiteboard using a Light Pen combined with a Cathode Ray Tube (CRT)-Type rear projection system.

As well, mounting a large (digitizing tablet) on the wall. For example, and projecting into it, is another alternative approach to prototyping a digital whiteboard.

12. Pen Computing

Many handheld computers also allow inputting data using an electronic pen (also called a stylus) looks like a ballpoint pen but uses an electronic head instead of ink. Pen computers use handwriting recognition software that translates the letters and symbols used in handwriting into character data that the computers can use. Although most handwriting recognition software recognizes printed letters and can be trained to distinguish writing styles, pen-computing technology continues to be refined.



Electronic pens or stylus

Optical Character Recognition

Optical character recognition, usually abbreviated to **OCR**, is the mechanical or electronic conversion of scanned images of handwritten, typewritten or printed text into machine-encoded text. It is widely used as a form of data entry from some sort of original paper data source, whether documents, sales receipts, mail, or any number of printed records. It is a common method of digitizing printed texts so that they can be electronically searched, stored more compactly, displayed on-line, and used in machine processes such as machine translation, text-to-speech and text mining. OCR is a field of research in pattern recognition, artificial intelligence and computer vision.



Devices that uses OCR

13. Magnetic Ink Character Recognition

Magnetic ink character recognition, or **MICR**, is a character recognition technology used primarily by the banking industry to facilitate the processing and clearance of cheques and other documents. The MICR encoding, called the MICR line, is located at the bottom of a cheque or other voucher and typically includes the document type indicator, bank code, bank account number, cheque number and the amount, plus some control indicator. The

technology allows MICR readers to scan and read the information directly into a data collection device. Unlike barcodes or similar technologies, MICR characters can be easily read by humans.



Machines using MICR



Activity 1: Complete the table below.

Device	Device Name	Device Description
1. 		
2. 		
3. 		

4.			
5.			
6.			
7.			

Thank you for completing this activity. Now, you may go to the end of this lesson to check your answer. Make sure you do the necessary corrections before moving on to the next part of this lesson.

Output Devices

Recalling from the previous discussion, an output is data that has been processed into a useful form called information. That is, a computer processed input into output. Computers generate several types of output, depending on the hardware and software being used and the requirements of the user. You may choose to display or view this output on a monitor, print it on a printer, or listen to it through speakers or a headset.

There are four types of output:

- a. Text - Consists of characters that are used to create words, sentences, and paragraphs. A *character* is a letter, number, punctuation mark, or any other symbol that requires one byte of computer storage space.
- b. Graphics - are digital representations of non-text information such as drawings, charts, and photographs? Graphics also can be animated, giving them the illusion of motion.

- c. Audio - in music, speech, or any other sound. Recall that sound waves, such as the human voice or music, are analog. To store such sounds, a computer converts the sounds from a continuous analog signal into a digital format. Most output devices require that the computer convert the digital format back into analog signals.
- d. Video - is captured with a video input devices such as a camera or Video Camera Recorder (VCR). A video capture card converts an analogue video signal into a digital that a computer can understand. The digital signal then is stored on the computer's hard disk.

The following are examples of output devices.

1. Monitor

Next to the computer itself, the monitor is the most important piece of equipment necessary for a user to operate the machine. The monitor is used to display the results of the computer's complex calculations. It is usually connected to the computer tower using a special cable that contains small screws which are twisted to ensure a tight connection.

a. Liquid Crystal Display (LCD)

The most common application of liquid crystal technology is in liquid crystal displays (LCDs). From the ubiquitous wristwatch and pocket calculator to an advanced Video Graphics Array (VGA) computer screen, this type of display has evolved into an important and versatile interface.

b. Cathode Ray Tube (CRT)

A Cathode Ray Tube (CRT) monitor, or monitor is a display device that consists of a screen housed in a plastic or metal case. A colour monitor display text, graphics and video information in colour. Colour monitor are used widely with all types of computers because most of today's software is designed to display information in colour.



CRT Monitor



LCD Monitor

2. Printer

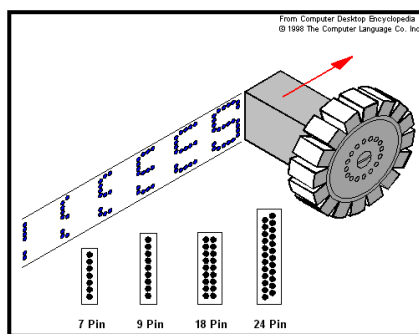
The printer is not considered a critical computer peripheral, but is useful for its ability to allow the user to print out important documents. Modern printers have the ability to also make photocopies, scan copies of documents into the computer or send faxes. Printers use elaborate connectors similar to the ones employed by monitors, though certain models also can be connected wirelessly through the installation of the proper device drivers.

Printer is also an external hardware device, which takes processed data from the computer to generate a hard copy of the same. Printers are the most used peripherals of computers and they are commonly used to print text data, images, etc. There are three main types of computer printers, namely inkjet, laser and dot matrix printers. The dot matrix printer is an impact printer. It uses striking pins against a ribbon to produce the characters in order to print the data. The inkjet printer uses magnetized plates that spray ink on the paper to produce the data. On the other hand, laser printers use a laser beam to produce the data.

Study the following types of printers below.

a. Dot Matrix Printer

- i. Limited to situations where carbon copies are needed and the quality is not too important.
- ii. Typical uses might be in ware house where duplicate copies of orders need to produce quickly and cheaply.
- iii. The printing quality is low
- iv. The purchase cost is low and the running costs are very low.
- v. Can print fairly quickly, if you remember that multiple copies are being printed in one print run.
- vi. Robust and can operate in harsh environments.
- vii. If several sheets of self-carbonating paper are placed into the printer then the impact will produce multiple copies.



Dot Matrix Mechanism



Dot Matrix Printer

Dot matrix printers print columns of dots in a serial fashion. The more dot hammers (pins), the better looking the printed results.

b. Ink Jet Printer

- i. A popular choice or home and school use where small amounts of printing are done.
- ii. The ink cartridges can be expensive so running costs can be high.

- iii. Speed is slow compared to a laser printer.
- iv. Relatively inexpensive and produce high quality black and white or colour printing.



Ink Jet Printer

c. Laser Printer

- i. Common wherever fast, high quality printing is required.
- ii. Non colour laser printers are more expensive than ink-jet printers (but the difference is narrowing).
- iii. Colour laser printers are considerably more expensive (but their speed and high quality output means they are becoming more popular).
- iv. Quiet and fast and produce high quality printouts.
- v. Running cost are low because although toner cartridges are expensive to replace, they last a long time.



Laser Jet Printers

3. Plotter

A device that draws pictures on paper based on commands from computer. Plotter differs from printer in that they draw lines using a pen. As a result, they can produce continuous lines, whereas printer can only simulate lines by printing a closely spaced series of dot. Multicolour plotter use different coloured pens to draw different colours.

Plotters are often used in science and engineering application for drawing building plans, printer circuit boards and machine parts. They are fast and

accurate but relatively expensive compared to printer. They can produce far larger printouts like a tarpaulin compared to a standard printer, up to the size of a small room.



Plotter

4. Headphones

Headphones give sound output from the computer. They are similar to speakers, except they are worn on the ears so only one person can hear the output at a time.

Headsets are a combination of speakers and microphone. A headset is used mostly by gamers, but it is also great tool for communicating with family or friends over the Internet using VOIP software.



Different types of headphones

5. Speakers

External speakers give the user a more complete listening experience-foregoing a reliance on a computer's internal speakers, which do not carry sound well. These devices are ideal for those who want to listen to music, movies or video game effects on their computer without having to make do with the internal speakers, or plugging in a set of headphones. Speakers can be connected either directly into the computer's casing, or through a sub-woofer, a device which produces low bass frequencies.

A speaker is also a hardware device, that is connected to a computer's sound card, which outputs the sound generated by the card. Audio data generated by the computer is sent to the audio card that is located in the expansion slot. The card translates the data into audio signals, which are then sent to either the speakers or the headphones. In the initial phase, computers had on-board speakers, which generated series of different tones and beeps. When the popularity of multimedia and computer games grew, better quality computer speakers known for higher quality sound effects and music came into the market.



Different types of speakers

6. Projector

It is a hardware device with which an image and text is projected onto a flat screen. Image data is sent to the video card by the computer which is then translated into a video image and sent to the projector. A projector is often used in meetings or to make presentations as it allows the display to be visible to a larger audience. Ceiling mount projector and table mount projector are the two types of projectors available in the market today.



Different types of projectors

7. Touchscreen

A **touchscreen** is an electronic visual display that the user can control through simple or multi-touch gestures by touching the screen with one or more fingers. Some touchscreens can also detect objects such as a stylus or ordinary or specially coated gloves. The user can use the touchscreen to react to what is displayed and to control how it is displayed (for example by zooming the text size).

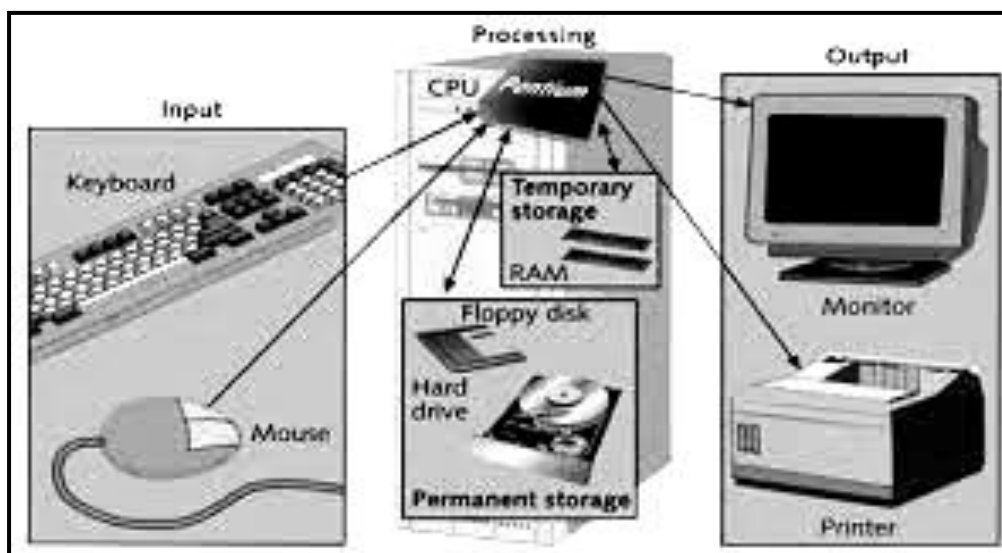
The touchscreen enables the user to interact directly with what is displayed, rather than using a mouse, touchpad, or any other intermediate device (other than a stylus, which is optional for most modern touchscreens).

Touchscreens are common in devices such as game consoles, all-in-one computers, tablet computers, and smartphones. They can also be attached to computers or, as terminals, to networks. They also play a prominent role in the design of digital appliances such as personal digital assistants (PDAs), satellite navigation devices, mobile phones, and video games.



Different devices using touchscreen

After learning all what input and output are, take a look at the diagram below which will show further the relationship of input and output in a computer activity.



Activity 2: In your own words define each of the given terms below. Write your answers on the space provided.

A.

1. Input

2. Data

3. Program

4. Command

5. Output

B. Choose a term from the box to name each of the figures below.

MICR

LCD Monitor

Bar Code Reader

Dot Matrix Printer

Plotter

Headset

Pen Input

Projector

Webcam

Touch Screen



















10.



Thank you for completing this activity. Now, you may go to the end of this lesson to check your answer. Make sure you do the necessary corrections before moving on to the next part of this lesson.



Summary

You have come to the end of Lesson 5. In this lesson, you learnt about different input and output devices and the functions of the input and output devices.

NOW DO PRACTICE EXERCISE 5 ON THE NEXT PAGE.

Practice Exercise 5

A. Classify the following devices as INPUT or OUTPUT.

Device	Write INPUT or OUTPUT
1. 	
2. 	
3. 	
4. 	
5. 	
6. 	
7. 	

8.		
9.		
10.		

B. Enumerate the following and briefly describe.

1. Name the three types of printers

a. _____

b. _____

c. _____

d. _____

2. The two types of Monitors

a. _____

b. _____

CHECK YOUR WORK. ANSWERS ARE AT THE END OF TOPIC 1.

Answers to Activities

Activity 1

1. **Handheld scanners** use the same basic technology as a flatbed scanner, but rely on the user to move them instead of a motorized belt. This type of scanner typically does not provide good image quality. However, it can be useful for quickly capturing text.
2. A **bar code scanner** scans a little label that has a bar code on it. The information is then saved on the computer.
3. A **digital camera** can be used to take pictures. It can be hooked up to a computer to transfer the pictures from the camera to the computer.
4. A **joystick** helps you control the movement of people and objects in many games. Joysticks are used for arcade-type computer games because they let you move quickly and accurately in any direction.
5. **Sheet-fed scanners** are similar to flatbed scanners except the document is moved and the scan head is immobile. A sheet-fed scanner looks a lot like a small portable printer.
6. A **microphone** is an input device that can be used in a computer for many different applications. One way to use a microphone is to record audio or video tutorials. Another use for a microphone is for performances such as karaoke or professional audio recording. A microphone is available as a hand-held model as well as a headset.
7. **Drum scanners** are used by the publishing industry to capture incredibly detailed images. They use a technology called a photo multiplier tube (PMT). In PMT, the document to be scanned is mounted on a glass cylinder. At the center of the cylinder is a sensor that splits light bounced from the document

into three beams. Each beam is sent through a color filter into a photo multiplier tube where the light is changed into an electrical signal.

Activity 2

A

1. **Input** is any data or instructions you enter into the memory of a computer. Once input is in memory, the CPU can access it and process the input into output. Four types of input are data, programs, commands, and user responses.
2. **Data** is a collection of unorganized facts that can include words, numbers, pictures, sounds, and videos. A computer manipulates and process data into information, which is useful. Although technically speaking, a single item of data should be called a datum; the term data commonly is used and accepted as both the singular and plural form of the word.
3. A **program** is a series of instructions that tells a computer how to perform the tasks necessary to process data into information. Programs are kept on storage media such as a floppy disk, hard disk, CD-ROM, or DVD-ROM. Programs respond to commands issued by a user.
4. A **command** is an instruction given to a computer program. Typing keywords or pressing special keys on the keyboard can issue commands. A keyword is a specific word, phrase, or code that a program understands as an instruction. Some keyboards include keys that send a command to a program when you press them.
5. **Output** is data that has been processed into a useful form called information. That is, a computer processed input into output. Computers generate several types of output, depending on the hardware and software being used and the requirements of the user.

B

1. Webcam
2. Headset
3. LCD Monitor
4. Bar Code Reader
5. Projector
6. Plotter
7. Pen Input
8. Touch Screen
9. Dot Matrix
10. MICR

Lesson 6: The Computer Software



Welcome to Lesson 6 of Unit 1. In Lesson 5 we defined the input and output devices, identified the different input and output devices and their functions.

In this lesson you will be able to define computer software, explain the definition and functions of the operating system, discuss the types of computer software



Your Aims:

- define computer software
 - define the operating system
 - identify the functions of the operating system
 - identify the types of computer software
-

Computer Software

Computer software is a general term that describes computer programs. Related terms such as software programs, applications, scripts, and instruction sets all fall under the category of computer software. Therefore, installing new programs or applications on your computer is synonymous with installing new software on your computer.

Software can be difficult to describe because it is "virtual," or not physical like computer hardware. Instead, software consists of lines of code written by computer programmers that have been compiled into a computer program. Software programs are stored as binary data that is copied to a computer's hard drive, when it is installed. Binary data is data whose unit can take on only two possible states, traditionally termed 0 and +1 in accordance with the binary numeral system and Boolean algebra. Since software is virtual and does not take up any physical space, it is much easier (and often cheaper) to upgrade than computer hardware.

While at its most basic level, software consists of binary data, CD-ROMs, DVDs, and other types of media that are used to distribute software can also be called software. Therefore, when you buy a software program, it often comes on a disc, which is a physical means of storing the software.

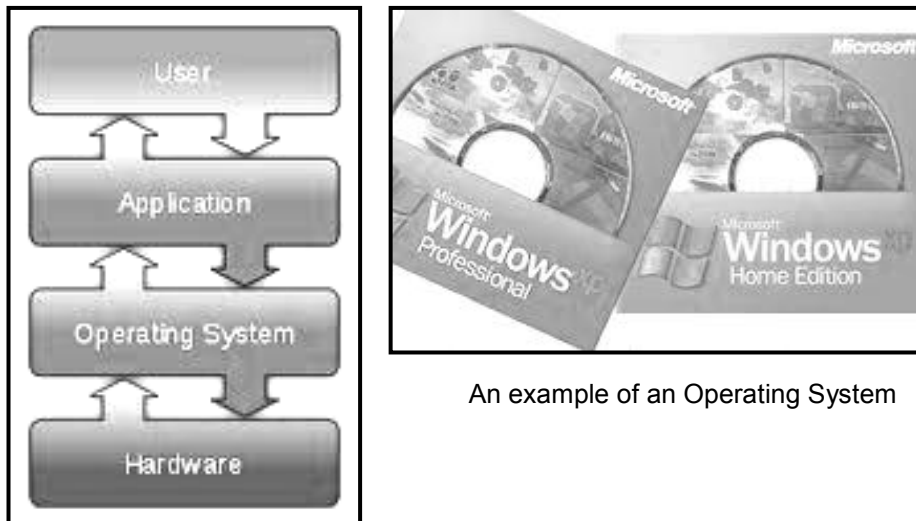


Windows Computer Software

An **operating system (OS)** is a collection of software that manages computer hardware resources and provides common services for computer programs. The operating system is a vital component of the system software in a computer system. Application programs usually require an operating system to function.

Time-sharing operating systems schedule tasks for efficient use of the system and may also include accounting for cost allocation of processor time, mass storage, printing, and other resources.

For hardware functions such as input and output and memory allocation, the operating system acts as an intermediary between programs and the computer hardware, although the application code is usually executed directly by the hardware and will frequently make a system call to an OS function or be interrupted by it. Operating systems can be found in almost any computer device such as cellular phones and video game consoles to supercomputers and web servers.

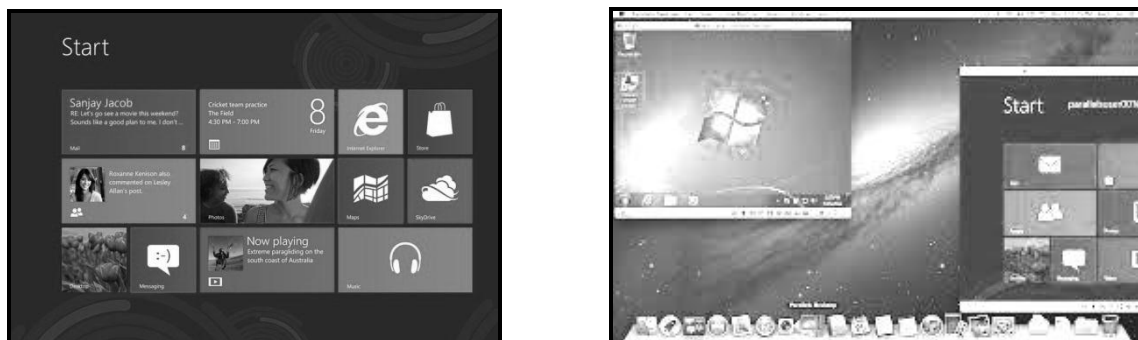


An example of an Operating System

How the hardware, operating system and software works

When you turn on your computer, it is nice to think that you are in control. There is the trusty computer mouse, which you can move anywhere on the screen, summoning up your music library or Internet browser at the slightest impulse. Although it is easy to feel like a director in front of your desktop or laptop, there is a lot going on inside, and the real man behind the curtain handling the necessary tasks is the operating system.

Operating systems usually come preloaded on any computer you buy. Most people use the operating system that comes with their computer, but it is possible to upgrade or even change operating systems. The three most common operating systems for personal computers are **Microsoft Windows**, **Mac OS X**, and **Linux**.



Laptop and Mac Computers with pre-loaded Microsoft Windows Applications

Most desktop or laptop PCs come pre-loaded with Microsoft Windows. Macintosh computers come pre-loaded with Mac OS X. Many corporate servers use the Linux or UNIX operating systems. The operating system (OS) is the first thing loaded onto the computer -- without the operating system, a computer is useless.

When you turn on the power to a computer, the first program that runs is usually a set of instructions kept in the computer's read-only memory (ROM). This code examines the system hardware to make sure everything is functioning properly. This **power-on self-test** (POST) checks the CPU, memory, and basic input-output systems (BIOS) for errors and stores the result in a special memory location. Once the POST has successfully completed, the software loaded in ROM (sometimes called the BIOS or **firmware**) will begin to activate the computer's disk drives. In most modern computers, when the computer activates the hard disk drive, it finds the first piece of the operating system: the **bootstrap loader**. The bootstrap loader is a small program that has a single function: It loads the operating system into memory and allows it to begin operation.

Types of Operating Systems

Within the broad family of operating systems, there are generally four types, categorized based on the types of computers they control and the sort of applications they support. The categories are:

- a. **Real-time operating system (RTOS)** - Real-time operating systems are used to control machinery, scientific instruments and industrial systems. An RTOS typically has very little user-interface capability, and no end-user utilities, since the system will be a "sealed box" when delivered for use. A very important part of an RTOS is managing the resources of the computer so that a particular operation executes in precisely the same amount of time, every time it occurs. In a complex machine, having a part move more quickly just because system resources are available may be just as catastrophic as having it not move at all because the system is busy.
- b. **Single-user, single task** - As the name implies, this operating system is designed to manage the computer so that one user can effectively do one thing at a time. The Palm OS for Palm handheld computers is a good example of a modern single-user, single-task operating system.



- c. **Single-user, multi-tasking** - This is the type of operating system most people use on their desktop and laptop computers today. Microsoft's Windows and Apple's MacOS platforms are both examples of operating systems that will let a single user have several programs in operation at the same time. For example, it's entirely possible for a Windows user to be writing a note in a word processor while downloading a file from the Internet while printing the text of an e-mail message.



- d. **Multi-user** - A multi-user operating system allows many different users to take advantage of the computer's resources simultaneously. The operating system must make sure that the requirements of the various users are balanced, and that each of the programs they are using has sufficient and separate resources so that a problem with one user does not affect the entire community of users. Unix, VMS and mainframe operating systems, such as MVS, are examples of multi-user operating systems.



It is important to differentiate between multi-user operating systems and single-user operating systems that support networking. Windows 2000 and Novell Netware can each support hundreds or thousands of networked users, but the operating systems themselves are not true multi-user operating systems. The **system administrator** is the only "user" for Windows 2000 or Netware. The network support and all of the remote user logins the network enables are, in the overall plan of the operating system, a program being run by the administrative user.



Activity 1. Answer the following.

A. Atate the correct word for each description.

1. A general term for computer programs. _____
2. A collection of software that manages computer hardware resources and provides common services for computer programs. _____
3. An operating system that has very little user interface capability. _____

4. An operating system that allows many different users to take advantage of the computer's resources simultaneously. _____

B. Answer the following.

Name the three most commonly used operating systems.

1. _____
2. _____
3. _____

List at least four different types of operating system.

1. _____
2. _____
3. _____
4. _____

Thank you for completing this activity. Now, you may go to the end of this lesson to check your answer. Make sure you do the necessary corrections before moving on to the next part of this lesson.

Operating System Functions

With the different types of operating systems in mind, it is time to look at the basic functions provided by an operating system.

At the simplest level, an operating system does two things:

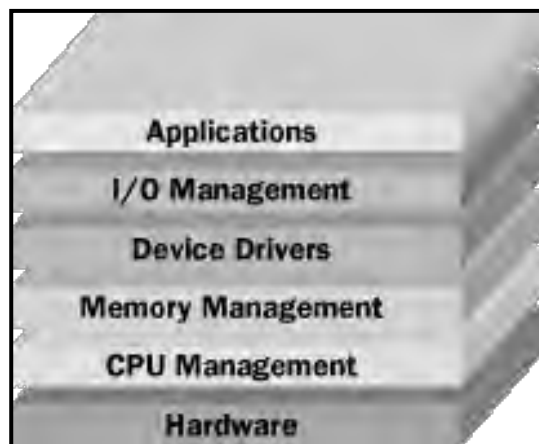
1. It manages the hardware and software resources of the system. In a desktop computer, these resources include such things as the processor, memory, disk space and more (On a cell phone, they include the keypad, the screen, the address book, the phone dialer, the battery and the network connection).
2. It provides a stable, consistent way for applications to deal with the hardware without having to know all the details of the hardware.

The first task, managing the hardware and software resources, is very important, as various programs and input methods compete for the attention of the **Central Processing Unit** (CPU) and demand memory, storage and input/output (I/O) bandwidth for their own purposes. In this capacity, the operating system plays the role of the good parent, making sure that each application gets the necessary resources while playing nicely with all the other applications, as well as improving the limited capacity of the system to the greatest good of all the users and applications.

The second task, providing a consistent application interface, is especially important if there is to be more than one of a particular type of computer using the operating

system, or if the hardware making up the computer is ever open to change. A consistent **Application Program Interface (API)** allows a software developer to write an application on one computer and have a high level of confidence that it will run on another computer of the same type, even if the amount of memory or the quantity of storage is different on the two machines.

Even if a particular computer is unique, an operating system can ensure that applications continue to run when hardware upgrades and updates occur. This is because the operating system -- not the application -- is charged with managing the hardware and the distribution of its resources. One of the challenges facing developers is keeping their operating systems flexible enough to run hardware from the thousands of vendors manufacturing computer equipment. Today's systems can accommodate thousands of different printers, disk drives and special peripherals in any possible combination.



The operating system controls every task your computer carries out and manages system resources.



Activity 2. Define each of the following words.

1. Software

2. Operating System

3. Bootstrap Loader

4. Application Program Interface (API)

5. Real Time Operating System

Thank you for completing this activity. Now, you may go to the end of this lesson to check your answer. Make sure you do the necessary corrections before moving on to the next part of this lesson.



Summary

You have come to the end of Lesson 6. In this lesson, you learnt the definitions of software, definitions of operating system, functions of operating system and types of operating system.

NOW DO PRACTICE EXERCISE 6 ON THE NEXT PAGE.

Practice Exercise 6

Fill-in-the blanks to complete each of the statements below. Each blank may consist of a word or group of words as answers.

1. Software consists of binary data, CD-ROMs, DVDs, and other types of media while at its most basic level are used to distribute software can also be called (a). Therefore, when you buy a software program, it often comes in a disc, which is a physical means of storing the (b).
 2. (a) schedule tasks for efficient use of the system and may also include (b) for cost allocation of processor time, mass storage, printing, and other resources.
 3. Most desktop or laptop PCs come pre-loaded with (a). Macintosh computers come pre-loaded with (b). Many corporate servers use the Linux or UNIX operating systems. The operating system (OS) is the first thing loaded onto the computer -- without the operating system, a computer is (c).
 4. This (a) (POST) checks the CPU, memory, and (b) (BIOS) for errors and stores the result in a special memory location.
 5. The (a) is the only "user" for (b) or (c). The network support and all of the remote user logins the network enables are, in the overall plan of the operating system, a program being run by the administrative user.
-

CHECK YOUR WORK. ANSWERS ARE AT THE END OF TOPIC 1.
--

Answers to the Activities

Activity 1

A.

- | | |
|---------------------|--------------------------------|
| 1. Software | 3. Real-time operating system |
| 2. Operating System | 4. Multi-user operating system |

B.

(1) Microsoft Windows (2) Mac OS X (3) Linux

(1) Real-time operating system (2) Single-user, single task operating system (3) single user, multi-tasking operating system (4) Multi-user operating system.

Activity 2

1. **Software** - is a general term that describes computer programs. Related terms such as software programs, applications, scripts, and instruction sets all fall under the category of computer software. Therefore, installing new programs or applications on your computer is synonymous with installing new software on your computer.
2. **Operating System** - is a collection of software that manages computer hardware resources and provides common services for computer programs. The operating system is a vital component of the system software in a computer system. Application programs usually require an operating system to function.
3. **Bootstrap Loader** - is a small program that has a single function: It loads the operating system into memory and allows it to begin operation. In the most basic form, the bootstrap loader sets up the small driver programs that interface with and control the various hardware subsystems of the computer.
4. **API (Application Program Interface)** - allows a software developer to write an application on one computer and have a high level of confidence that it will run on another computer of the same type, even if the amount of memory or the quantity of storage is different on the two machines.
5. **RTOS (Real-time operating systems)** - are used to control machinery, scientific instruments and industrial systems. An RTOS typically has very little user-interface capability, and no end-user utilities, since the system will be a "sealed box" when delivered for use. A very important part of an RTOS is managing the resources of the computer so that a particular operation executes in precisely the same amount of time, every time it occurs. In a complex machine, having a part move more quickly just because system resources are available may be just as catastrophic as having it not move at all because the system is busy.

Answers to Practice Exercises in Topic 1

Practice Exercise 1

A. True or False

- | | |
|----------|-----------|
| 1. False | 6. False |
| 2. True | 7. True |
| 3. False | 8. False |
| 4. True | 9. True |
| 5. False | 10. False |

B. Enumeration: Answers are not in particular order.

The Different Characteristics of Computer

- | | |
|-------------------------|---------------------|
| a. Speed | f. No I.Q. |
| b. Accuracy | g. Common Data Used |
| c. Versatility | h. Diligence |
| d. Reliability | i. Storage |
| e. Power of Remembering | |

Limitations of Computers

- It cannot correct any incorrect data placed by the user.
- It can only do what it programmed to do.
- It cannot generate information on its own.
- It is subject to occasional breakdown.

Practice Exercise 2

Invention / Machine	Inventor
1. Punch card for looming device	g. Joseph Marie Jacquard
2. Automatic calculator	k. Howard Aiken
3. ENIAC	i. Eckert and Mauchly
4. Pascaline	d. Blaise Pascal
5. Colossus	b. Alan Turing
6. Vacuum Tube	c. John Ambrose Fleming
7. Difference Engine	a. Charles Babbage
8. Transistors	l. Kemeny and Kurtz
9. Integrated Circuits	h. Kilby and Noyce
10. Tabulating Machine	i. Eckert and Mauchly

Practice Exercise 3

Enumeration

1. Types of personal computer
 - a. Tower
 - b. Desktop
 - c. All-in one system
 2. Different internal hardware component
 - a. Motherboard
 - b. Integrated circuit
 - c. Expansion Slot / Expansion Card
 - d. Bus
 - e. Port
 3. List the different types of ports
 - a. Ethernet
 - b. Serial
 - c. Parallel
 - d. Audio
 - e. USB
 - f. VGA
 - g. PS/2
 4. Function of computer hardware
 - a. Input
 - b. Process
 - c. Storage
 - d. Control
 - e. Output
-

Practice Exercise 4

1. Types of a mouse
 - a. Mechanical Mouse
 - b. Optical Mouse
2. Three different types of peripherals
 - a. Input
 - b. Output
 - c. Storage

3. Peripheral Devices either input or output (any of these answers)
- a. Keyboard
 - b. Monitor
 - c. Mouse
 - c. Printer
 - d. Scanner
 - e. Modem
 - f. Microphone
 - g. Headset
 - h. Digital Camera
 - i. Webcam
 - j. Speakers

Practice Exercise 5

A.

- 1. Output
- 2. Output
- 3. Input
- 4. Output
- 5. Input
- 6. Output
- 7. Input
- 8. Input
- 9. Input
- 10. Input

B.

1.

a. Dot Matrix Printer

- i. Limited to situations where carbon copies are needed and the quality is not too important.
- ii. Typical uses might be in ware house where duplicate copies of orders need to produce quickly and cheaply.iii. The printing quality is low
- iv. The purchase cost is low and the running costs are very low.
- v. Can print fairly quickly, if you remember that multiple copies are being printed in one print run.
- vi. Robust and can operate in harsh environments.
- vii. If several sheets of self-carbonating paper are placed into the printer then the impact will produce multiple copies.

b. Ink Jet Printer

- i. A popular choice for home and school use where small amounts of printing are done.
- ii. The ink cartridges can be expensive so running costs can be high.
- iii. Speed is slow compared to a laser printer.
- iv. Relatively inexpensive and produce high quality black and white or colour printing.

c. Laser Printer

- i. Common wherever fast, high quality printing is required.
- ii. Non colour laser printers are more expensive than ink-jet printers (but the difference is narrowing).
- iii. Colour laser printers are considerably more expensive (but their speed and high quality output means they are becoming more popular).
- iv. Quiet and fast and produce high quality printouts.
- v. Running cost are low because although toner cartridges are expensive to replace, they last a long time.

2.**a. Liquid Crystal Display (LCD)**

The most common application of liquid crystal technology is in liquid crystal displays (LCDs). From the ubiquitous wristwatch and pocket calculator to an advanced VGA computer screen, this type of display has evolved into an important and versatile interface.

b. Cathode Ray Tube (CRT)

A CRT monitor, or monitor is a display device that consists of a screen housed in a plastic or metal case. A colour monitor display text, graphics and video information in colour. Colour monitors are used widely with all types of computers because most of today's software is designed to display information in colour.

Practice Exercise 6

- 1. (a) software (b) software
 - 2. (a) Time Sharing Operating System (b) Accounting
 - 3. (a) Microsoft Windows (b) Mac OS X (c) useless
 - 4. (a) Power-On Self- Test (b) basic input-output system
 - 5. (a) System Administrator (b) Windows 2000 (c) network
-

End of Topic 1.

Now Do Exercise 1 in Assignment Book 1 Then Go to Topic 2.

TOPIC 2:

WORKING WITH THE COMPUTER

Lesson 7:	Starting the Computer
Lesson 8:	Basic Keyboarding Review
Lesson 9:	The Graphical User Interface
Lesson 10:	Data Handling
Lesson 11:	Storage Devices
Lesson 12:	Data Security

TOPIC 2: WORKING WITH THE COMPUTER

Computers are very important devices which we commonly use nowadays. Computers help businesses by making their staff efficient and productive and also save their valuable time in any business or office. Computers in schools help the learners to comprehend the basic concepts better with the help of video or audio examples. In higher learning institutions computers help the professors and researchers to do their work very fast and in an efficient and better way. These machines also help in sharing the same knowledge with other people. Computers become a vital gadget in several sectors; railways, banking, electricity, telephone departments and shopping carts are just but a few of them. They are also used in the medical industry to help doctors in diagnosing the diseases quickly and efficiently. All the administrative systems, whether private or public are now using computers and this practice can be evident in every part of the world. Hence, the importance given to computers is based due to their uses.

In this topic you will learn more about how to work with the computer. The topic outlines the basic tasks and information necessary to be able to manipulate a computer and perform different tasks with it.

In this topic, you will study the following in the six lessons:

Lesson 7 provides guides on how to start up a computer, open and shutdown programs.

Lesson 8 reviews how to use the computer keyboarding.

Lesson 9 defines Graphical User Interface with its features.

Lesson 10 explains how to properly handle data.

Lesson 11 introduces you to various storage devices and explains how they are used in back ups for data safety.

Lesson 12 emphasizes on how users must do to protect their data for its confidentiality.

By the end of Topic 2, you should be able to use basic skills in manipulating a computer and use a range of computer applications.

Lesson 7: Starting the Computer



Welcome to Lesson 7 of Unit 1. In Topic 1, you learnt about what a computer is and its basic parts and functions.

In this lesson you will learn how to use a computer.



Your Aims:

- identify the steps on how to start up the computer
- identify how to open programs in the computer
- identify different locations in the computer
- identify the steps on how to shut down the computer

How to Start the Computer

You have learnt how to start up a computer in your Grade 9 Course on Computing. We will begin this lesson with a review of that. Make sure you are sitting next to a power point with your computer. Now follow the instructions below, start up your computer.

1. First plug your computer unto the power surge protector that is already plugged onto the power point in the walls.



Power Surge Protector

2. Locate the power button which usually has a picture that looks like this: 
3. Find the Power button on your computer brain or CPU and press it once (with a few minutes for it to start up).
4. Find the "Power button" on your monitor and press it once if your monitor screen stays blank.
5. Make sure there is a green light that comes when your power is on.

The green light indicates that your computer has power and is switched on, ready to use. The next part of this lesson, you will learn how to open programs installed in your computer.

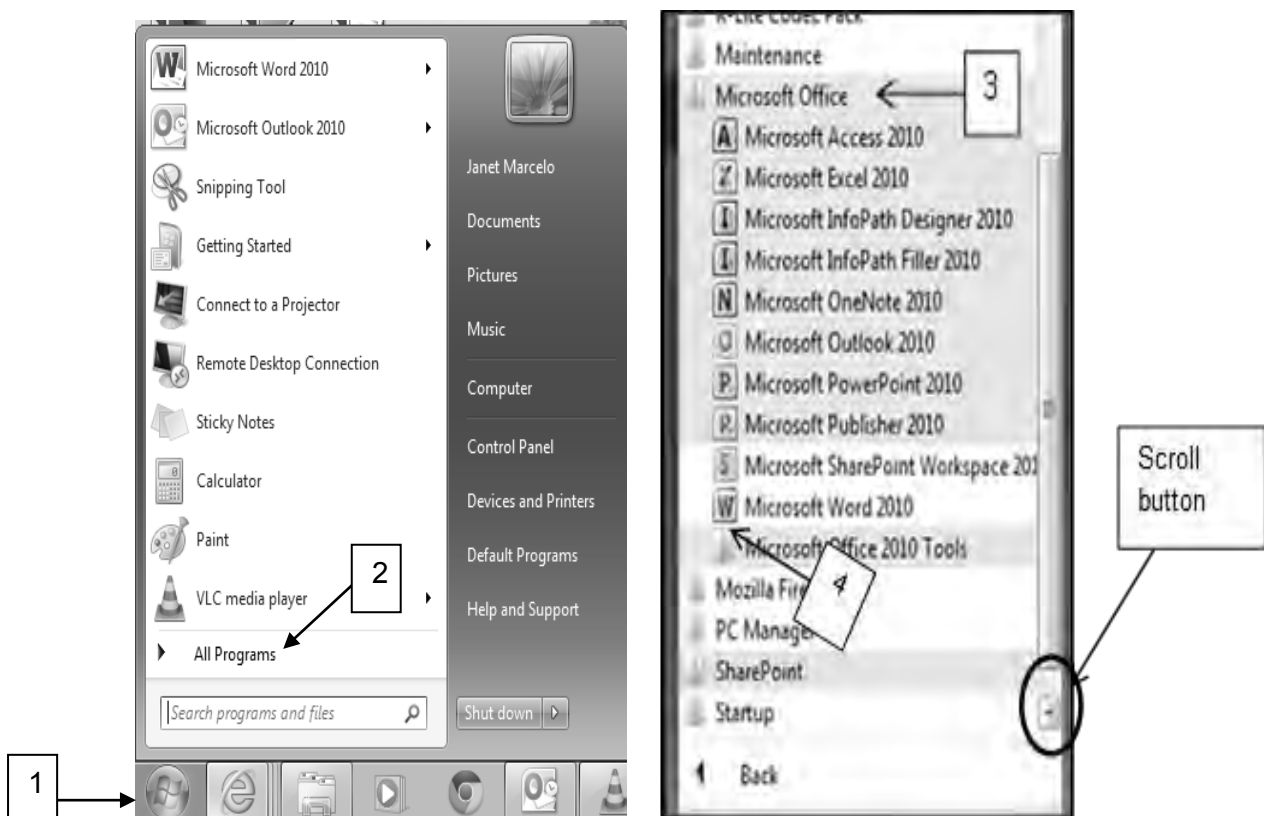
How to Open Programs in the Computer

Your computer may have different programs installed in it. The Microsoft Office Applications software is the most common software installed in computers. Let us learn how to initially open these programs.

There are three ways on how you can open programs in the computer.

First is by using the **Start Menu**. The steps below will guide you on how to open programs.

1. Click the **Start** button.
2. Choose **All Programs**.
3. Click the Scroll button until you see **MS Office** folder.
4. Click **MS Office** folder and select the programs you need by double clicking your left mouse button..



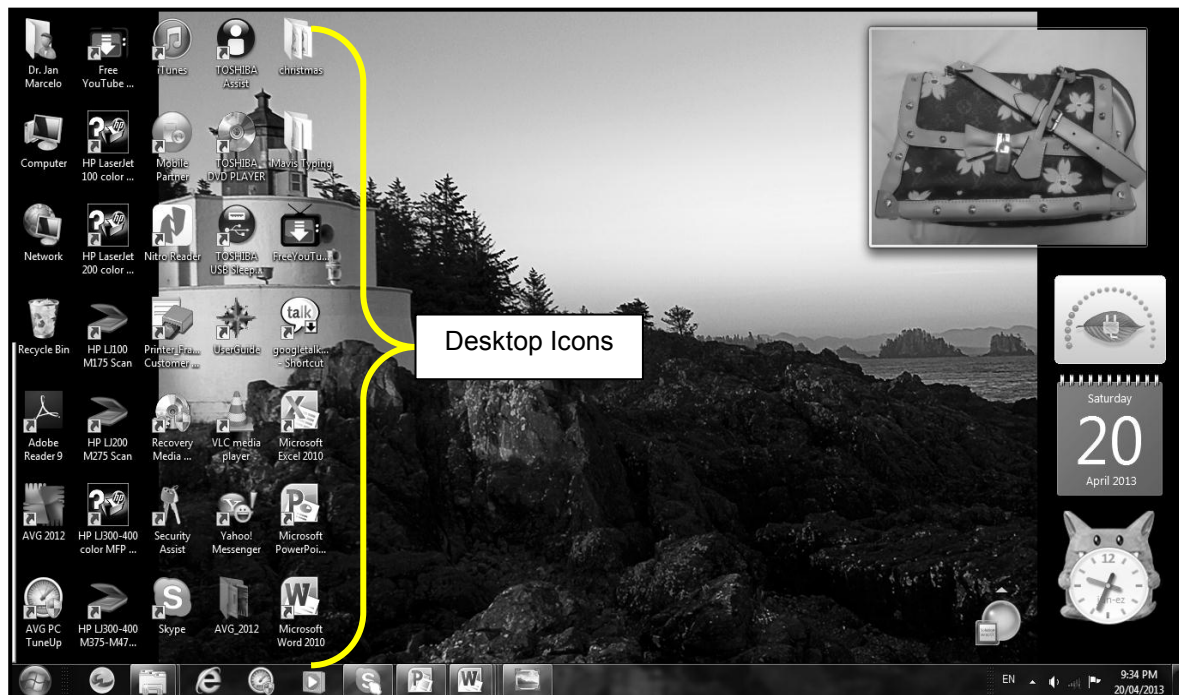
5. The program you have chosen will now open.

The second way to open programs in your computer is by using the **Desktop Icons**. What you see on the monitor screen is called the **-desktop-**. Like the top of a real desk, it has a place for files, folders, documents and even, trash. The desktop is the primary user interface of a computer. When you start up your computer, the desktop is displayed once the startup process is complete. It includes the desktop background (or wallpaper) and icons of files and folders you may have saved to the desktop. In Windows, the desktop includes a task bar, which is located at the bottom of the screen by default.



Computer Desktop

Icons are like doorways to look into things in your computer easily.



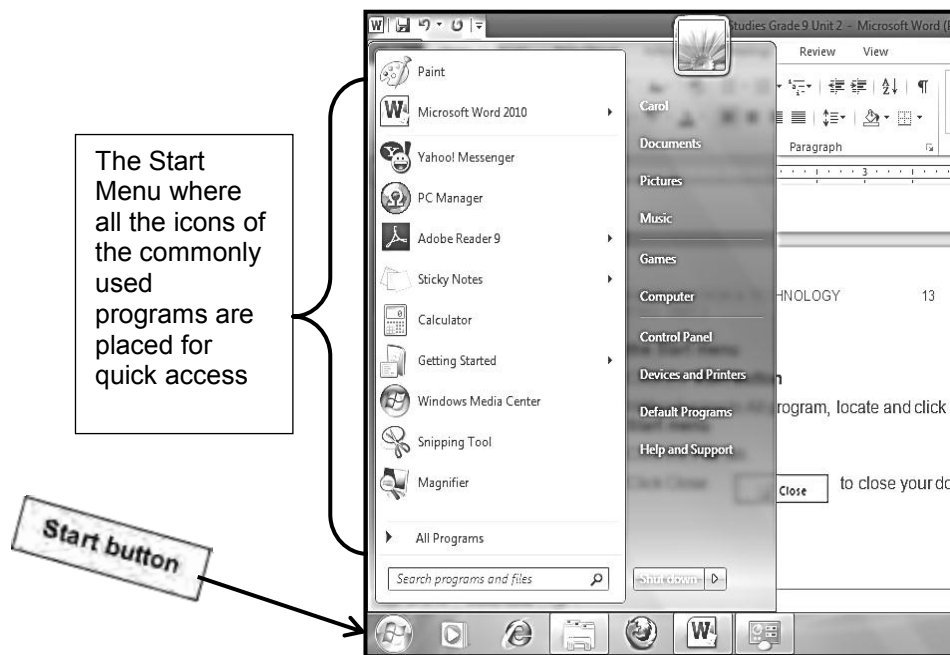
Study the steps below on how to open programs using the Desktop icons.

1. **Double click** the chosen program icon from your desktop. Do not worry if your computer doesn't have the needed icon. You can skip this part and proceed to using the Start Menu.
2. The chosen program is now open.

The third way to open programs in your computer is through the **Start Menu**.

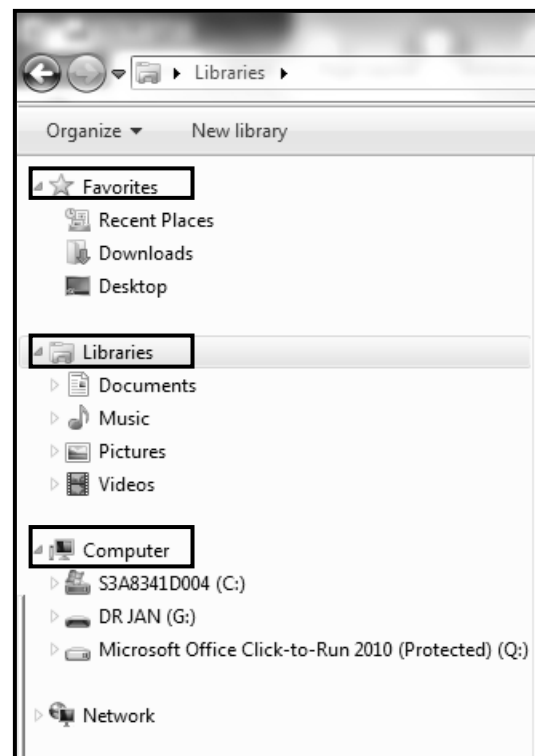
1. Click the **Start button**.
2. Without going to **All Programs**, locate the program icon you need in the **Start menu**.

3. The chosen program is now open.



Locations in the Computer

After being able to open programs installed in your computer, the different locations in your computer is next to be learnt.



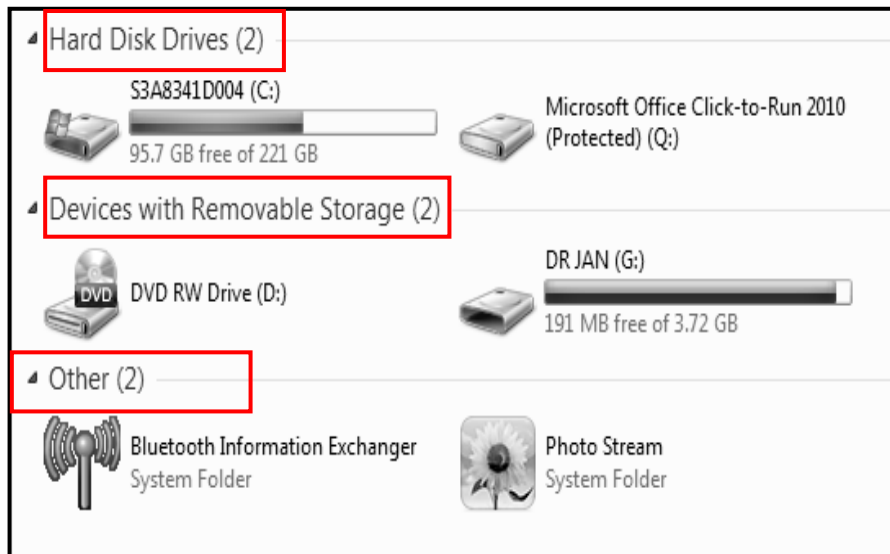
The image displays common locations in a computer.

The common locations in your computer are:

1. The **Favorites: Favorites** consists of Recent Places (where you have recently viewed and went to), Download (where downloaded files from the Internet are saved) and the Desktop (where shortcut icons of programs and other program icons can be seen)
2. The **Libraries: Libraries** consists of Documents (where all document files can be saved), Music (music files can be saved in this location), Pictures (all

picture files can be saved) and Videos (all video files can be saved in this location).

3. **Computer** where the following can be seen:

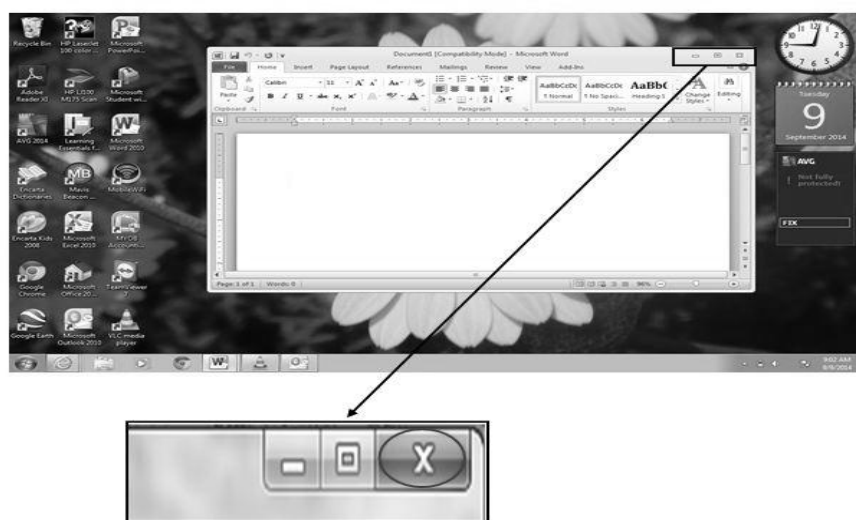


Closing a Window and Turning Off the Computer

When the program opens, a “window” appears on your monitor screen. This is usually rectangular in shape. It is a visual area containing a display of the output of and may allow input to one or more processes.

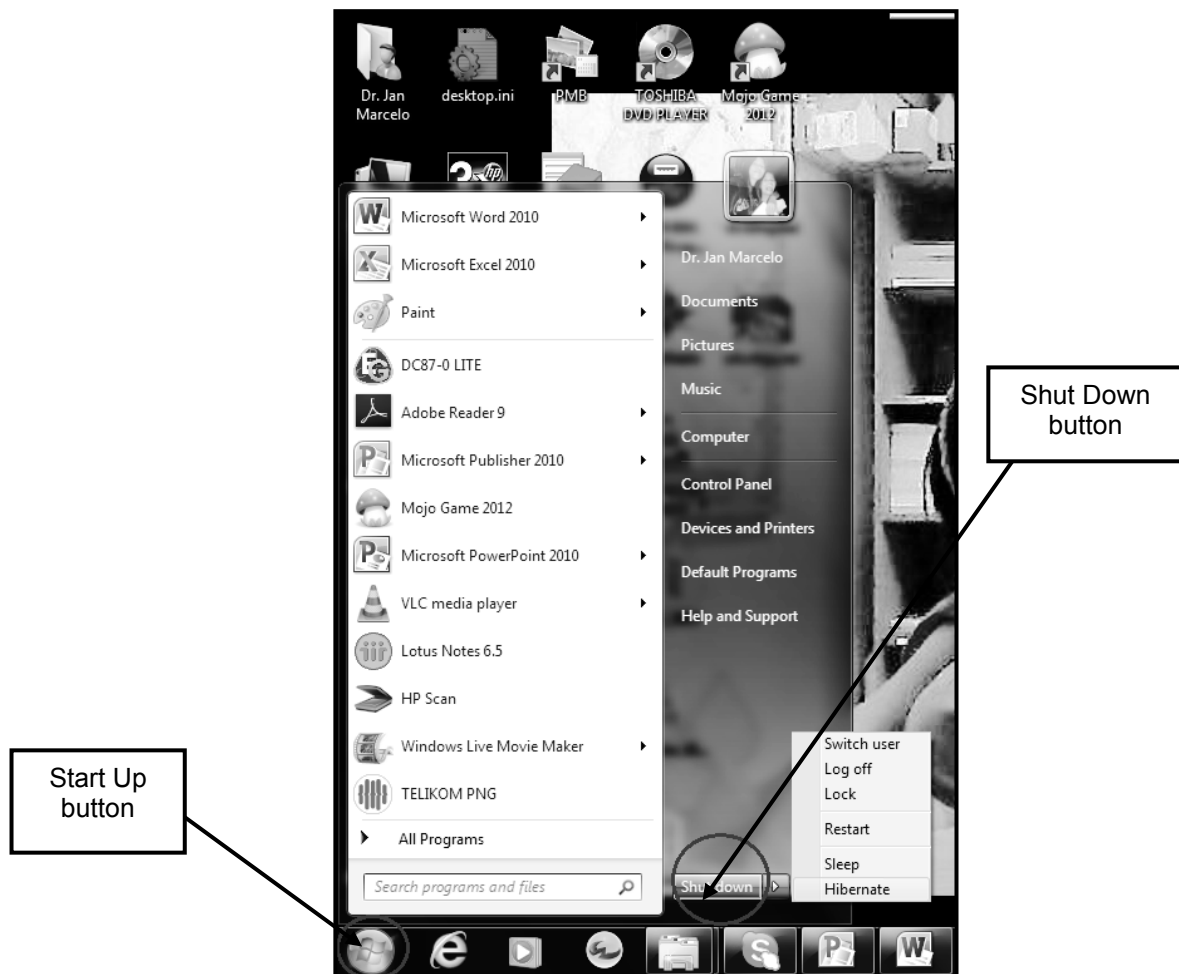
Now to close the window:

1. Use your mouse arrow and point on the **X** in the top right corner of the window.
2. Click the left mouse button once. The window will close.



Now, to turn off your computer:

1. Look on the left bottom of your screen and find the **Start-up button**.



2. Point your mouse arrow on **Start-up button** and click the left button once. If it does not stay open, then HOLD down the left button. A list of things will open up. Look for the words **Shut Down**.
3. Point your mouse on the **Shut Down** and click once. This will shut down (turn off) your computer. Double-check to make sure that both CPU and the monitor are off.



Activity 1: Circle the letter of the correct answer.

1. Ezra would like to close a program. Which of the following icons should she click?

a.	c.
b.	d.

2. Tony inserted his flash drive into the computer. Where could he view the contents of his flash drive?
- a. Download
 - b. Libraries
 - c. Document
 - d. Computer
3. Maria would like to save her photo on the computer. Where could she best save this file on Libraries for an organized management of files?
- a. Music
 - b. Document
 - c. Pictures
 - d. Videos
4. How many ways can you open a program installed in your computer?
- a. two
 - b. four
 - c. three
 - d. five
5. If Sarah would like to shut down her computer, what must she do?
- a. Go to File Menu and click Shut down button
 - b. Go to the Desktop and click any icon to shut down
 - c. Go to Computer and locate the Shut down button, click to shut down
 - d. Go to Start Up button, click once and choose Shut down button

Thank you for completing this activity. Now, you may go to the end of this lesson to check your answer. Make sure you do the necessary corrections before moving on to the next part of this lesson.



Summary

You have come to the end of Lesson 7. In this lesson, you learnt about the steps on how to start up the computer, how to open programs in the computer, how to identify the different locations in the computer and how to shut down the computer.

NOW DO PRACTICE EXERCISE 7 ON THE NEXT PAGE.

Practice Exercise 7

A. State how to start up your computer.

1. _____
 2. _____
 3. _____
 4. _____
 5. _____
-

B. Choose from this list of words to complete the statements below:

desktop
doorways

files
pictures

What you see on the monitor screen is called the ~~desk~~ **desktop**. Like the top of a real desk, it has a place for (a) , folders, documents and even, trash. The (b) is the area behind the (c) . Icons are like (d) to look into things in your computer easily.

C. Explain the difference between the following:

1. Desktop and Icons

2. Start Up button and Shutdown button

3. Libraries and Favorites

CHECK YOUR WORK. ANSWERS ARE AT THE END OF TOPIC 2.
--

Answers to Activities

Activity 1

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

Lesson 8: Basic Keyboarding Review



Welcome to Lesson 8 of Topic 2. In Lesson 7, you learnt about steps on how to start up and shut down a computer, open programs and identify their different locations in the computer.

In this lesson you will review the basics of keyboarding.



Your Aims:

- define keyboarding
 - identify the basic keyboarding steps
 - type data using the keyboard
-

Basic Keyboarding Review

In Grade 9 Design and Technology Computing, you were given an additional student resource material named as Basic Computer Guide and Keyboarding. This has taught you relevant details on computer and skills in keyboarding which assists you in gaining more to be literate in computing.

Let us go over the basic information first on keyboarding before we proceed to the skills of doing so.

Keyboarding, teaches the skills of encoding the data using the keyboard. A **keyboard** is an input device consisting of a series of keys in a standard layout. The keyboard comes in different looks and the size. However, the most common of these is the QWERTY keyboard. QWERTY is this term used to describe a standard keyboard because the first six keys in the upper-left part of the keyboard spell out Q-W-E-R-T-Y. Referring to Lesson 9 of Grade 9 Design and Technology Computing. The QWERTY keyboard is divided into four major areas:

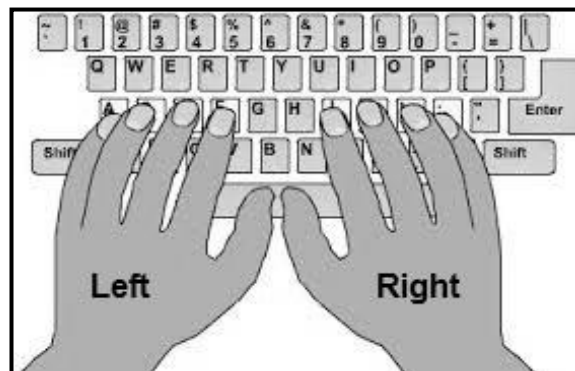
- **Alphanumeric keys** - letters and numbers on the keyboard. A numeric keypad is located on the right-hand side of the keyboard. It is for quick entry of numbers
- **Cursor control keys** - allows the cursor to be moved and includes the arrow keys, page down, page up, home and end.
- **Special keys** - include enter/return, tab, space, caps lock, backspace, delete and esc (escape). Modifier keys (such as shift, control, alternate, option and command) are used in combination with other keys.
- **Function keys** (F1, F2 to F12) - allow instructions to be given to the computer and depend on the software. There are variations to the standard keyboard, such as the wireless keyboard, a folding keyboard for palm computers, a miniature keyboard built into pocket-sized devices and a one-handed keyboard.



The QWERTY keyboard

The following are some basic reminders you have to remember when it comes to keyboarding:

1. The best way to use a keyboard is with both hands.
2. The alphabet letters on the computer keyboard are laid out the same as on a standard typewriter.
3. The Keyboard is divided into the **left** side and the **right** side.



The left hand stays on the left side and strikes any key on the left side.

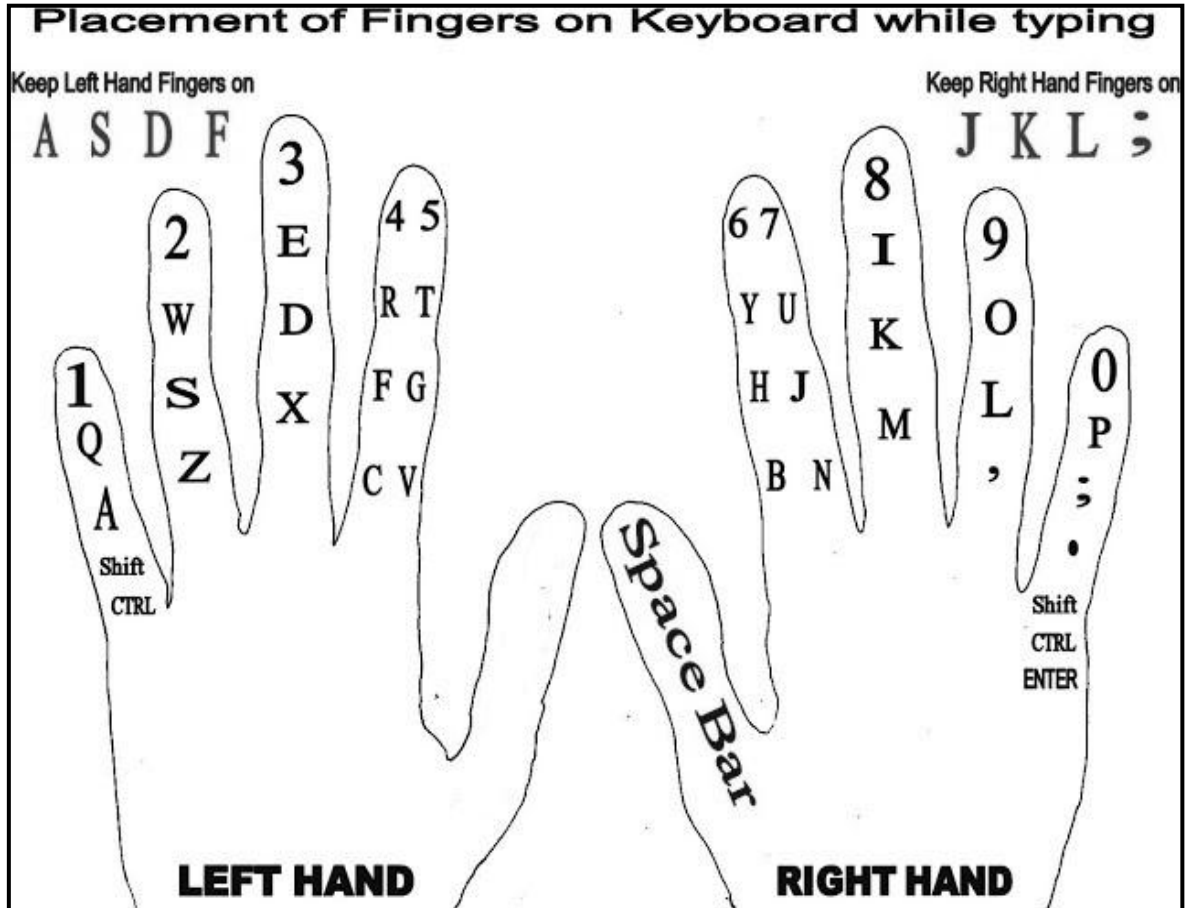
The right hand stays on the right side and strikes any key on the right side.

4. The **Home Row keys** are **A, S, D, F, J, K, L** and **;** on your keyboard. This is where your fingers must be placed into when typing.



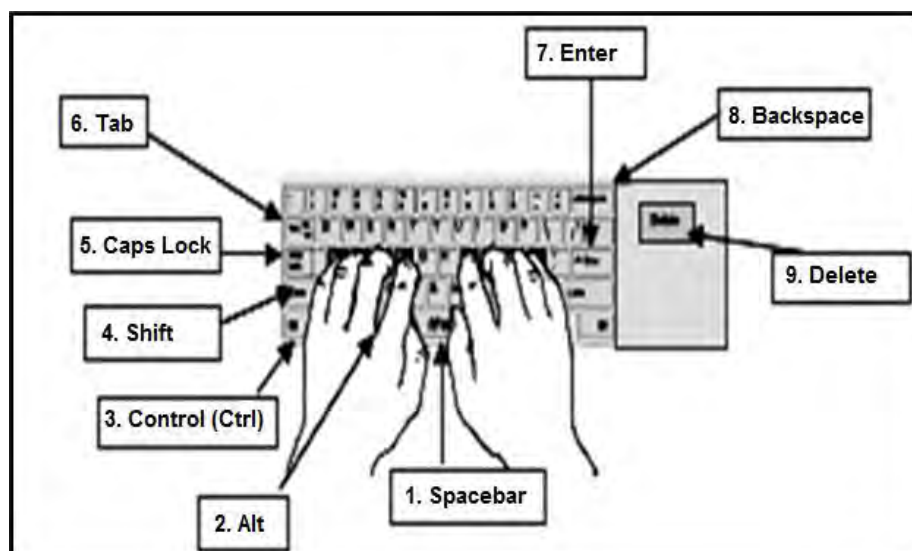
Practice typing with the assigned keys in each finger for both hands. You must keep your fingers to its assigned letters and numbers and continue practising all fingers in both hands in typing. You can always refer back to the manual given you in Basic Keyboarding to review this skill.

The Typing Reference on Fingering is provided below.



Typing Reference - Fingering

5. There are **Nine Basic Keys**. Review the picture below as it displays the nine basic keys.



The Nine Basic Keys



Activity 1: Practice your typing skills by doing the following exercises.

1. How many times can you type the vowels A, E, I, O and U in 3 minutes?
2. How many times can you type the Home Keys correctly in 3 minutes?
3. Beat the 3 minute timer. Type this sentence:

Once upon a time there was a wizard, a cat and a broomstick. They all lived very happily together until one day they were visited by some nasty goblins named Too-Silly, Too-Dopey and Too-Nasty. They wanted to steal the broomstick.

Thank you for completing this activity. Make sure you do the necessary repetitions to this activity to familiarize yourself with keyboarding before moving on to the next part of this lesson.



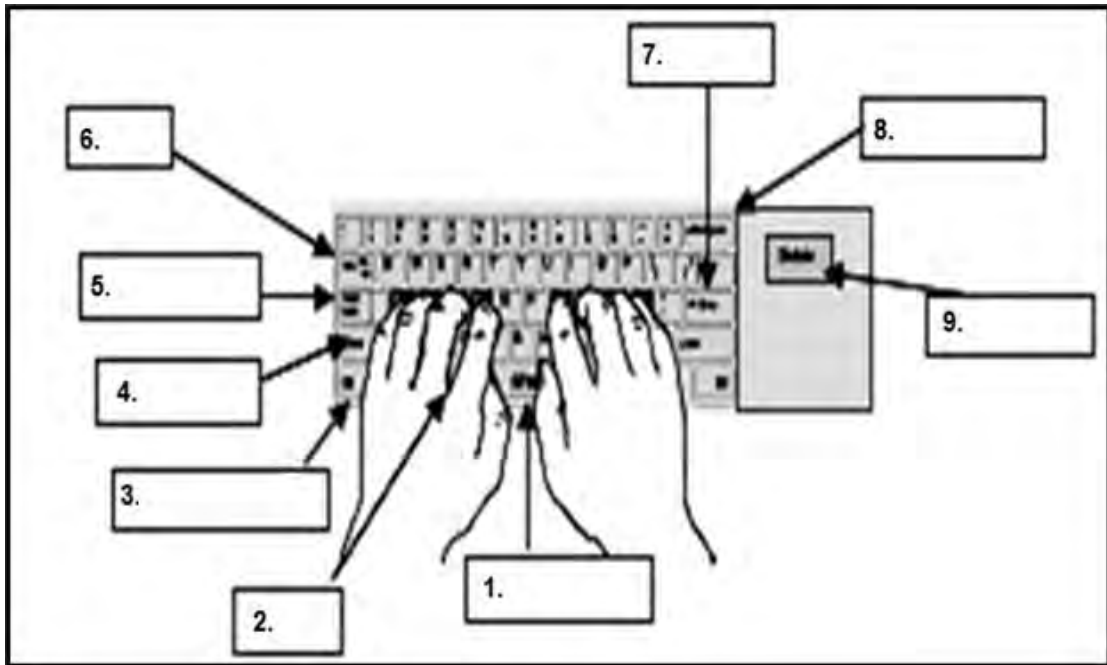
Summary

You have come to the end of Lesson 8. In this lesson, you learnt about the definition of keyboarding, identified the basic keyboarding steps and typed data using the keyboard.

NOW DO PRACTICE EXERCISE 8 ON THE NEXT PAGE.

Practice Exercise 8

- A.** Look at the picture below and using your own keyboard, identify the nine basic keys. Write your answers on the space provided after the picture.



- | | | | |
|----|-------|----|-------|
| 1. | _____ | 6. | _____ |
| 2. | _____ | 7. | _____ |
| 3. | _____ | 8. | _____ |
| 4. | _____ | 9. | _____ |
| 5. | _____ | | |

- B.** Answer the following questions.

1. What are the Home Row Keys?

2. Why do you need to use both hands in typing?

3. List the four major areas of a QWERTY keyboard.

1. _____	3. _____
2. _____	4. _____

CHECK YOUR WORK. ANSWERS ARE AT THE END OF TOPIC 2.

Lesson 9: The Graphical User Interface



Welcome to Lesson 9 of Topic 2. In Lesson 8, you learnt about the definition of keyboarding, identified the basic keyboarding steps and typed data using the keyboard.

In this lesson you will learn more about the graphical user interface.



Your Aims:

- define graphical user interface
- identify the main features of a graphical user interface
- apply graphical user interface

The Graphical User Interface

Graphical User Interface (GUI, say Gooee) is a software that works at the point of contact (interface) between the computer and the users. GUI allows the users to interact with the computer through graphical icons which are pictures and symbols representing a software or a hardware application. This explains why the software is called graphical.

Before the invention of GUI, computer screens were black/white or dark green commonly known as Character based screens. They could only display Alpha-Numeric characters. Now GUI allows pictures and text in multi colour mode.

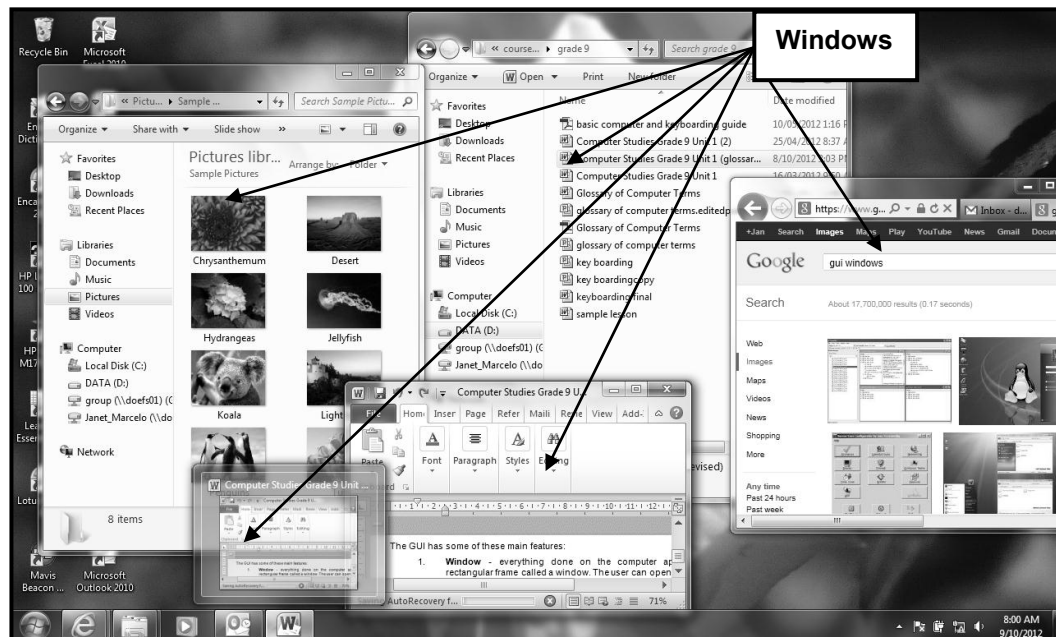
This makes GUI a friendly way for users to interact with the computer. Using pictures and symbols makes programs easier to identify and use.

GUI makes use of Windows, Icons, Menu and the Pointer. Graphical User Interface actually contains six important features that include a pointer, a pointing device, icon, desktop, window and menu.

We will now take a study of these features.

The Window

Everything done on the computer appears within a rectangular frame called a window. The user can open several windows at the same time and work on different programs. Each window can be closed, resized, moved, minimised or maximised.

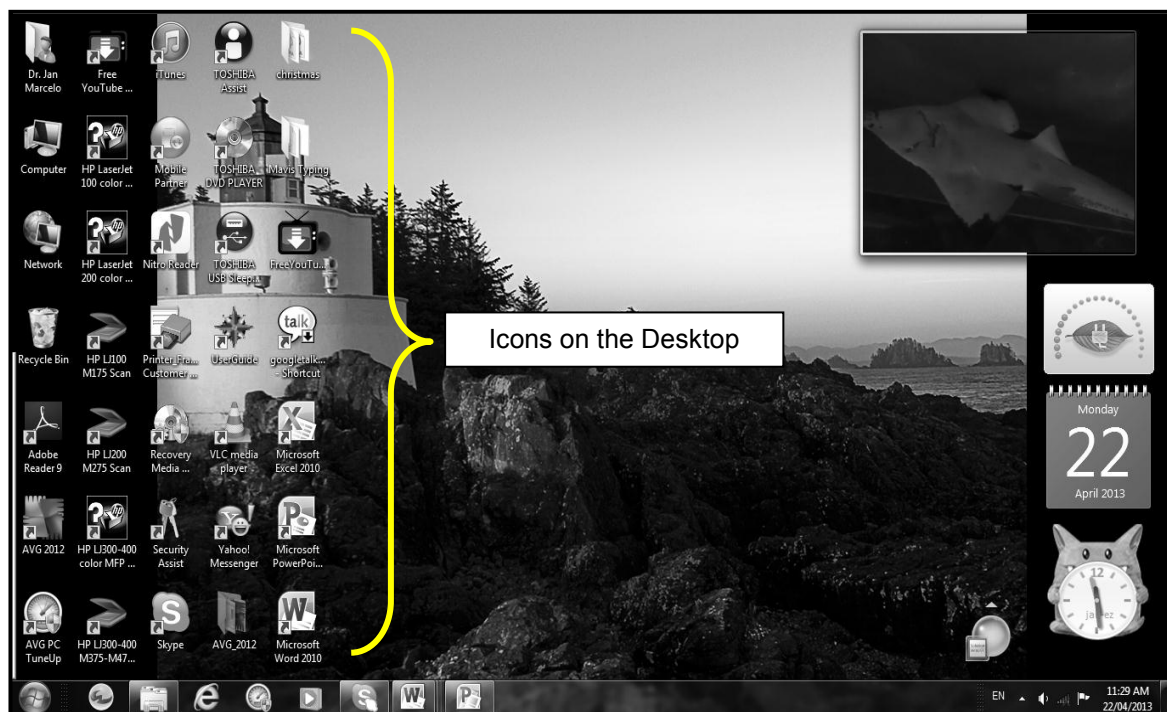


Several opened Windows on computer screen

This feature would make a great way for you to easily view the other tasks that you are currently doing. Multi- tasking is allowed through the use of windows.

The Icon

A small picture that represents a program, file, folder or shortcut. Text describing the icon appears when the user points at the icon. Double-clicking the icon will open the file.



Some Icons found on the Computer Desktop

The use of icons enables you to immediately recognize the program that you need thereby can find your way easier in looking for needed programs. Moreover, the icons are also shortcuts that can be found in your Desktop. These shortcut icons provide an easier access to much used programs by the user.

The Menu

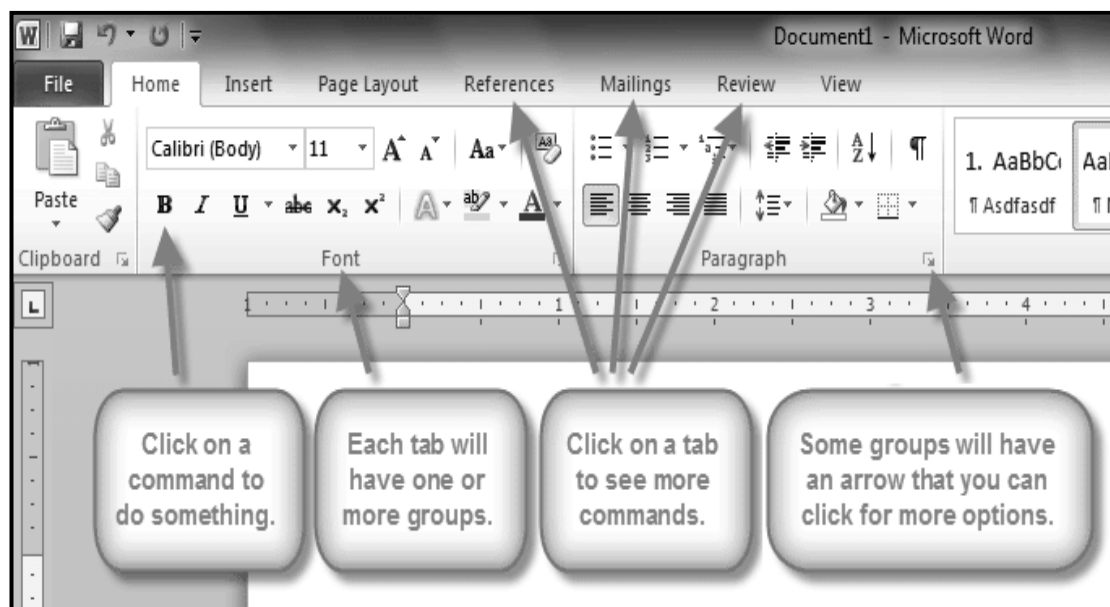
The Menu is an onscreen list of available commands and tools. Word 2010 is a bit different from earlier versions, so even if you have used Word before, you should take some time to familiarize yourself with the interface.

The toolbars are similar to those in Word 2007, and they include the **Ribbon** and the **Quick Access Toolbar**. Unlike Word 2007, commands such as **Open** and **Print** are housed in **Backstage view**, which replaces the **Microsoft Office Button**.

The **Ribbon** contains all of the commands you will need in order to do common tasks. It contains multiple **tabs**, each with several **groups** of commands, and you can add your own tabs that contain your favorite commands.

Some groups have an arrow in the bottom-right corner that you can click to see even more commands.

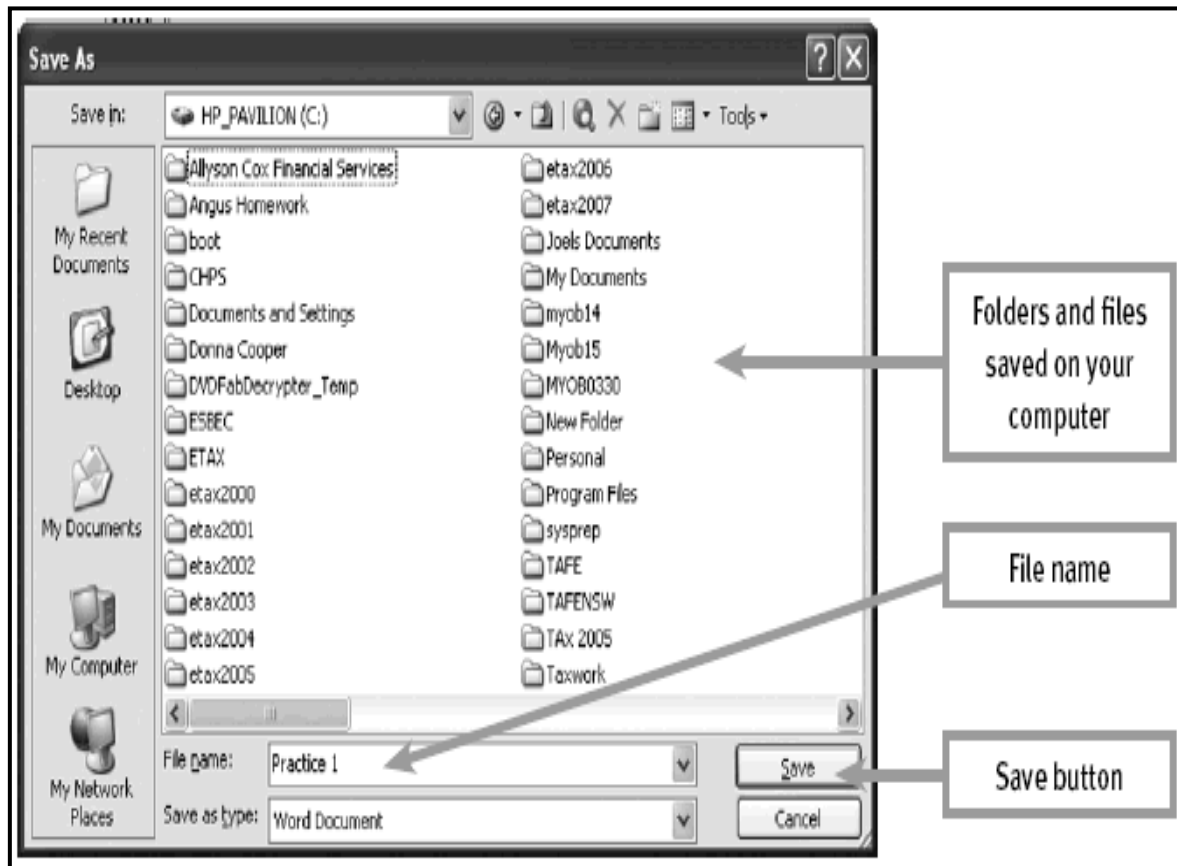
Look into the picture on the next page and familiarize yourself with the Ribbon.



The Ribbon

The Dialog box

The Dialog Box is a secondary window that contains buttons and various kinds of options through which you can carry out a particular command or task.



Dialog Box for Saving Command

The Dialog box guides you to the commands you need to perform in order to accomplish a certain task. The example given above enables the user to type in the file name and where the file is located upon saving.

The Desktop

The Desktop is the onscreen work area on which windows, icons, menus and dialog boxes appear. It is like the physical desktop we use in day-to-day work.



Desktop

Using the Desktop is one of the ways of opening installed programs in your computer. As discussed in Lesson 7, you can open a program by double-clicking the icon of the program.

The Recycle or Trash Bin

The Recycle or Trash Bin is a special folder to store deleted files. To delete a file drag the file to the recycle bin or right-click the file and press delete.



The Recycle or Trash Bin found on the Desktop of the Computer

Emptying the Recycle or the Trash Bin is very important as this will free more memory space needed by the computer. Moreover, these deleted files inside the Recycle or Trash Bin must be emptied as in the long run, these deleted files may turn into “worms”. A worm is a self-replicating program that is similar to a virus.

You can use the features of the GUI by following how it works from the given descriptions of each.



Activity 1: Following are features of Grapical User Interface. State their importance.

1. Windows

2. Recycle Bin

3. Desktop

Thank you for completing this activity. Now, you may go to the end of this lesson to check your answer. Make sure you do the necessary corrections before moving on to the next part of this lesson.



Summary

You have come to the end of Lesson 9. In this lesson, you learnt about the definition of graphical user interface, identified the main features of a graphical user interface and learnt how to apply the graphical user interface.

NOW DO PRACTICE EXERCISE 9 ON THE NEXT PAGE.

Practice Exercise 9

A. Identify which feature of the GUI in A,B,C or D suits the description..

1. It allows the user to perform a task by following instructions
 - A. Menu
 - B. Dialog Box
 - C. Recycle or Trash Bin
 - D. Icons
2. A small picture that represents a program, a file folder or a shortcut
 - A. Menu
 - B. Dialog Box
 - C. Recycle or Trash Bin
 - D. Icons
3. A special folder to store or delete files
 - A. Menu
 - B. Dialog Box
 - C. Recycle or Trash Bin
 - D. Icons
4. An onscreen list of available tools and commands
 - A. Menu
 - B. Dialog Box
 - C. Recycle or Trash Bin
 - D. Icons

B. Describe the use or function of the following GUI.

1. Menu

2. Icon

CHECK YOUR WORK. ANSWERS ARE AT THE END OF TOPIC 2.
--

Answer to Activity

1. The window as a GUI feature would make a great way for you to easily view the other tasks that you are currently doing. Multi- tasking is allowed through the use of windows.
2. Recycle or the Trash Bin is very important as this will free more memory space needed by the computer.
3. The Desktop in the onscreen work area on which windows, icons, menus and dialog boxes can be located Moreover, the Desktop is one way of opening installed programs in your computer.

Lesson 10: Data Handling



Welcome to Lesson 10. In Lesson 9, you have learnt about the definition and uses of the Graphical User Interface.

In this lesson you will learn about the definitions of data and information, data sources and data types.



Your Aims:

- define data
- define information
- identify the types of data
- identify the sources of data

Data Handling

Data Handling was introduced to you in Grade 9 Unit 3, Lesson 13 under Data and Information and in Lesson 14 under Data coding, sources, and types. In this lesson we will discuss further the concepts introduced to you.

Data is the raw/unprocessed material that is being fed into the computer system through one of its input devices.



A mouse is used to control the programs on the computer.

The unprocessed material could be anything from text, numbers, and characters to graphics, video, audio, and animation. Data in itself cannot be understood unless it is processed or compiled in a way that makes it more meaningful to humans. The data is organized through the use of application software through commands issued by the user. Commands issued are just clicks of the mouse on buttons displayed on the application software's graphical user interface. Once the users' job is completed people would now be able to understand the data. This is when we now call it information.

There are many ways of converting data into information, 3 of which are;

- combining data,
- displaying data in an understandable way,
- deleting irrelevant data.

Since information is the result of processed data therefore information depends on the data entered. Even though data processed allows humans to understand the information presented this may not allow others to fully understand what is presented.

Information can be valuable commodity. This is dependent upon the following: Whether it is

- relevant,
- accurate,
- current, and
- appropriately presented

For information to be effectively used it must be organized in an attractive manner and a way that makes it easy to use. Therefore appropriate formats need to be chosen for different purposes. Choosing a format also depends on how best the target audience will be able to understand the information. Some people understand information more clearly through information being displayed on tables. Others understand information more easily through information being displayed on graphs. Others understand data through videos, podcasts, etc. Information can be displayed through a variety of peripherals such as screens, printers, speakers, and others. Data can be represented in analog or digital form.

Analog data

Analog data is obtained using a device that displays the variation of a measureable physical quantity such as voltage. For example, an analog clock shows a second hand that continues to rotate around the clock, displaying the change in the time. This is a continuous variation of small units of time. Most of the natural events in the world such as temperature, air pressure, and wind speed change smoothly and slowly. Sounds, video, and Images are naturally analog.



A pocket watch displaying analog data



Time displayed in digital format

Digital Data

Digital data does not flow continuously but automatically jumps to the next level by following the correct order in the sequence. This data is represented by using discrete measurements in the form of digits or numbers. Numbers, text, and other characters are naturally in digital form.

Data is processed in words. A word (or word size) is the number of bits processed by the computer at any one time.

When bits are moved from one place to another in the computer it takes one word at a time. Most computers use word sizes of 8, 16, 32, 64 bits. The speed of the computer depends on the word size.



Bits are the smallest unit of data that the computer uses to communicate with its other parts. It usually refers to a high voltage or a low voltage. We make sense of these by assigning a 1 (one) for a high voltage (dc) and a 0 (zero) for a low voltage (dc). 8 of these bits make up one Byte. Most processors nowadays process information at 32 bits and 64 bits per calculation. If the processor is a 32 bit processor then the software and motherboard must be compatible to 32 bit architecture.

Data Types

There are several forms of data namely Text, Numeric, Hypertext, Graphics, Audio, Video, and Animation.

Text is data in the form of letters, numbers, and other special characters. A word processor organizes and arranges text thus creating documents. The application software is also used to create a variety of documents. These include reports, letters, assignments, and articles. Most software applications accept text. The text can be edited in many ways such as:

- deleting
- moving
- inserting
- copying

Text is stored as ASCII code on the computer's storage devices. ASCII is the acronym for American Standard Code for Information Interchange. This standard allows the computer to convert text, numbers, or characters into a numerical value that the computer is able to understand. Every entry on to the computer whether it be a letter, number, symbol would always have its numerical equivalent.

The data type in some applications, such as database, needs to be detailed. It requires the user to specify the exact nature of the data;

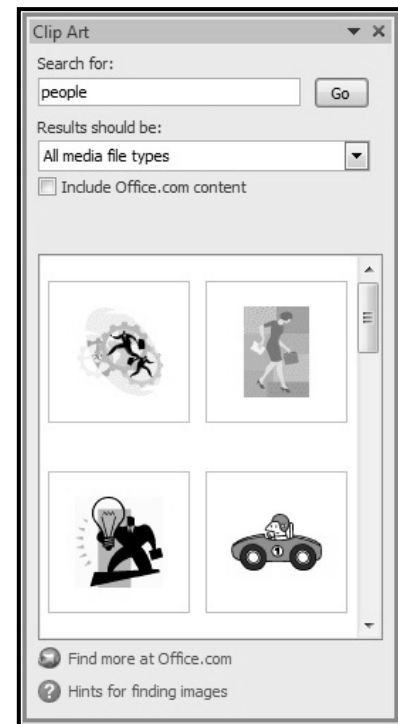
- Alphanumeric – All keys on the keyboard, both letters, numbers, symbols and spaces.
- Numeric – numbers only
- Alphabetic – letters only
- Boolean – true or false
- Currency – money
- Date – day, month, year.

Numeric data is often used to perform calculations in a database and a spreadsheet.

Hypertext is a way that allows user to open other documents to be cross-linked. This is done by clicking on the text that is linked to that document. Hypertext links are usually identified by the blue color and blue underline. This is most common for web pages and web based documents.

Graphics are pictures, shapes, drawings, images, painting and photographs. These files can also be stored, edited, and transferred in ways similar to text. On the other hand the Graphics Application Software used to create and edit graphics. They can also be captured using scanners, digital cameras, or video cameras. All graphics are made up of pixels. These are tiny dots which are the smallest part of a screen that can be controlled by the computer. Graphics can be placed anywhere on the page of a document, and can also be resized, cropped, or distorted.

The two types of graphic objects are bit-mapped and vector graphics. Bit-mapped graphics can sometimes present problems to the user usually when the image is enlarged. Enlarging a bit-mapped image may create a staircase pattern called aliasing. Vector graphics are easily edited using a drawing program. The meaning of a graphic is determined by looking at the image and interpreting it. Some common file extensions are BMP, JPG, GIF, and TIF.



Clip Art is used to insert images.

Audio data is the sound that has been converted into computer language to be stored on the computer. It is represented in the form of digits or numbers. It may be the sound of elephants in the wild arid desserts of Africa or the voice of a narrator telling a story. Sounds can be edited in many different ways, such as:

- Deleting sounds
- Adding echo
- Changing the speed
- Overlaying sound files
- Adding sounds
- Altering the quality of the sound file

The meaning of the audio data is determined by listening to and interpreting the sounds. Some common file extensions are MP3, WAV, MIDI.

Animation is the movement of an object. It is the result of a series of graphic or frames presented in rapid succession. Sometimes animation can present information more effectively than text or graphics. For example an animation that shows the flow of blood through the veins in the body of a human being or the changes in the tides at daytime and at night time. The meaning of an animation is determined by watching it over a period of time. Some common file extensions for animation would include SWF, MOV, GIF.

Primary Sources

Primary source is data that is collected first hand. Many organisations prefer to collect their own information themselves because they consider it more reliable and meaningful although it is time consuming and costly.

Surveys and interviews are a common method of collecting data. These involve sample characteristics, attitudes, behaviors, and opinions. A survey may be conducted face-to-face or via mail/email. An interview meeting is conducted with the interviewee face-to-face. Specific questions are asked during this time to gauge the interviewee's opinions and feelings.



The picture above portrays an ongoing interview as part of a survey.

A blank form with tables and questions is used to collect the primary data. Examples of forms would be bank registration forms and Medical forms for enrollment into a school. The forms and tables need to be carefully design. It is often necessary to try to anticipate answers from the people you will be interviewing for individual questions or possible results to events.

Secondary Sources

Secondary source is data collected or created by someone else. Secondary data can be available as printed text or available on the Internet.

- Printed text has been the main medium for spreading information since 900 AD when printed books became popular with Chinese scholars and artisans when they collaborated in the block printing process, producing hundreds if not thousands of copies. Printed text over the years had taken many different forms such as scripts, books, pamphlets, magazines, newspapers, newsletters, reports, and journals. The enormous quantity of printed information means that an individual can only absorb a limited amount of information. To search for particular information you would need to look through the “Table of Content”, “Summary”, and “Index”. Printed material becomes outdated and irrelevant when society and the technology in it changes.
- The Internet is a major source of data. Data stored on another computer on the internet can be accessed by another person on another computer regardless of his/her geographical location. Websites are a combination of different web pages put together to provide information for Internet users or other potential customers for businesses or other people wanting to find out more about a company or organisation. In addition to the World Wide Web (www) information can be collected from newsgroups. A newsgroup is a discussion group on a specific topic. People access newsgroups each day and they provide a large diversity of opinion and knowledge. The Internet also allows for data to be downloaded from other computers on the Internet. Files containing text, graphics, sound, video, and animation can all be downloaded.

**Activity 1: Give the differences of the following pair of words.**

1. Analog and Digital Signals

2. Alphanumeric and Numeric Texts

3. Bit map and Vector Graphics

4. Primary and Secondary Sources

Thank you for completing this activity. Now, you may go to the end of this lesson to check your answer. Make sure you do the necessary corrections before moving on to the next part of this lesson.

**Summary**

You have come to the end of Lesson 10. In this lesson, you have learnt about the definitions of data and information as well as the types and sources of data.

NOW DO PRACTICE EXERCISE 10 ON THE NEXT PAGE.

Practice Exercise 10

A. Write down “A” if it is analog data or “D” if it is digital data on the spaces provided.

1. Yard stick _____
2. Speedometer _____
3. Digital thermometer _____
4. Mercury-based thermometer _____
5. A Genuine Grandfather clock _____
6. Documents stored on the computer _____

B. Identify the type of data on the spaces provided.

1. 35435435131 _____
2. Askdhfkh3543 _____
3. Aksjbdflajsbdk _____
4. K10, 520.00 _____
5. \$45, 200.00 _____
6. 16/11/1981 _____
7. Male/Female _____

C. Explain the difference between data and information.

CHECK YOUR WORK. ANSWERS ARE AT THE END OF TOPIC 2.

Answers to Activity

1. Analog data is obtained using a device that displays the variation of a measureable physical quantity such as voltage while Digital data does not flow continuously but automatically jumps to the next level by following the correct order in the sequence.
2. Alphanumeric includes all keys on keyboard. includes both letters, numbers, symbols, spaces while Numeric are numbers only.
3. Bit-mapped graphics can sometimes present problems to the user usually when the image is enlarged. Enlarging a bit-mapped image may create a staircase pattern called aliasing. Vector graphics are easily edited using a drawing program. The meaning of a graphic is determined by looking at the image and interpreting it.
4. Primary source is data that is collected first hand while Secondary source is data
Secondary source is data collected or created by someone else.

Lesson 11: Storage Devices



Welcome to Lesson 11. In Lesson 10, you learnt about the definitions of data and information as well as the types and sources of data.

In this lesson you will learn to define, state and describe the different storage devices and discuss its importance.



Your Aims:

- define storage devices
- identify the different storage devices
- identify the importance of storage devices

Definition of Storage Device

A computer storage device is any type of hardware that stores data. The most common type of storage device is a hard drive. The computer's hard drive stores the operating system, applications, and files and folders for users of the computer. All storage devices offer the convenience of doing sharing, moving, copying and having a back up for all data types.



A hard drive displayed upside down



Hard Drive is a secondary storage device that stores data and information on spinning disc platters that are made of glass and aluminium. There are two types of hard drives available on the market. There is the PATA (Parallel Advanced Technologies Attachment Interface) and the SATA (Serial Advanced Technologies Attachment Interface). The SATA drives are the latest and fastest technology introduced compared to the PATA which used to be called IDE (Integrated Device Electronics).



SATA



PATA

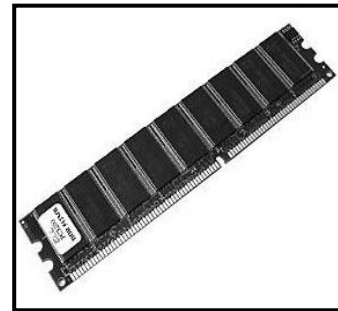
Primary Storage

Primary storage stores data and programs that need to be instantly accessible to the central processing unit (CPU). It is internal storage as it uses integrated circuits (silicon chips) located on the motherboard. Primary storage is also known as main memory, main storage, or simply memory. It consists of RAM, cache, and ROM.

A. RAM

RAM (Random Access Memory) is where data and instructions are held temporarily. It depends on a supply of electricity to maintain data storage. When the power to the computer is shut off, everything in RAM is lost. In other words, RAM is **volatile** memory. The data in RAM can be accessed randomly. That is, a byte of memory is accessed without touching any of the other bytes. There are two main types of RAM:

- Dynamic RAM (DRAM, pronounced dee-ram') is memory that must be consistently refreshed.
- Static RAM (SRAM, pronounced sessram') is memory that does not have to be updated or refreshed.



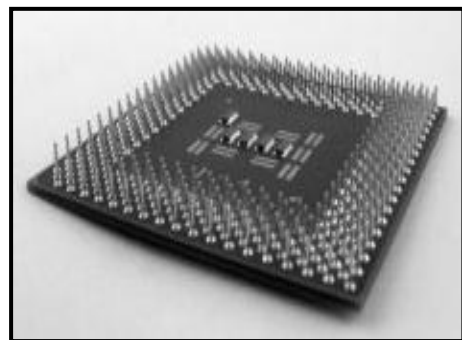
DDR RAM Chip

RAM is regarded as the working memory of the computer. Programs and files currently in use are stored in RAM. RAM is one reason RAM manufacturers are continually inventing new designs to provide the fastest possible access times at the lowest possible cost. This has resulted in different types of DRAM and SRAM chips. Memory is upgraded by inserting DRAM chips into special slots on the motherboard.

B. Cache

Cache (pronounced kash') is a temporary storage area used to store data that the computer can access quickly. There are two common types of cache:

- Cache memory is a high speed memory located at the underside of the microprocessor. The cache memory aids the Microprocessor before calling on the RAM to step in for the work that requires more memory. It improves performance by using SRAM and reduces the need for the CPU to access the slower DRAM chip.



Cache

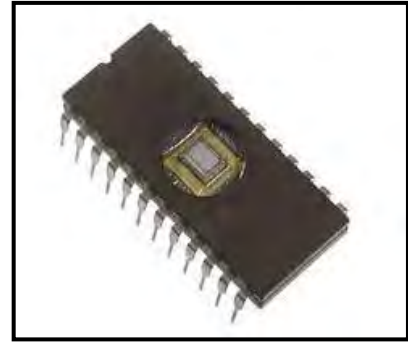
- Disc Cache works the same way as cache memory. It stores the most recent data from the disc in RAM and when the CPU needs access to data from the disc, it first checks the disc cache. Disc caching improves the performance because accessing the data from the RAM is a thousand times faster than accessing a disc.

C. ROM

ROM (read only memory) holds data and instructions that are fixed at the time of production and cannot be changed by the computer. It is permanent memory that only allows data to be retrieved (read) and not entered into storage (write).

The software that is stored in ROM is called firmware. Storage of software within the ROM protects it from being damaged or changed. Most personal computers contain a small amount of ROM that stores important programs such as booting the computer and checking for input and output devices.

The instructions that allow the computer to communicate with input and output devices are called the ROM BIOS (Basic Input/Output System). The computer manufacturer sets the actual contents of ROM and it is **non-volatile**. Non-volatile memory does not lose its contents when the power to the computer is turned off.



ROM

Secondary Storage

Secondary storage refers to other storage devices for the computer that are not located on the motherboard. A storage device is any device that will allow users to store files and then later allow the data to be retrieved. It involves magnetic tape drives, magnetic discs, optical discs, and flash memory.

While the hard drive is the most common of all storage devices, other types are common as well. Flash drives and Mp3 players are popular ways to store data in a small, mobile format. Other types of flash memory, such as compact flash and SD cards are popular ways to store images taken by digital cameras.

External hard drives that connect via Firewire and USB are also common. Most portable (external) hard drives connect to the computer via a USB connector. USB is the acronym for Universal Serial Bus. Firewire is another high speed serial connection which is similar to USB and was developed by Apple. USB on the other hand is much more popular than Firewire.

These types of drives are often used for backing up internal hard drives, storing video or photo libraries, or for simply adding extra storage. Finally, tape drives, which use reels of tape to store data, are another type of storage device and are typically used for backing up data. Most large companies use this to store backup the companies day to day electronic transactions and filing.



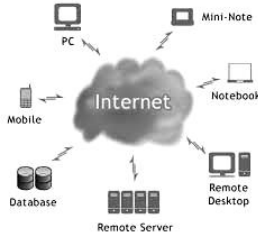
Tape Drive



Flash Memory sometimes called Flash Drives are devices that allow you to store amounts of data and information. These devices are “Solid State Technology” which means that there are no moving parts inside these storage devices. PATA which use moving parts whereas most SATA drives now use Solid State as well. Memory Cards would also fall under this category. SD cards are very popular among phones because they give your phones the extra memory needed for your phone to store more music, videos, and other files. SD is the acronym for Secure Digital.

The table below lists and describes other various types of storage devices that may be used to back up your data. We recommend that you use more than one method, as none of these should be used as your primary back up media. It is especially important to back up information stored on your computer's internal hard drive on a regular basis.

Picture	Brief Description
Compact Disc Read Only Memory (CD-R or CD-RW) 	What it is: A type of disc drive that can create CD-ROMs and audio CDs. A feature of many CD-R drives, called multisession recording, enables you to keep adding data to a CD-ROM over time. This is extremely important if you want to use the CD-R drive to create backup CD-ROMs. Capacity: 700 MB Advantage: Inexpensive, portable storage. Easy to label and store.
Digital Versatile Disc (DVD) 	What it is: A type of disc drive that can create DVDs. The biggest difference between a CD and DVD is space – a DVD can hold more than 4 times as much data as a CD. Capacity: 4.7 GB Advantage: Inexpensive, portable storage. Easy to label and store.
USB Flash Drive 	What it is: USB flash drives are typically removable and rewritable. USB flash drives offer potential advantages over other portable storage devices. They have a more compact shape, operate faster, hold much more data, have a more durable design, and operate more reliably due to their lack of moving parts. Capacity: 64 MB – 64 GB Advantage: Portable, small storage. Easy to transport.

External Hard Drive 	What it is: An external hard drive sits outside of your computer and is usually connected via a USB or Firewire port. Capacity: varies up to 2 TB Advantage: Store large amounts of data, most allow you to schedule automatic back up of data.
Internet – based 	What it is: Web-based storage, accessible from anywhere with an Internet connection. Some options are Microsoft Windows Live SkyDrive (pictured) and Amazon S3. Capacity: 25 GB free (SkyDrive), unlimited for a fee (Amazon S3) Advantage: Store large amounts of data, access data from any computer.

Data and information has become one of the most important resources of most individuals and mainly businesses and organisations. If it is lost, damaged, or stolen then this may pose a potential risk to the livelihood of the individual or if it belongs to an organisation, this will end the business entirely. That is why when it comes to data storage, it is a must that we follow the set procedures to handling data and making sure that the storage devices that we use will not be affected in any way.



Activity 1:

Answer the following questions.

1. What is a computer storage device?

2. Give the difference of primary and secondary storage device.

3. What is the importance of storage devices?

Thank you for completing this activity. Now, you may go to the end of this lesson to check your answer. Make sure you do the necessary corrections before moving on to the next part of this lesson.



Summary

You have come to the end of Lesson 11. In this lesson you have learnt about the definition, types and importance of storage devices.

NOW DO PRACTICE EXERCISE 11 ON THE NEXT PAGE.

Practice Exercise 11**A. Complete the table below.**

	Name	Capacity
		
		
		
		
		

B. State the difference among the three types of Primary Storage devices.

C. Explain why USB is more commonly used than Firewire.

CHECK YOUR WORK. ANSWERS ARE AT THE END OF TOPIC 2.
--

Answers to Activity

1. A computer storage device is any type of hardware that stores data.
2. RAM (Random Access Memory) is where data and instructions are held temporarily. It depends on a supply of electricity to maintain data storage. When the power to the computer is shut off, everything in RAM is lost while Cache (pronounced ash‘) is a temporary storage area used to store data that the computer can access quickly and the ROM (read only memory) holds data and instructions that are fixed at the time of production and cannot be changed by the computer. It is permanent memory that only allows data to be retrieved (read) and not entered into storage (write).
3. All storage devices offer the convenience of doing sharing, moving, copying and having a back up for all data types.

Lesson 12: Data Security



Welcome to Lesson 12. In Lesson 11, you have learnt about the definition, types and importance of storage devices.

In this lesson you will learn about data security, the threats that affect data, and basic security measures.



Your Aims:

- define data security
- identify the need for data security
- classify the basic security methods

Definition of Data Security

Much of the information covered in this topic is theoretical but will make you aware of the imminent dangers lurking on the internet. But with the right measures in place your Internet experience would be very fulfilling and enriched.

Data Security is the act of protecting information and other personal or company information from other people who are not supposed to read or hold on to. This is sometimes referred to as File Security.



A comical depiction of network security

Why Data Security is Important

Data security is critical for most businesses and even home computer users. Client information, payment information, personal files, bank account details - all of this information can be hard to replace and potentially dangerous if it falls into the wrong

hands. Data lost due to disasters such as a flood or fire is crushing, but losing it to hackers or a malware infection can have much greater consequences.

We are in the information age where almost everything depends on information alone hence the expression, —“information is power”. Indeed this may be true if we look at it literally and also hypothetically speaking.

The more you know the more you become unpredictable; this makes it hard for your enemies to go against you. They become afraid of your abilities. The more you learn the more skillful and aware you become of your enemies weaknesses. This is what referred to as being a formidable opponent.

There may be a lot of personal files that you may have on your computer at home. A few of the personal files you may have could be:

- Pictures of family, friends, and relatives.
- Electronic copy of land title
- Personal Certificates (Grade 2, 6, 8, 10, 12, University, others)
- Personal Music
- Personal Videos
- Others

Data can be affected in a number of ways. A few of the threats are listed below:

1. Information Theft includes the growing number of cases of information theft over the past few years. While more and more electronic security measures have been going up to protect people's possessions and information, these new technologies have bugs and design flaws that are opening up whole new worlds for the technologically advanced criminal.
2. Financial Theft is when an unauthorized person gains access to information that he/she is not allow to have access to. The information that this person gets content sensitive information that can allow that person to have access to your financial services (ie: ATM – Automatic Teller Machine, Bank account, Digital Wallet, EFTPOS – Electronic Funds at Point Of Sale, etc.).
3. Information Alteration is when hackers make changes to your personal details or data in the company's original file making the data in the files unreliable. When data becomes unreliable the rest of it becomes useless. This is because you will not be certain as to whether the rest of the file has been changed or not.
4. Unlawful Access includes any unauthorized access to data in a computer system whether it be intentional or not. Viewing someone else's data on his or her computer can been seen that you are invading privacy.
5. Burglary is a rascal may steal a computer and on that computer may be important data. This is one way you can lose data.

6. Vandalism includes all crackers who may gain illegal access to your computer and may damage your data intentionally or unintentionally. This not only refers to software but hardware as well.
7. Viruses is a type of software that is created (sometimes intention, sometimes not) to affect the normal functions of your computer. Since these are programs, they have no effect on any living beings.
8. Software Piracy is any unauthorized duplicating and replicating and distribution of application software programs.
9. Natural Disaster such as fire, floods, earthquakes, etc. that may destroy they computers containing the data.
10. Accidental includes unintentional deletion of data, or unintentional formatting of the disk without backing up.

In Grade 9, Lesson 18 on Data Security you had learnt that Hackers are individuals who gain unauthorized access to computer systems for the purpose of stealing and corrupting data.

The use of the term hacker has been well debated on. Some text define hackers as being anyone that accesses others computers and at the same time corrupting data or even crashing the computer that they access.

To be more exact, a hacker is someone that gains access to another person's computer without their permission using skills and knowledge that most people do not have and exit the target computer without damaging it. Hackers may use the data they find to benefit from it.

A Cracker is like a hacker but the techniques used are sometimes hurtful towards the computer and will at most times crash the target computer.

A person who may have an advanced understanding of computers and computer networks may not be considered a hacker.



A hacker caught in the act.

Risk Assessment

Thorough data security begins with an overall strategy and risk assessment. This will enable you to identify the risks you are faced with and what could happen if valuable data is lost through one of the items listed in the previous section.

You can then identify areas of vulnerability and develop strategies for securing your data and information systems. Here are several aspects that need to be considered:

- who has access to a specific data
- who uses the internet, email systems and how they access it
- who will be allowed access and who will be restricted
- whether or not to use passwords and how they will be maintained
- what type of firewalls and anti-malware solutions to put in place
- properly training the staff and enforcing data security.

After the above analysis, you can then prioritize specific data along with your more critical systems and determine those that require additional security measures.



Email – this is similar to text message but it is done through the use of internet.

Firewall – this is used to filter out (like a strainer) any viruses or hackers from entering your computer through the internet.

Antimalware – an umbrella term for antivirus, antispysware and intrusion detection systems. Essentially, any type of software that detects and blocks unwanted input to the computer.

Securing Data

Once you draw up a plan and assess your risks, it is time to put your data security system into action. Since data can be compromised in many ways, the best security against misuse or theft involves a combination of technical measures, physical security and a well-educated staff. You should implement clearly defined policies into your infrastructure and effectively present them to the staff. Here are things that you may do:

- Protect your office or data center with alarms and monitoring systems
- Keep computers and associated components out of public view
- Enforce restrictions on internet access
- Ensure that your anti-malware solution is up to date
- Ensure that your operating system is up to date
- Fight off hacking attacks with intrusion detection technology
- Utilize a protected power supply and backup energy sources

Mobile Data Security

Hand-held devices and laptop computers have become popular in the business environment. However, mobile computers are at a much greater risk of data loss

through damage and theft. For this reason, different safeguards need to be implemented in addition to the security measures listed above.

- Regularly backup data on removable media and safely store multiple copies
- Activate password protection whenever the device is left alone
- Never leave the device alone and visible in a vehicle
- Protect the device from physical damage by transporting it in protective casing

Efficient data security involves numerous steps, many of which can be downright time consuming. On the other hand, I am sure you will agree that actually losing this important data could be much worse.



Activity 1: Answer the following questions.

1. How can data be secured?

2. What is mobile data security?

3. What is risk management?

Thank you for completing this activity. Now, you may go to the end of this lesson to check your answer. Make sure you do the necessary corrections before moving on to the next part of this lesson.



Summary

You have come to the end of Lesson 12. In this lesson you have learnt about the definition and importance of data security. The different threats involving data security were also discussed and how to avoid these using risk management.

NOW DO PRACTICE EXERCISE 12 ON THE NEXT PAGE.

Practice Exercise 12

A. Define Data Security.

B. List ten security threats.

- | | |
|----------|-----------|
| 1. _____ | 6. _____ |
| 2. _____ | 7. _____ |
| 3. _____ | 8. _____ |
| 4. _____ | 9. _____ |
| 5. _____ | 10. _____ |

C. Short Answers. Complete the following items by writing your answers in the spaces provided.

1. If you owned a mobile phone, why do you think someone would want to hack your phone?

2. In one sentence, explain why Data Security is important.

3. Why is Risk Assessment important for a business?

4. Explain in your own words the difference between hacker and a cracker.

CHECK YOUR ANSWERS AT THE END OF TOPIC 2.
--

Answers to Activity

1.
 - Protect your office or data center with alarms and monitoring systems
 - Keep computers and associated components out of public view
 - Enforce restrictions on internet access
 - Ensure that your anti-malware solution is up to date
 - Ensure that your operating system is up to date
 - Fight off hacking attacks with intrusion detection technology
 - Utilize a protected power supply and backup energy sources
2. Mobile security involves different guideline to protect mobile computers.
3. Risk management enables you to identify the risks you are faced with and what could happen if valuable data is lost through one of the items listed in the previous section. You can then identify areas of vulnerability and develop strategies for securing your data and information systems.

Answers to Practice Exercises in Topic 2

Practice Exercise 7

A.

1. Find the "Power button" on your monitor and press it once if your monitor screen stays blank.
2. Locate the power button usually has a picture that looks like this: 
3. Find the Power button on your computer brain or CPU and press it once.
4. Your computer should be plugged into a surge protector that is plugged into the wall.
5. Make sure there is a green light that comes when your power is on.

B.

files, desktop, pictures, doorways

C.

1. The desktop is the area behind the pictures while the icons are like doorways to look into things in your computer easily. The icons are found in the desktop.
2. Start up enables the computer to locate the different programs and applications installed in the computer while Shut down turns down the power of the computer.
3. Favorites which consists Recent Places (where you have recently viewed and went to), Download (where downloaded files from the Internet are saved) and the Desktop (where shortcut icons of programs and other program icons can be seen) while Libraries which consists of Documents (where all document files can be saved), Music (music files can be saved in this location), Pictures (all picture files can be saved) and Videos (all video files can be saved in this location).

Practice Exercise 8

A.

- | | |
|--------------------|--------------|
| 1. Spacebar | 6. Tab |
| 2. Alternate (Alt) | 7. Enter |
| 3. Control (Ctrl) | 8. Backspace |
| 4. Shift | 9. Delete |
| 5. Caps Lock | |

B.

1. The **Home Row keys** are the letters **A, S, D, F, J, K, L** and **;** on your keyboard. This is where your fingers must be placed into when typing.
2. Both hands must be used in typing as there are two sides of the keyboard, one on the left and the other on the right. Each side has its own set of letters, numbers and characters. Each finger in each hand has an assigned number, letter or character for it.
3.
 - **Alphanumeric keys** - letters and numbers on the keyboard. A numeric keypad is located on the right-hand side of the keyboard. It is for quick entry of numbers
 - **Cursor control keys** - allows the cursor to be moved and includes the arrow keys, page down, page up, home and end.
 - **Special keys** - include enter/return, tab, space, caps lock, backspace, delete and esc (escape). Modifier keys (such as shift, control, alternate, option and command) are used in combination with other keys.
 - **Function keys** (F1, F2 to F12) - allow instructions to be given to the computer and depend on the software. There are variations to the standard keyboard, such as the wireless keyboard, a folding keyboard for palm computers, a miniature keyboard built into pocket-sized devices and a one-handed keyboard.

Practice Exercise 9**A**

- | | |
|------|------|
| 1. B | 3. C |
| 2. D | 4. A |

B.

1. The Menu is an onscreen list of available commands and tools.
2. A small picture that represents a program, file, folder or shortcut. Text describing the icon appears when the user points at the icon. Double-clicking the icon will open the file.

Practice Exercise 10**A.**

- | | |
|------|------|
| 1. A | 4. D |
| 2. A | 5. D |
| 3. A | 6. A |

B.

- | | |
|-----------------|-------------|
| 1. Numeric | 4. Currency |
| 2. Alphanumeric | 5. Currency |
| 3. Alphabet | 6. Date |
| | 7. Boolean |

C.

Data - Data is the raw material entered into a computer system.

Information – The result of data that has been worked on in the computer.

Practice Exercise 11**A.**

	Name	Capacity
	External hard drive	Varies up to 4 TB Advantage: Store large amounts of data, most allow you to schedule automatic back up of data.
	Universal Serial Bus	2 GB – 1 TB Advantage: Portable, small storage. Easy to transport
	Digital Versatile Disc Capacity:	4.7 GB Advantage: Inexpensive, portable storage. Easy to label and store
	Compact Disc wRiteable Compact Disc ReWriteable	700 MB Advantage: Inexpensive, portable storage. Easy to label and store.
	Internet- based	25 GB free (SkyDrive), unlimited for a fee (Amazon S3) Advantage: Store large amounts of data, access data from any computer

B.

RAM – Is the storage between the processor and the other components on the motherboard.

ROM – holds permanent data and instructions that is fixed and cannot be changed by the computer.

Cache – Is attached to the processor and aids the RAM and processor to increase functionality.

C.

USB a type of storage device that are compact in shape, operate faster, hold much more data and durable because of lack of moving parts.

Practice Exercise 12

A. Data Security is the act of protecting information and other personal or company information from other people who are not supposed to read or hold on to.

B.

1. Information Theft
2. Financial Theft
3. Information Alteration
4. Unlawful Access
5. Burglary
6. Vandalism
7. Viruses
8. Software Piracy
9. Natural Disaster
10. Accident

C.

1. To look for sensitive information about you. (To blackmail you, to steal your money, to steal your credits, etc.)
2. Any of these two can be the answer.
 - a. Client information, payment information, personal files, bank account details- all of this information can be hard to replace and potentially dangerous if it falls into the wrong hands.
 - b. Data lost due to disasters such as a flood or fire is crushing, but losing it to hackers or a malware infection can have much greater costs.
3. This will enable you to identify the risks you are faced with and what could happen if valuable data is lost through any of the data security threats.

4. Hacker is someone that gains access to another person's computer without their permission using skills and knowledge that most people do not have and exit the target computer without damaging it.

A Cracker is like a hacker but the techniques used are sometimes hurtful towards the computer and will at most times crash the target computer and crash it.

End of Topic 2.

Now Do Exercise 2 in Assignment Book 1 Then Go to Topic 3.

TOPIC 3:

FILE MANAGEMENT

Lesson 13: File Management

Lesson 14: How to Open a File

Lesson 15: How to Copy a File

Lesson 16: How to Name and Rename Files

Lesson 17: How to Delete Files

Lesson 18: How to Create Back Up for Files

TOPIC 3: FILE MANAGEMENT

The term **computer file management** refers to the manipulation of documents and data filed in a computer. Specifically, it means that a user can create a new file or edit an existing file and save it; open or load a pre-existing file into memory; or close a file without saving it.

Topic 3 will help you develop the understanding, skills and strategies that you need to manipulate documents and data filed in a computer.

Lesson 13 introduces and defines file management and its importance.

Lesson 14 discusses the various ways to opening a file.

Lesson 15 discusses the different ways on how to copy a file .

Lesson 16 shows how to name and rename files.

Lesson 17 shows how to delete files.

Lesson 18 explains why and how to create back up for files and folders on the computer.

By the end of Topic , you should be able to identify and apply appropriate skills of file management to organise all your files and folders in your computer.

Lesson 13: File Management



Welcome to Lesson 13 of Topic 3. In Topic 2 you learnt about how to work with the computer.

In this lesson you will learn about file management.



Your Aims:

- define file management
 - identify the different ways on how to organise and create files or folders
 - identify the importance of file management
-

Basic File Management

Computer file management refers to the manipulation of documents and data filed in a computer. It describes the basic methods for naming, storing and handling files.

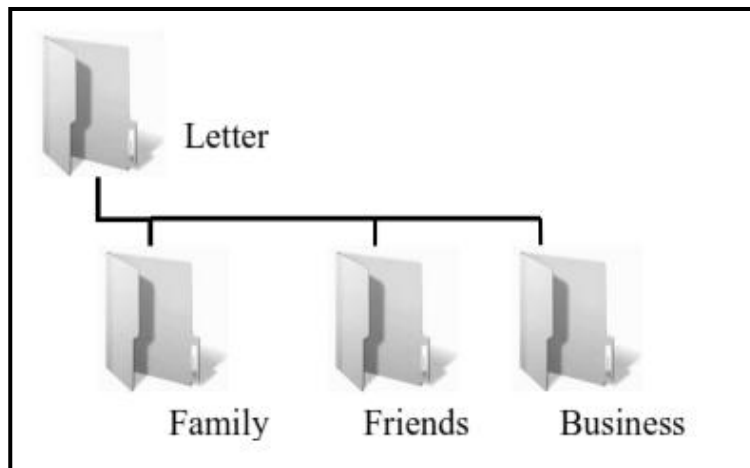
File Management is the most important concept in learning any application. File management will allow you to create, select, copy, move, and rename files and folders in your computer.

Before we go any further, let us have a discussion on drive, folder and files.

When you create a new file from a program application it must be saved so that you can work on it at a later time. The first time you save a file, the default is a **Save As** dialog box. This gives you the opportunity to give the new file a name. For further organization, you must save the file to a newly created folder or default folder. All files that you store on the hard drive (C:) are stored in a folder.

Now let us take a look at folders and subfolders. The following are basic things you should know about them.

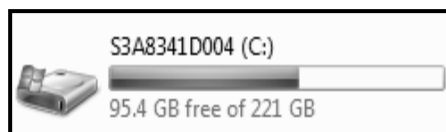
- Folders are used to organize data on your disk.
- Folders are represented by icons that actually look like file folders.
- When you want to create a folder to store files, you must first decide where you want to place the new folder.
- To create a subfolder, your decision is in which parent folder the new subfolder will be placed.



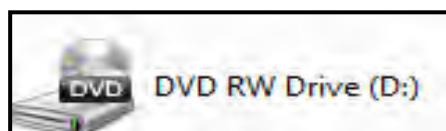
Example of Folders with Subfolders

Moving on with our discussion. The computer is a commonly used tool for file management because it allows you the access different drives. Windows Explorer is a utility that allow you to access removable storage such as CDs, DVDs, Flash Drive, SD Memory Card, etc.

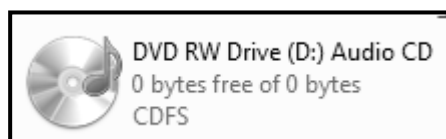
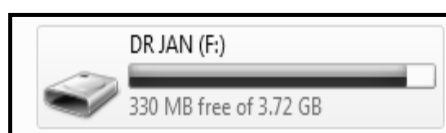
On most computers, the (C:) drive is your primary storage for all of the programs, folders and files on your system. The pictures examples below are the disk drives and removable storage devices in a computer.



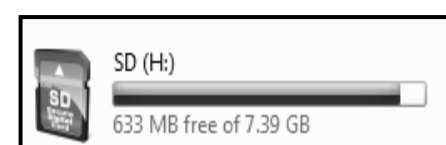
C drive or the primary storage disk drive



DVD RW Drive

DVD RW Drive
with an Audio CD

Flash Drive



SD Memory Card

Removable
Storage Devices

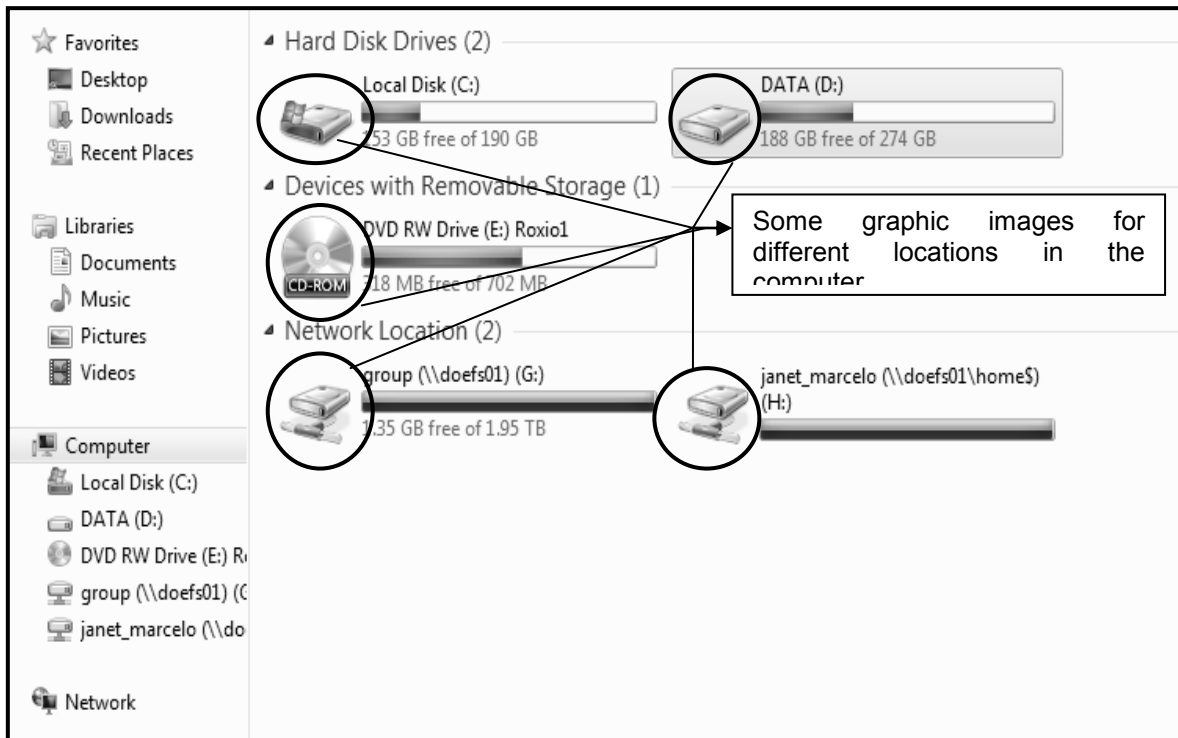
Recognizing Types of Icons

Being familiar with icons is a great way for you to be more organized with your computer file management.

The following are the types of icons:

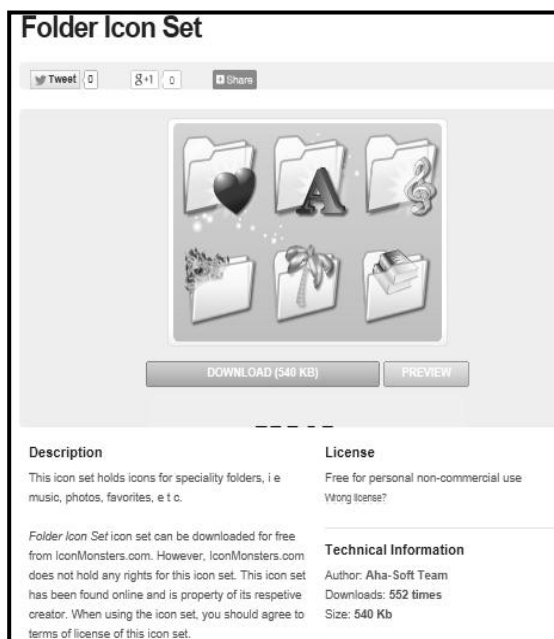
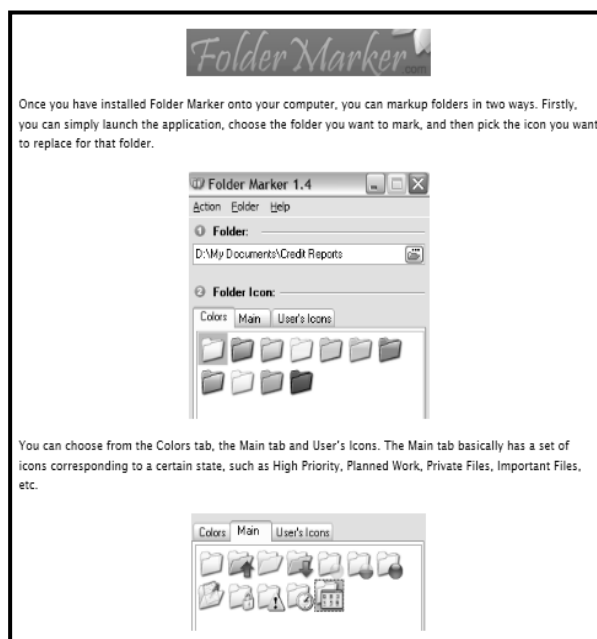
1. Location Icons

These are graphic images that represent drives, disks, or locations, such as Computer.



2. Folder Icons

These icons look like manila folders and some folders give a clue to their contents. Today there are different sets of folder icons that are purchased or free (called as freeware program) from different websites.



3. Application File Icons

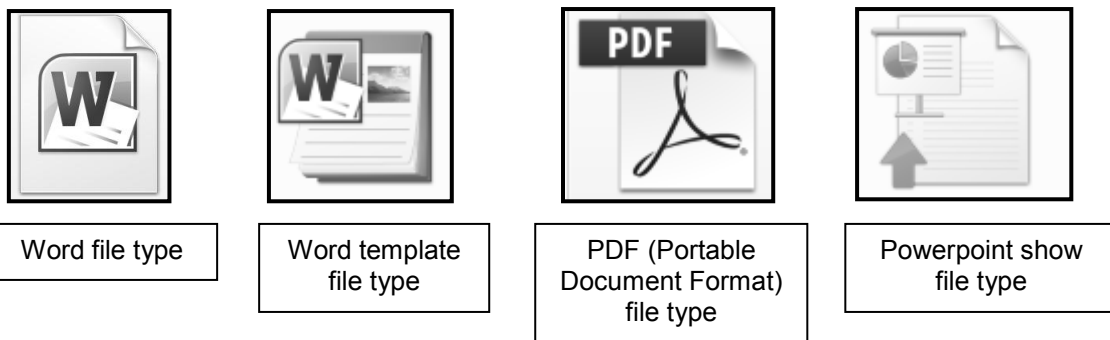
These icons look like a miniature version of the program icon or a window.



These icons are taken from a Mac book (Apple Computer) where the application programs are represented by icons.

4. Document File Icons

These icons are represented by a piece of paper with a graphic indicating the type of document.



How to Organize Your Files and Folders

Now that you know what file management is and have gone through a review with drives, folders and files, you are now ready to organise your files. There are many ways of organising files which will be further discussed in the succeeding lessons. But for now, let us discuss the most common ways.

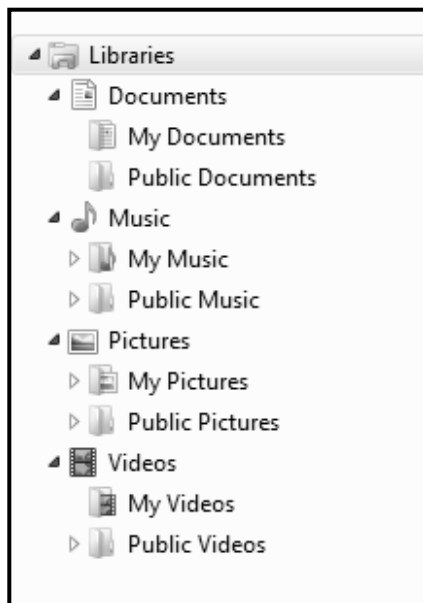
1. Use Documents

For many reasons, it is smart to take advantage of the Documents feature. Documents feature is called Documents in Windows 7 and in Windows Vista while it is called My Documents in Windows XP.

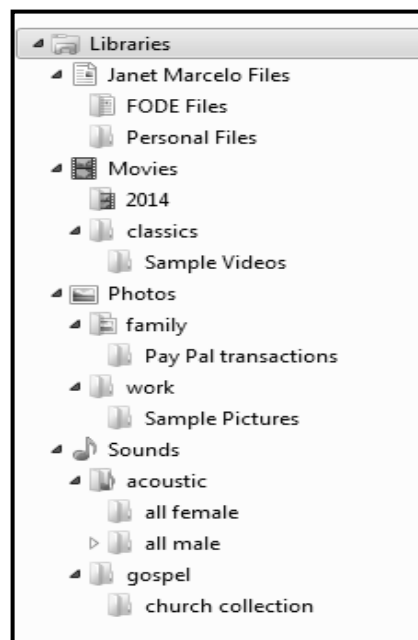
To open Documents in Windows 7 and Vista, click **Start**, and then click **Documents** to discover an easy way to store your personal documents.

In Windows 7, the Documents feature is actually a virtual library. By default, the Documents library includes My Documents or Documents folder and the Public Documents folder. You can customize the Documents library (in addition to the Music, Pictures, and Videos libraries that are also included by default) in Windows 7 to group files and folders from any location on your computer-without actually moving them. Or you can build your own libraries to easily organize your files. Building your own libraries would mean renaming folders and having sub folders where you can organise your files according to your own personal needs.

The example below are examples of libraries. The first one is the default while the second was customized by the computer user.



Libraries in Windows 7



Modified and personalised Libraries

2. **Adopt Consistent Methods for File and Folder Naming**

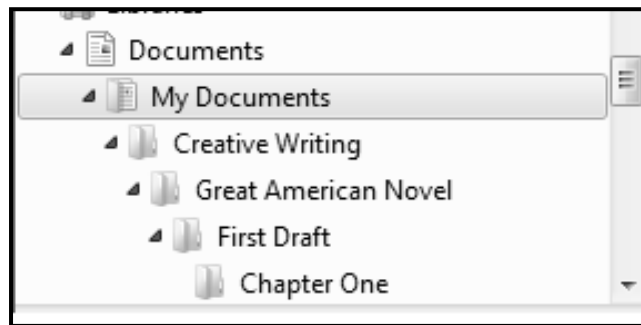
When learning how to manage files and folders, it is important that you develop a naming scheme for the kinds of files you create most often and then stick to it.

If however you decide to change an existing file or folder name, right-click the name in the folder structure. Click **Rename**, and then type the new name. More on this will be discussed in Lesson 16.

3. **Keep Names Short**

Even though you can use long file names in Windows, you should not necessarily do so. Long file names can be harder to read.

Let your folder structure do some of the naming. For example, rather than creating a file called Great American Novel Chapter One First Effort, you can build a structure like this:



4. **Separate Ongoing and Completed Work**

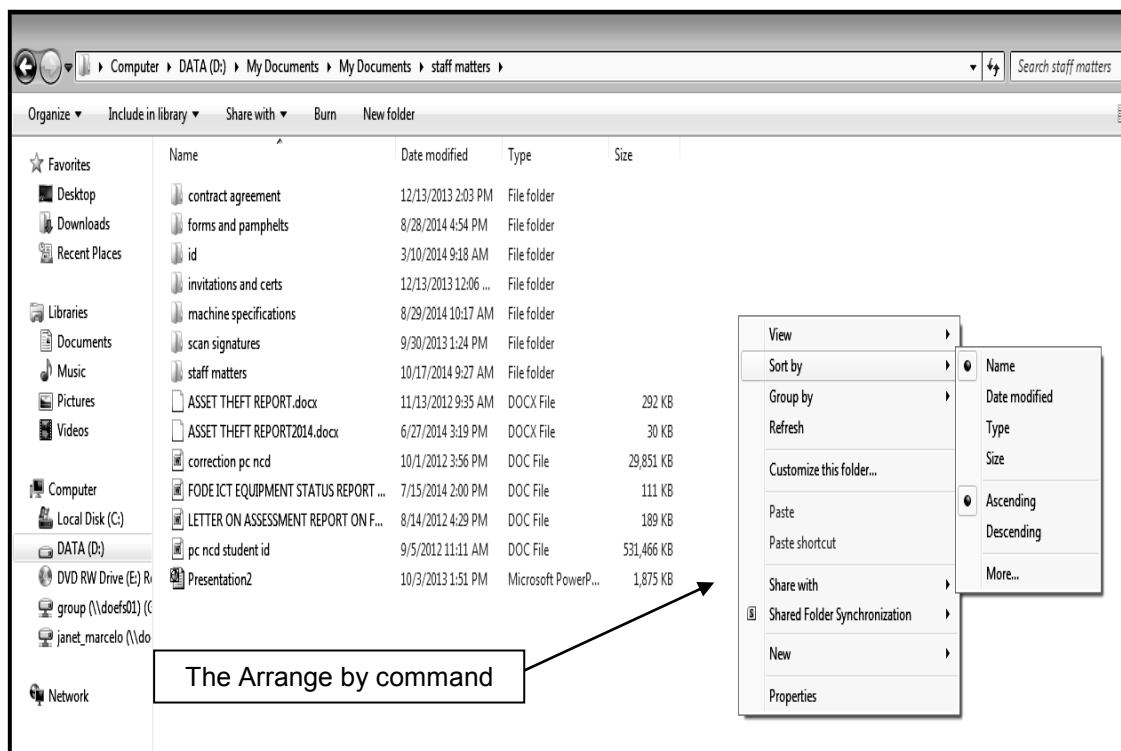
To keep the Documents folder from becoming too unwieldy, use it only for files you are actively working on. As a result, you can reduce the number of files you need to search through and the amount of data you need to back up.

Every month or so, move the files you are no longer working on to a different folder or location, such as a folder on your desktop, a special archive folder, a flash drive, an external hard disk drive, or even a CD. These will be discussed further in Lesson 18.

5. **Store Like with Like**

Restricting folders to a single file type (or predominantly one type) makes it easier for you to find files. For example, with all of your graphics in a single folder.

Use the **Arrange by** command to sort files by criteria, such as author, date modified, and type. These criteria can change based on the file type (documents have different Arrange by criteria than photos, for example).



Right click your mouse for the Arrange by command to appear. You can now arrange your files accordingly based from their names, date modified, type, size and more.

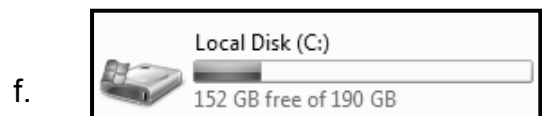
6. Avoid large folder structures

If you need to put so many subfolders in a folder that you can not see all of them at a glance.

**Activity 1: Answer the following.**

1. Mario would like to organise his files where all Word documents, Excel spreadsheet files, Powerpoint shows, PDF files and Publisher files will be located in their own folders. What must he do? Suggest ways on how Mario can organise his files.

2. Identify the type of icons. Write your answer on the space provided.



Thank you for completing this activity. Make sure you repeat the steps for you to learn how to create folders using the two methods given before moving on to the next part of this lesson.

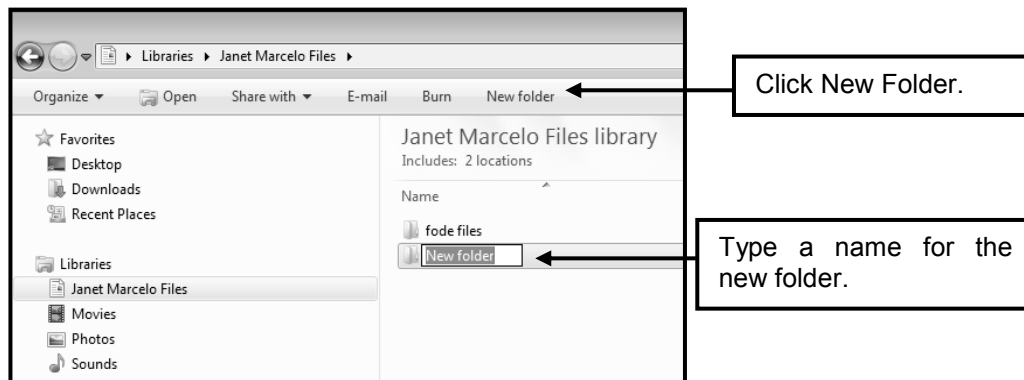
How to Create Your Folders

You can store documents on your computer by creating folders. To create a new folder, start by going to the folder or library that you want your new folder to be part of.

Then do the following steps:

1. Click **Start** → **Documents**. By doing this, the Documents library opens.
2. Click the **New Folder** button in the command bar.

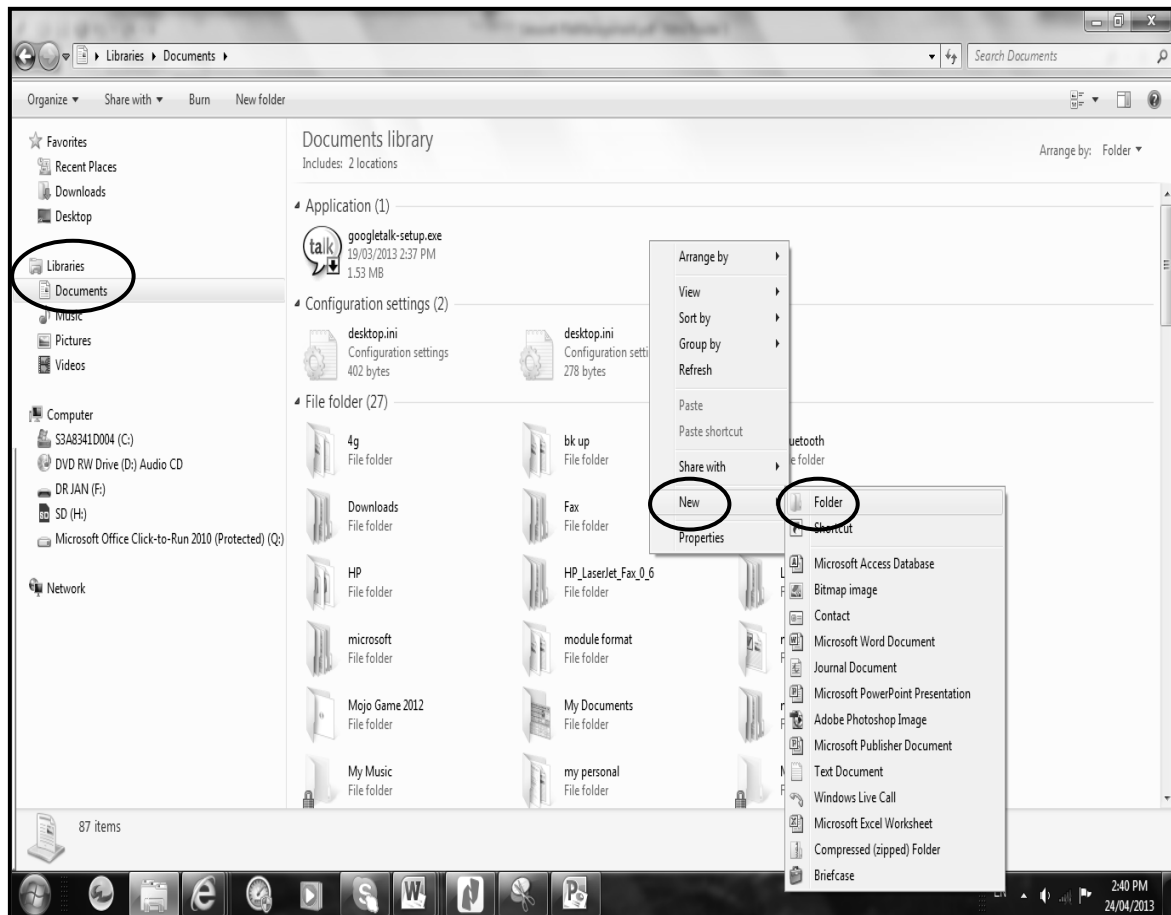
An icon for the new folder appears in the content area, with the name New folder next to it is already selected.



3. Type the name you intend to give to the new folder. Do not move the cursor or mouse before you start typing. Your new text will replace the highlighted text automatically.
4. Press the Enter key to apply changes to the folder name. You can open your new folder by double-clicking its icon.

There are other ways on how to create a folder. Another way of creating your folder is by going to Documents and doing a right-click on your mouse, choose **New** and on the cascading menu, click on **Folder**.

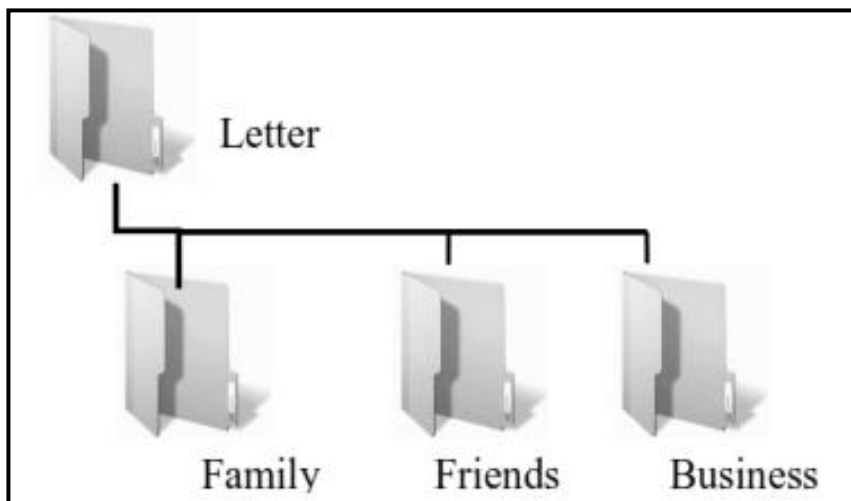
Study the picture on the next page as this further illustrates how to create a folder by right clicking on Documents.



Creating a New Folder by Right Click on Documents

**Activity 2: Follow the given instructions to create a file structure.**

1. Under Libraries virtual folder —Document”, create a similar file structure like the one shown below following any of the two methods given on the next page.



2. Use any of the two methods below:

Method 1 –Create in their proper sub-folder

1. Go to Document folder.
2. Create a new folder called —~~Letter~~”.
3. Double click on the **Letter** icon.
4. Create a new folder called —~~Family~~”.
5. Double click on the **Family** icon.
6. Create a new folder called —~~Business~~”.
7. Double click on the **Business** icon.

Method 2 –Create all folders first

1. Navigate to Document folder.
2. Create all folders: **Letter, Family, Friend and Business**
3. Drag **Family** folder icon over **Letter** until it turn blue.
4. Drag **Friends** folder icon over **Letter** until it turn blue.
5. Drag **Business** folder icon over **Letter** until it turn blue.

Repeat both methods to ensure that you understand how to create folders.

Thank you for completing this activity. Make sure you do the necessary corrections before moving on to the next part of this lesson.



Summary

You have come to the end of Lesson 13. In this lesson, you learnt the definition and other related facts of file management, identified the different ways on how to organise and create files or folders and learnt the importance of file management.

NOW DO PRACTICE EXERCISE 13 ON THE NEXT PAGE.
--

Practice Exercise 13

A. Follow the given instructions to create new folders.

Create the following folders structure under Libraries on the virtual Folders of Documents, Pictures and Music. Make sure to place the correct subfolder in their folders.

- Libraries → Document → Letters
 - Libraries → Document → Recipes
 - Libraries → Document → Business
 - Libraries → Pictures → Rock Stars
 - Libraries → Pictures → Flowers
 - Libraries → Music → Soft Rock
-

CHECK YOUR WORK. ANSWERS ARE AT THE END OF TOPIC 3.

Answers to Activities

Activity 1

1. Mario can store like with like by using the arrange by command. He can store all Word document files in one folder and this goes the same for all Excel, PDF and Publisher files in their own separate folders. First, he will choose the location where he will store it, say for example in Documents. Then he will use the arrange by command by doing the right click on the mouse and the command will appear. From here he can sort the files according to type. Once he finishes, he can create separate folders for each file types and rename these folders accordingly. Lastly, he will transfer all same file types to the folder where they belong.
2.
 - a. location icon
 - b. document file icon
 - c. application file icon
 - d. application file icon
 - e. folder icon
 - f. location icon

Activity 2

Check the boxes if you have done the steps below:

Method 1 –Create in their proper sub-folder

- ☐ 1. Went to Document folder.
- ☐ 2. Created a new folder called —~~Letter~~”.
- ☐ 3. Double clicked on the **Letter** icon.
- ☐ 4. Created a new folder called —~~Family~~”.
- ☐ 5. Double clicked on the **Family** icon.
- ☐ 6. Created a new folder called —~~Business~~”.
- ☐ 7. Double clicked on the **Business** icon.

Method 2 –Create all folders first

- ☐ 1. Navigate to Document folder.
- ☐ 2. Create all folders: **Letter, Family, Friend and Business**
- ☐ 3. Drag **Family** folder icon over **Letter** until it turn blue.
- ☐ 4. Drag **Friends** folder icon over **Letter** until it turn blue.
- ☐ 5. Drag **Business** folder icon over **Letter** until it turn blue.

Lesson 14: How to Open a File



Welcome to Lesson 14 of Topic 3. In Lesson 13 you learnt about the definition and other related facts on file management, identified the different ways on how to organise and create files or folders and learnt the importance of file management.

In this lesson you will learn about how to open a file.



Your Aims:

- define file
 - identify the steps in opening files
 - describe how to open files in different locations
-

The File

File can be a document, workbook, presentation, an image, a clip art and audio clips. In the world of computing, the terms “folder” and “file” are entirely separate, distinct, and non-interchangeable. Folders contain files; files cannot contain folders.

Files are represented by various icons that indicate which program is used to open them. Hence the word file extension. **File extension** is the two or three or four letters after the dot in a filename. The file extension indicates what kind of file it is: its “format” or “type.” For instance, the file extension .exe refers to an “executable” file--in other words, an application. The file extension .html indicates a Hypertext Markup Language file--in other words, a web page.

In Computer or Windows Explorer, double-clicking on a file will open it if the file extension is correct.

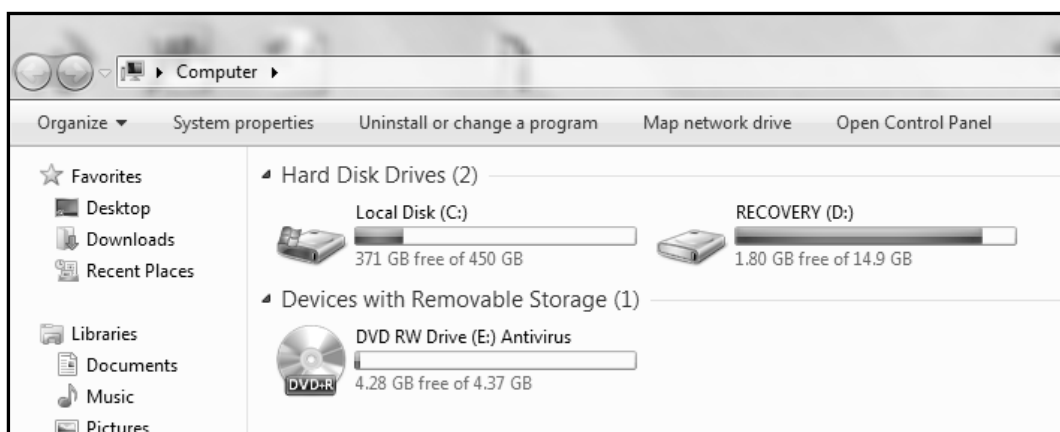
These are some common file extensions:

- .doc – Microsoft Word 2007 document and .docx for Microsoft Word document (2010)
- .xls – for spreadsheets
- .mp3 – for music and audio files
- .avi – video files
- .wpd – WordPerfect Document
- .txt – Plain text document
- .htm, .html – A plain text document with added code that enables it to be read on the World Wide Web
- .jpg – An image file

- .gif – An animated image file
- .exe – An executable file, meaning an application/program/piece of software

Another fact about files is that they have names hence, the word file filename. **File name** is the name of a file, including or not including its file extension. Example pf file names are mediakit.doc, filename.jpg

All files come in varying sizes so aside from File extension and Filename, we also have File size. **File Size** is the size of a file measured in bytes. A floppy disk holds about 1.5 Mb; a Zip disk holds 100 Mb or 250 Mb; a CD holds about 800 Mb; a DVD holds about 4,700 Mb.



The illustration above displays the DVD drive showing the capacity and used space of a DVD disk inside the disk drive.

To understand the differences of file sizes, look into the conversion table used to measure file size.

1,000 bytes = 1 kilobyte (Kb)

1,000 kilobytes = 1 megabyte (Mb)

1,000 megabytes = 1 gigabyte (Gb)

1,000 gigabytes = 1 terabyte (Tb)

From the listing above, file size measures the size of a computer file. Typically it is measured in bytes with an SI (International System of Units) prefix.

How to Open a File

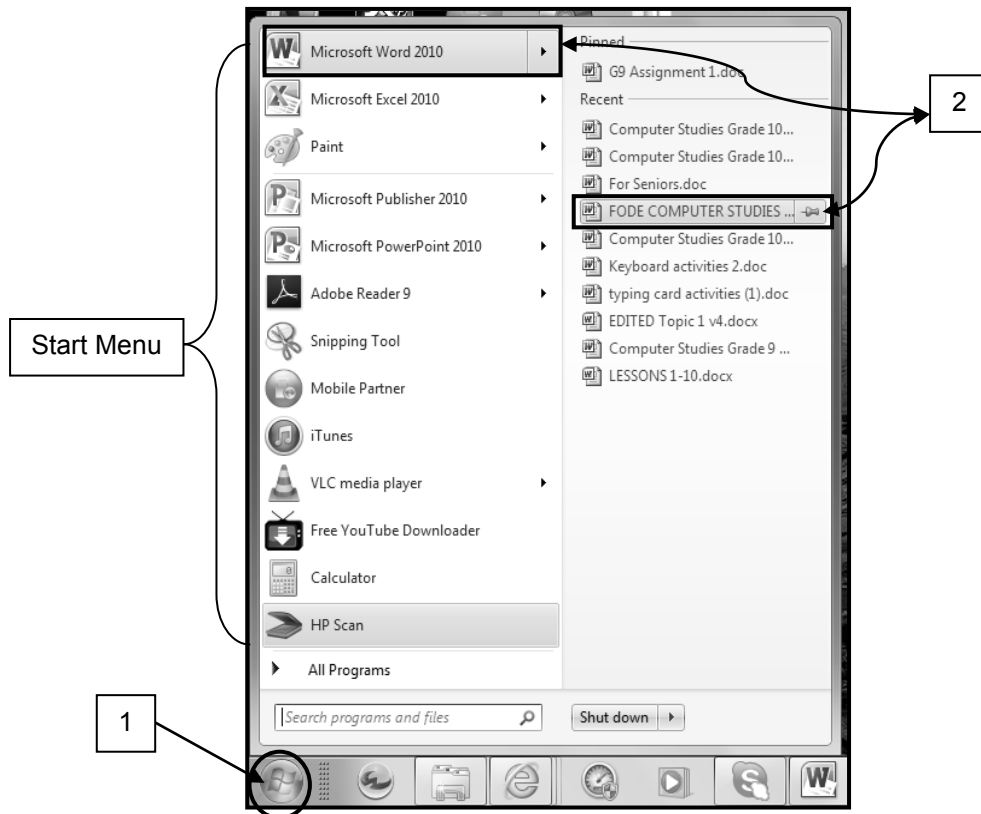
There are various ways on how to open a file. Let us take them one at a time.

1. Opening a File by Using the Start Menu

Using the Start Menu would enable you to open a recent file. Study the following steps on how to use the Start Menu to open a file.

1. Click **Start Up** button.
2. Look for the program used by the file on the **Start Menu** and on the cascading menu click on the file

3. After doing this, check that the chosen file is opening up.

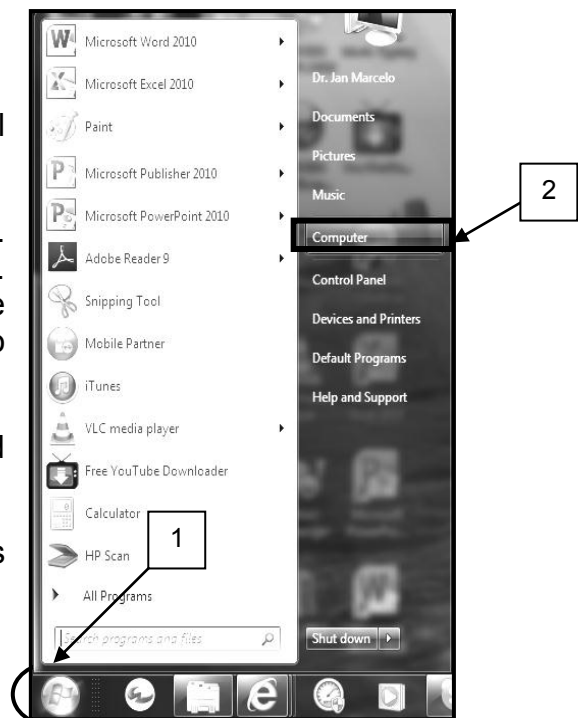


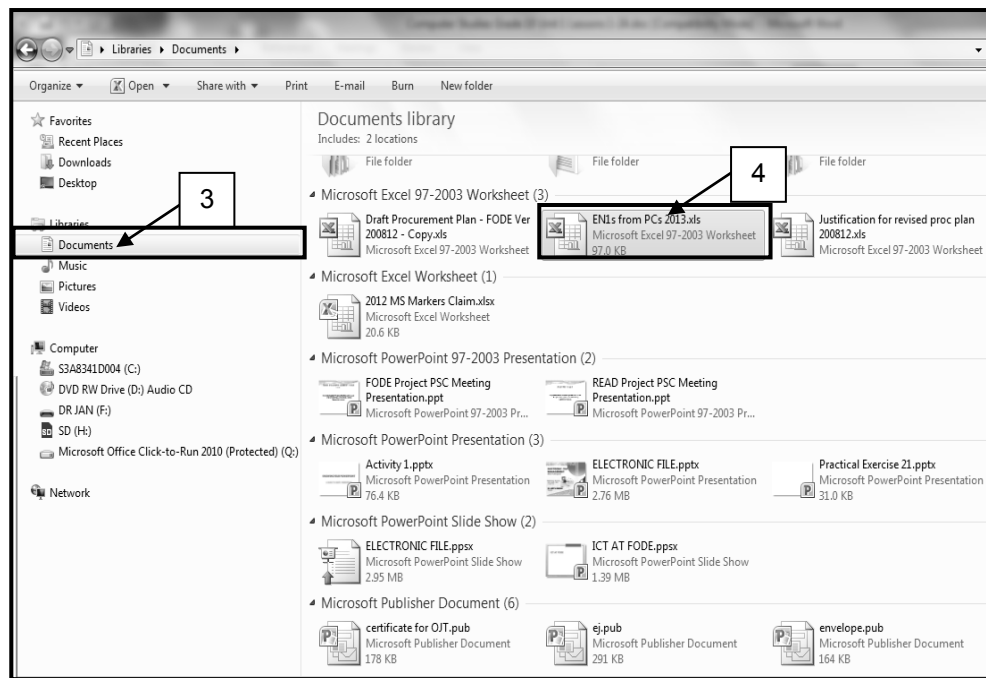
Do not worry if the program used by the file is not on the Start Menu. You can always do the other methods on how to open a file.

2. Opening a File by Using the Computer

Using the Computer is another way on how to open a file. Follow the steps on how to open a file using the Computer.

1. Click **Start Up** button.
2. Click on **Computer**. This will open the Computer directory.
3. Choose the location of the file. Click on the location of the file. Remember that there are different locations. Refer back to Lesson 7 as needed.
4. Browse over the saved files and click on the file.
5. Check to see if the selected file is now open.

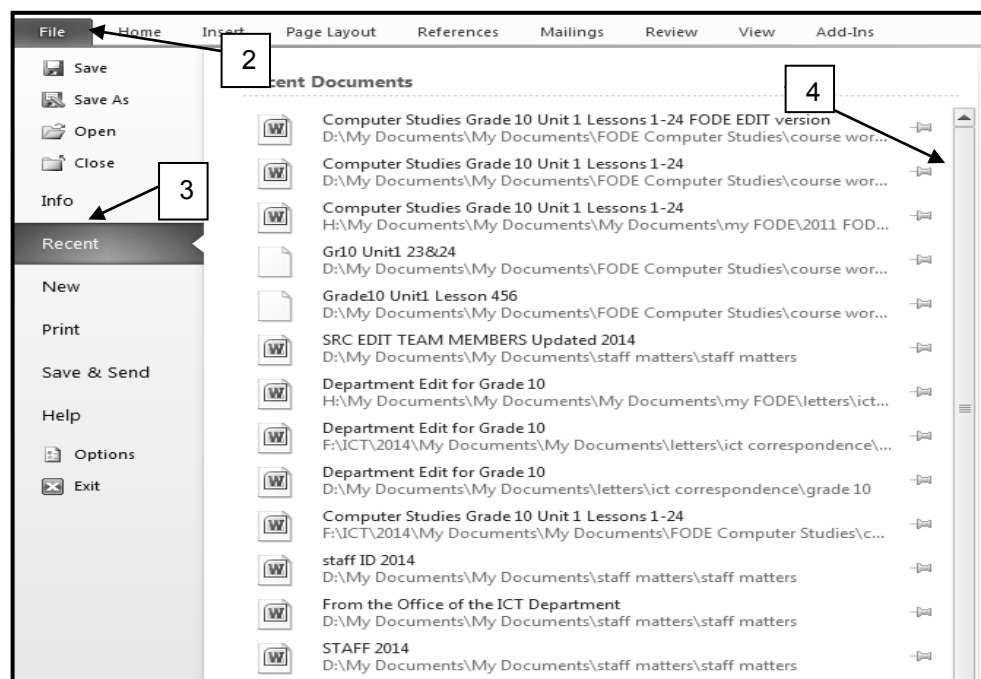




3. Opening a File by Using the File Tab

Using the File tab allows you to open a file. By going to the File tab, you will be led to the Backstage View where you will see the Recent. From here, study the succeeding steps to open a file using the File tab.

1. Open the Program of the needed file. (You can check the file extension to identify what application program is used.)
2. Go to **File** Tab.
3. Click on **Recent**. In here, all recent files and their location will be displayed.
4. Scroll up or down to locate the needed file. Click the file.
5. The chosen file is now open.



If you cannot see the needed file in the Recent tab, you can always use the **Computer** in opening a file.



Activity 1: Follow the given steps to practice the skill of opening a file.

1. Open a Microsoft Word Program
2. With the New Blank Document, type the following data.

The institution has a clear sense of purpose and direction evidenced by well-defined strategic plan and explicit policies translating global context, national needs and priorities and demonstrating the use of open and distance learning methods to provide educational services.
3. Click the File Tab and choose Save As.
4. Select the location where you will save the file.
5. Save the document as —Institution”.
6. Take note of the file extension, it should have .doc for MS Word 2007 and .docx for MS Word 2010.
7. Click **Save** and close the document.
8. Open the document you have just saved using any of the three ways on how to open a file. Refer back to the steps in Lesson 14 as needed.

Thank you for completing this activity. Make sure to do the necessary corrections before moving on to the next part of the lesson.

Summary



You have come to the end of Lesson 14. In this lesson, you learnt about the definition of file and other facts related to it. You also identified the steps in opening files and learnt how to open files in different locations.

NOW DO PRACTICE EXERCISE 14 ON THE NEXT PAGE.
--

Practice Exercise 14

A. Circle the letter of the correct answer.

1. .jpg is an example of _____?
A. file name C. file extension
B. file path D. file size
 2. subagan.pptx is an example of _____?
A. file name C. file extension
B. file path D. file size
 3. Which has a biggest file size, 236 mb or 534kb?
A. 236 mb C. 2.36 kb
B. 534 kb D. 5.34 mb
 4. If your file is not in the Recent Tab, what can you do to open the file?
A. use Computer to open the file
B. use the Start Menu to open the file
C. use File Tab to open the file
D. A and B
 5. Favorites, Libraries and Computer are the
A. locations C. directories
B. file names D. A and B
-

B. Answer the following questions.

1. What is the difference between file and folder?

2. Choose one of the ways on opening a file and list down its steps.

CHECK YOUR WORK. ANSWERS ARE AT THE END OF TOPIC 3.

Answers to Activity 1

Check the boxes if you have done the steps below	
1.	Opened a Microsoft Word Program.
2.	Typed the data below: The institution has a clear sense of purpose and direction evidenced by well- defined strategic plan and explicit policies translating global context, national needs and priorities and demonstrating the use of open and distance learning methods to provide educational services.
3.	Clicked the File Tab and chose Save As.
4.	Saved the document as —Institution”.
5.	Checked if the file extension has either .doc for MS Word 2007 and .docx for MS Word 2010.
6.	Closed the document.
7.	Opened the document you have just saved using any of the three ways on how to open a file. Choose what way of opening was used and continue checking the boxes if you have done the steps.

Using the Start Menu	
1.	Clicked Start Up button.
2.	Click the MS Word program.
3.	Checked if the chosen file is opening up.

Using The Computer	
1.	Clicked Start Up button.
2.	Clicked on Computer .
3.	Chose the location of the file. Clicked on the location of the file.
4.	Browsed over the saved files and clicked on the file.
5.	Checked to see that the selected file is now open.

Using the File Tab	
1.	Open the MS Word program.
2.	Went to File Tab.
3.	Clicked on Recent .
4.	Scrolled up or down to locate the needed file. Clicked the file.
5.	Checked if the chosen file is now open.

Lesson 15: How to Copy a File



Welcome to Lesson 15 of Unit 1. In Lesson 14 you: learnt about the definition of file and other facts related to it. You also identified the steps in opening files and learnt how to open files in different locations.

In this lesson you will learn about how to copy a file.



Your Aims:

- define “copy of file”
- identify the steps on how to copy files
- identify how to copy files in different locations
- identify the importance of copying files

Copy

Copy is an important command in the Ribbon. This enables the user to create copies of files into different locations thus, a way to create back up for files as well.

Choosing “Copy” will copy a selected file or folder into the clipboard so that it can be pasted elsewhere, but will not remove the file or folder from its current location.

This command is represented by this icon



This same command is not only used in Word or in other Microsoft application software but the underlying principle of this command is also used for files, hence the phrase “copying of files”.

When you copy a file, you are creating a duplicate of that file to be placed elsewhere. You can copy files from different locations in your computer and place them in different directories or locations. For example, you can copy a file from your C drive to Libraries or to an external storage device like a CD or a flashdrive.

Study the following steps on how to copy a file. Remember that when you can copy a file or folder (or groups of files or folders at the same time) to another location on your computer, the original file or folder stays in the same location, but a duplicate of it is copied to the location you indicate.

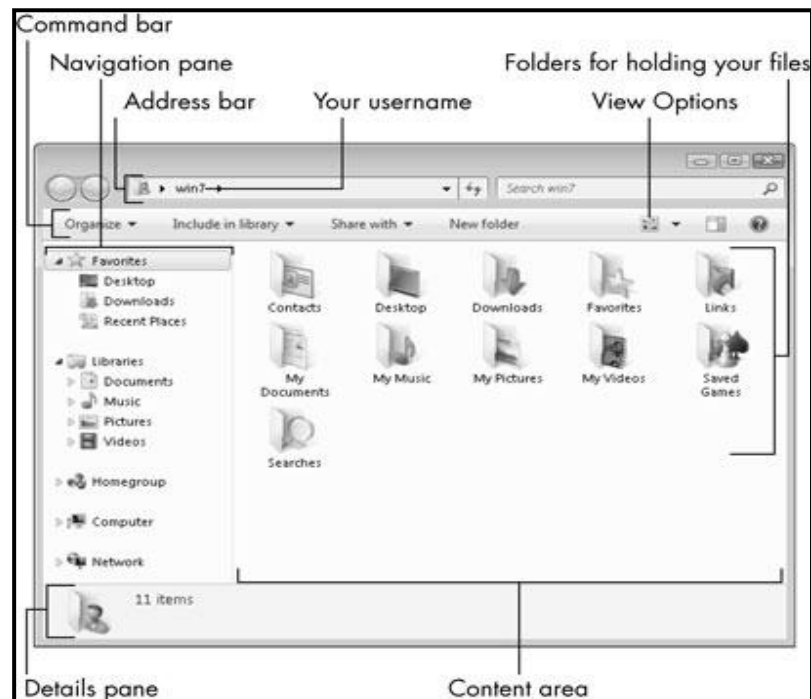
How to Copy a File

The steps below on how to copy a file involves a good knowledge on the different locations or directories of the computer and the skill of dragging and right clicking. Dragging would mean that you are to hold down the left side part of your mouse, let it stay for a while then literally “drag” or pull the files to where you want it to be placed or you can right click the mouse to choose the command copy then select the location where the duplicate of the files will be created and pasted.

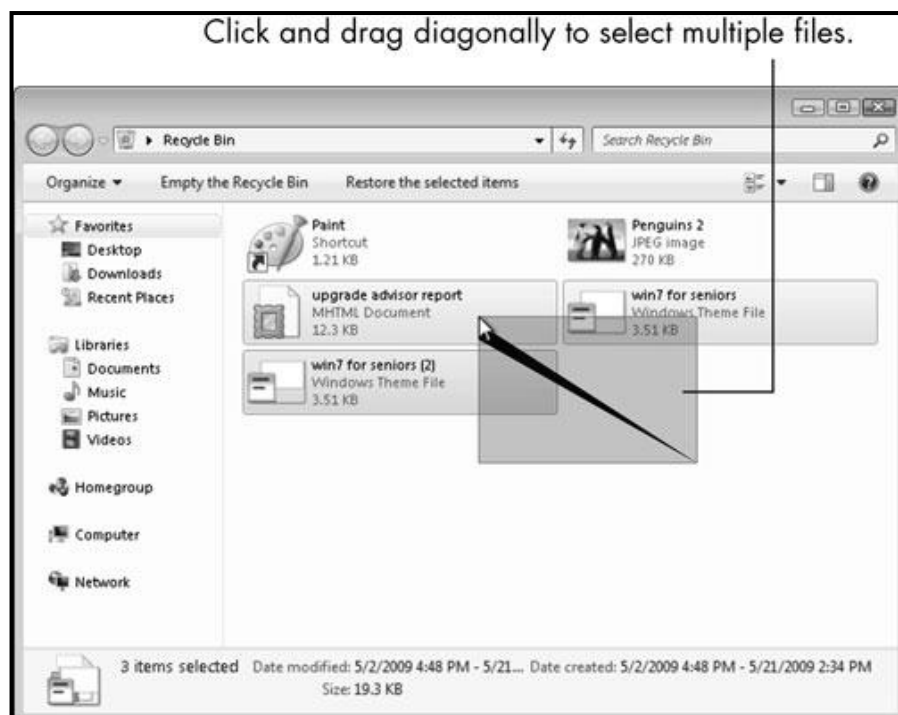
1. In **Windows Explorer**, select the file, folder, or groups of files and folders you would like to copy.

You can select multiple files or folders in several ways:

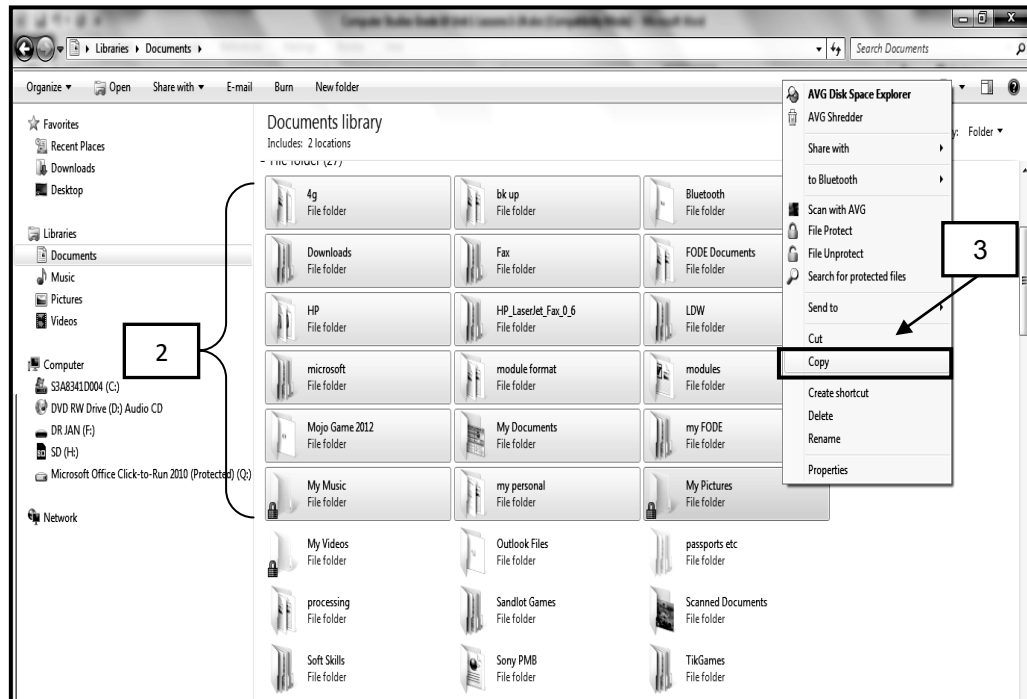
- Click the first file or folder you want to select, hold down the **Ctrl** key, and then click each additional file or folder you want. The selected files are highlighted, and the details pane displays the number of selected items. To unselect one of the selected files, click that file a second time. After selecting all your files, release the **Ctrl** key.



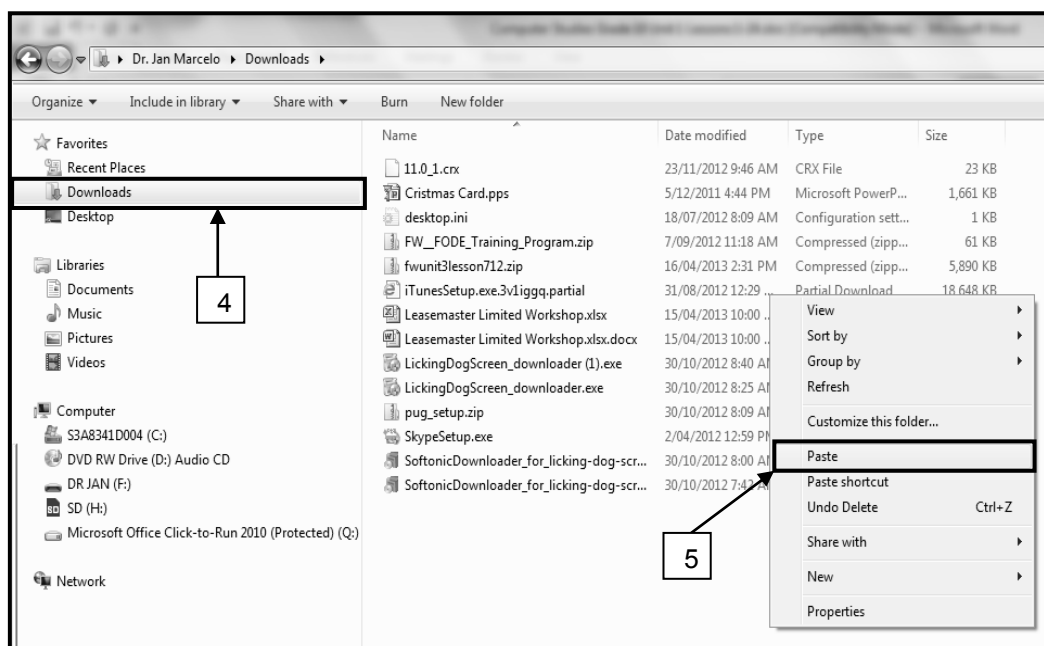
- Click an empty part of the content area in **Windows Explorer**, hold down the left mouse button, and drag the mouse pointer towards the files you want to select. A selection box appears on-screen. Any file or folder that you touch with that selection box becomes selected. You do not have to surround a file with the box - just touch it.

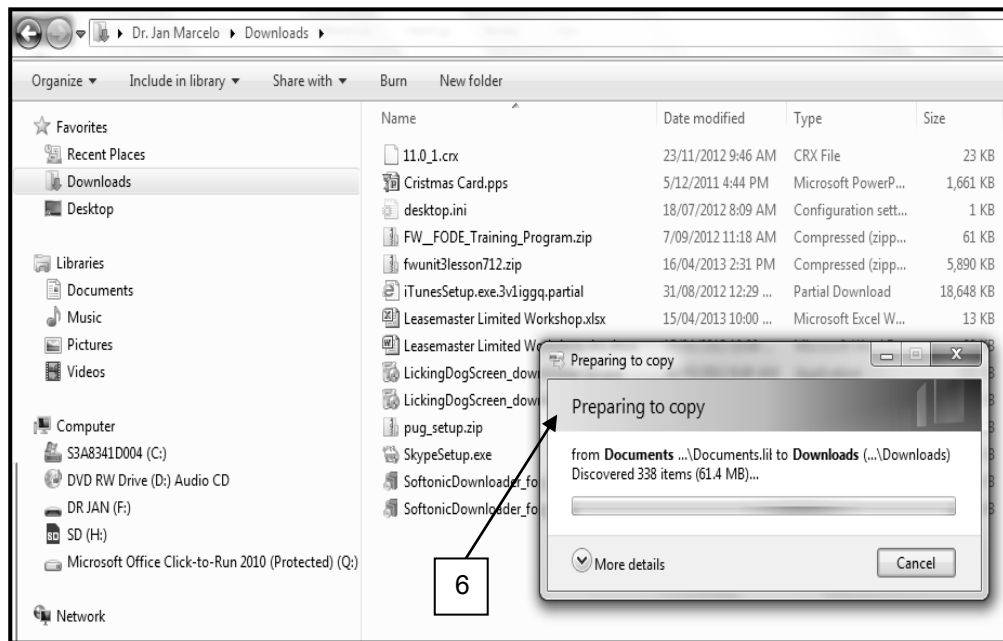


- To select all files inside a folder, open that folder by double-clicking its icon and then press **Ctrl+A** or choose **Organize**→**Select All**.
- After selecting multiple files or folders by any method, right-click any of the selected items. After doing this, a dialog box appears.
 - Choose **Copy**. Then the file or folder is copied. If you selected multiple files or folders, all are copied.



- Then after, choose the location for the files or folders you have selected and copied.
- Do a right click and a dialog box appears. Choose **Paste**.
- The files or folders will be copied on its new location.



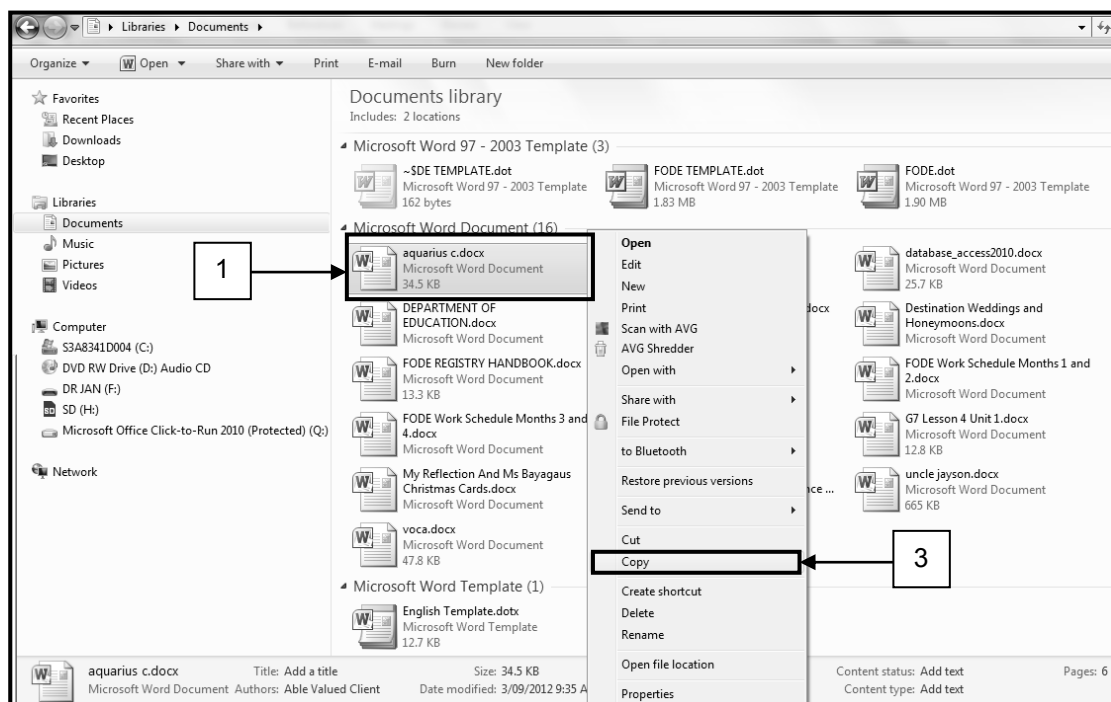


Remember that it is safer to right-click the mouse and the context menu appears and choosing copy rather than dragging and dropping them to a selected location.

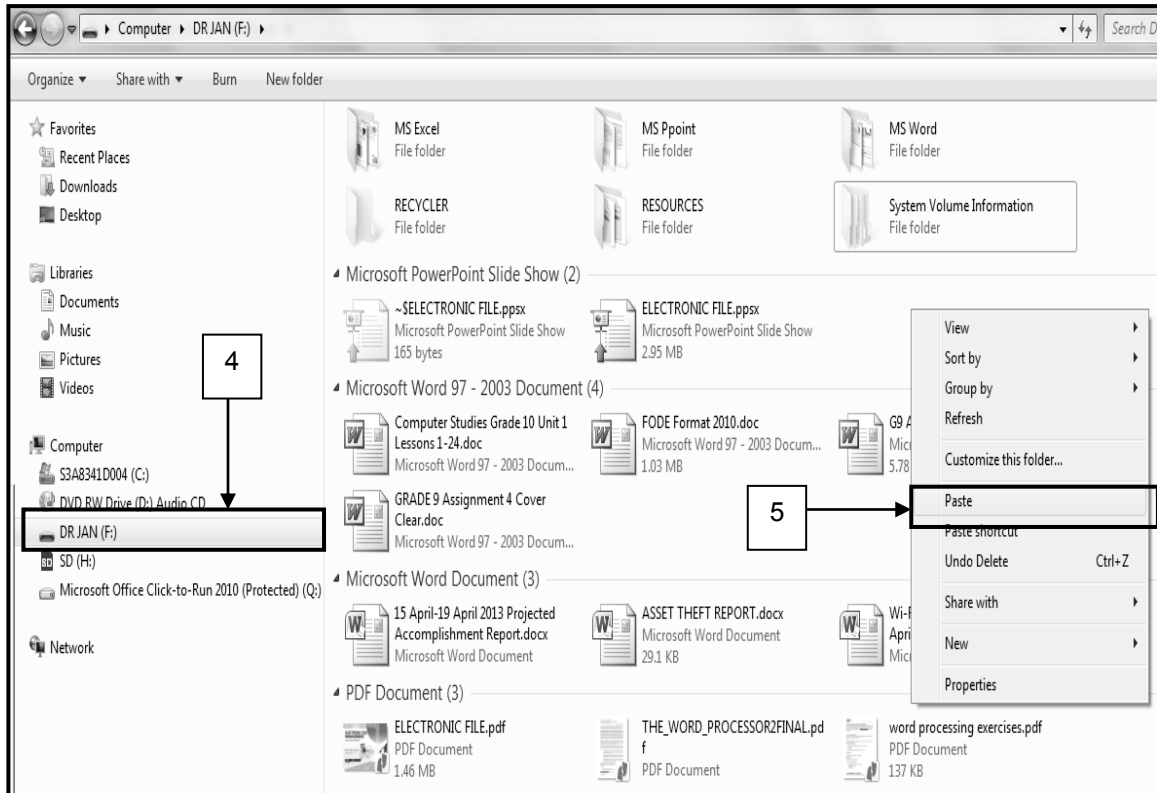
Doing this —drag and drop” method requires a lot of mouse control, if not you risk —losing” your file by dropping it to another location instead of the intended location.

If a single file or folder is copied, do the following:

1. In **Windows Explorer**, select the file or folder you would like to copy.
2. After selecting the file, right-click the file or folder. After doing this, a dialog box appears.
3. Choose **Copy**. Then the file or folder is copied.



4. Then after, choose the location for the file or folder you have selected and copied.
5. Do a right click and a a dialog box appears. Choose **Paste**.
6. The file or folder will be copied on its new location.



It is important for you not to drop the files in the wrong place. If you do, you can UN-DO the move by selecting Organize → Undo from the top of the page. It is very important that you do not perform any other actions or do anything else between the time that you accidentally moved the files and the time when you “undo” the move. Often, you can only undo one step back. If you perform a second operation before undoing, you may not be able to undo the move.



Activity 1: Practice your skill of copying files. Follow the given instructions below.

A.

1. In Windows Explorer, click on Pictures folder under Libraries.
2. Choose the folder Sample Pictures.
3. Open the folder Sample Pictures by double clicking the folder to open it or doing a right click and text menu that appeared, choose open.

4. Select the file Tulips.jpg



5. Right click and when the context menu appears, choose copy.
6. Copy the selected file to the location Favoties under the Download folder.

B.

1. Open the Word program.
2. Type the following data:

That any notices or other forms of communication, given or sent by one party to the other, pursuant to, or in connection with this Agreement shall be deemed to have been duly made, given or sent if it is in writing and signed and delivered by hand or sent by pre-paid post to, incase of the Contractor, the Principal and in case of the Contracted, to the business address as noted herein.

3. Save the file as Notices in Documents.
4. Applying the method below, copy the file in Pictures. Describe in your own words what happens in each step.

a) In Windows Explorer, select the file or folder you would like to copy.

b) After selecting the file, right-click the file or folder. After doing this, a dialog box appears.

c) Choose Copy. Then the file or folder is copied.

d. Then after, choose the location for the file or folder you have selected and copied.

- e. Do a right click and a dialog box appears. Choose Paste.

- f. The file or folder will be copied on its new location.

Thank you for completing this activity. Make sure you repeat the steps and keep referring back to the steps until you learn how to copy files or folders to another location. When done you can move on to the next part of this lesson.



Summary

You have come to the end of Lesson 15. In this lesson, you learnt about definition of “copy” and “copying of files”. You also identified the steps on how to copy files and folders in different locations and learnt the importance of copying files.

NOW DO PRACTICE EXERCISE 15 ON THE NEXT PAGE.
--

Practice Exercise 15**A. Follow the given instructions to create and copy files.**

1. Create the following folders structure under Libraries on the virtual Folders of Documents, Pictures and Music. Make sure to place the correct subfolder in their folders.
 - Libraries → Document → Constitution
 - Libraries → Document → Examinations
 - Libraries → Document → Ideas
 - Libraries → Pictures → Heroes
 - Libraries → Pictures → Rainbows
 - Libraries → Music → Ballad
2. After creating the folders and their subfolders. Copy the subfolders to their new locations.
 - The subfolder Constitution to Favorites → Downloads.
 - The subfolder Examinations to Libraries → Music.
 - The subfolder Ideas to Favorites → Downloads.
 - The subfolder Heroes to Libraries → Videos.
 - The subfolder Rainbows to Favorites → Downloads.
 - The subfolder Ballad to Libraries → Music.

CHECK YOUR WORK. ANSWERS ARE AT THE END OF TOPIC 3.**Answers to Activity 1****Tick (✓) the boxes if you have done the steps below.**

- ☐ 1. In Windows Explorer, clicked on Pictures folder under Libraries.
- ☐ 2. Chose the folder Sample Pictures.
- ☐ 3. Opened the folder Sample Pictures by double clicking the folder to open it or done a right click and text menu that appeared, chose open.
- ☐ 4. Selected the file Tulips.jpg



- ☐ 5. Right clicked and when the context menu appeared, chose copy.
- ☐ 6. Copied the selected file to the location Favoties under the Download folder.

B.

- ☐ 1. Opened the Word program.
- ☐ 2. Typed the following data:

That any notices or other forms of communication, given or sent by one party to the other, pursuant to, or in connection with this Agreement shall be deemed to have been duly made, given or sent if it is in writing and signed and delivered by hand or sent by pre-paid post to, incase of the Contractor, the Principal and in case of the Contracted, to the business address as noted herein.

- ☐ 3. Saved the file as Notices in Documents.
- ☐ 4. Applied the method below, copy the file in Pictures. Described in own words what happened in each step.

- a) In Windows Explorer, select the file or folder you would like to copy.

The file with the file name Notices was found in Documents where it was saved.

- b) After selecting the file, right-click the file or folder. After doing this, a dialog box appears.

The dialog box displayed many choice, the command —~~copy~~” was chosen.

- c) Choose Copy. Then the file or folder is copied.

The file I have chosen is now copied.

- d) Then after, choose the location for the file or folder you have selected and copied.

I have to find the location where to paste it. The location is Pictures.

- e) Do a right click and a a dialog box appears. Choose Paste.

I opened Pictures as the location of the file to be pasted. I did a right click on the mouse and chose the command —~~paste~~”.

- f) The file or folder will be copied on its new location.

The file with the file name Notices is now pasted in Pictures as its new location.

Lesson 16: How to Name and Rename Files



Welcome to Lesson 16 of Unit 1. In Lesson 15 you defined “copy” and “copying of files”. You also identified the steps on how to copy files and folders in different locations and learnt the importance of copying files.

In this lesson you will learn how to name and rename files.



Your Aims:

- identify the steps on how to name and rename files
- identify the importance of naming and renaming files

Naming Folders and Files

Files and folders use the same naming conventions. DOS and Early versions of Windows used a naming convention called 8.3. The “8” part means that the file’s name cannot be longer than eight characters in length. The “3” part refers to the file extension.

Take note that file extension was discussed in Lesson 14. This is the three character identifier following the period separator in a file name. Refer back to Lesson 14 for different examples of file extensions.

An example of a file name following the 8.3 naming convention is subaganj.doc which is a Word 2007 file.

With the advances of technology, the newer versions of Windows would now allow longer filenames (up to 255 characters). Aside from numbers and letters in a filename, you can likewise use spaces and some punctuation marks in long filenames. An example of a long acceptable filename would be J & S Antique Furniture Shop Delivery. Also some long filenames use extensions longer than three characters such as .jpeg or .html.

There are however compatibility issues with the use of 8.3 and long filenames. These are the following:

- Programs designed for any Windows system prior to Windows 95 do not recognise long filenames.
- For those programs, Windows automatically assigns an 8.3 alias, which is a short version for the long file name.
- When you open a file with a long filename in a program that doesn’t recognise long filenames, the long filename could get lost.
- Utility programs that back up data files may not support long filenames, and using such programs can destroy the long filenames. The backup files may not be accessible.

These compatibility issues must be recognised and considered as doing so will save you from experiencing any difficulties when it comes to your file storage.

When learning how to manage files and folders, it is important that you develop a naming scheme for the kinds of files you create most often and then stick to it. Naming your files and folders will enable you to organise your electronic files better and will give you ease of access when trying to locate it.

When developing your file naming policy, you may wish to include some of the following common elements in the file name:

- Version number (e.g., version 1 [v1, vers1])
- Date of creation (e.g., February 24, 2001 [022401, 02_24_01])
- Name of creator (e.g., Rupert B. Smith [RBSmith, RBS])
- Description of content (e.g., media kit [medkit, mk])
- Name of intended audience (e.g., general public [pub])
- Name of group associated with the record (e.g., Committee ABC [CommABC])
- Release date (e.g., released on June 11, 2001 at 8:00 a.m. central time [61101_0800CT])
- Publication date (e.g., published on December 24, 2003 [pub122403])
- Project number (e.g., project number 739 [PN739])
- Department number (e.g., Department 140 [Dept140])
- Records series (e.g., SeriesX)

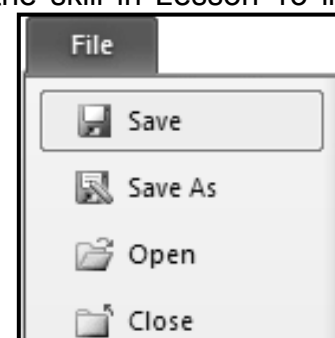
The examples provided will give you the idea on what type of file naming policy was used. For example, naming a second version of a report as Dynasty Report v2 would give you the idea that the report is a second version. Another example is naming the same file as Dynasty Report June 21, 2014 would give the idea of the report's publication or release date.

How to Name a File

Naming a file is identical with using the Save command . The filename that you will give to a file for the first time can be done by saving the file.

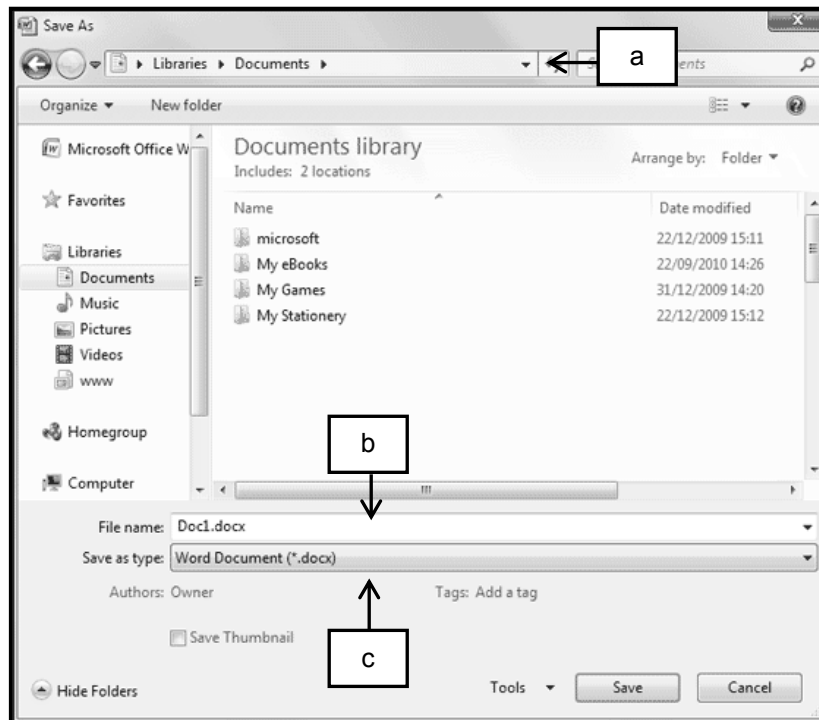
Study the steps of saving a file below. The example given is saving a file in Microsoft Word. This will likewise refresh your skill in saving Word documents as studied in Grade 9 Design and Technology Computing Unit 2. Also, the skill in Lesson 13 in creating a new folder will be used here.

1. For Word 2010, click the **File** tab at the top of Word:

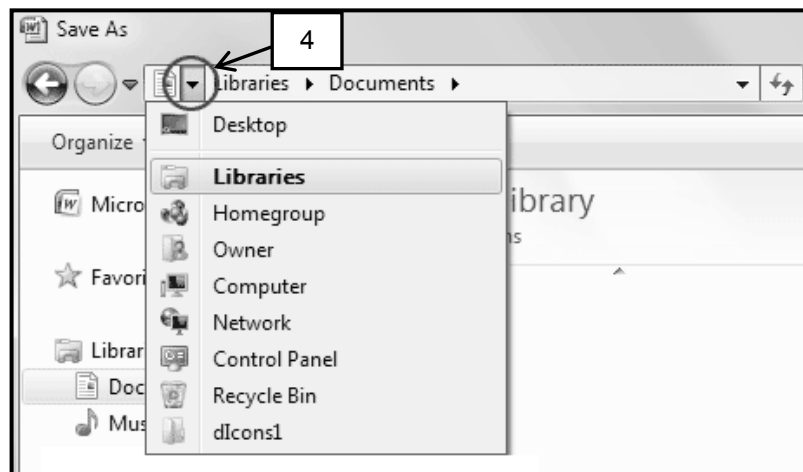


2. In all versions of Word, when you click the **Save** item (or **Save** then **Browse**) a dialogue box appears:

There are three main areas in the Save dialogue box: (a) The location, (b) the file and the (c) file type.

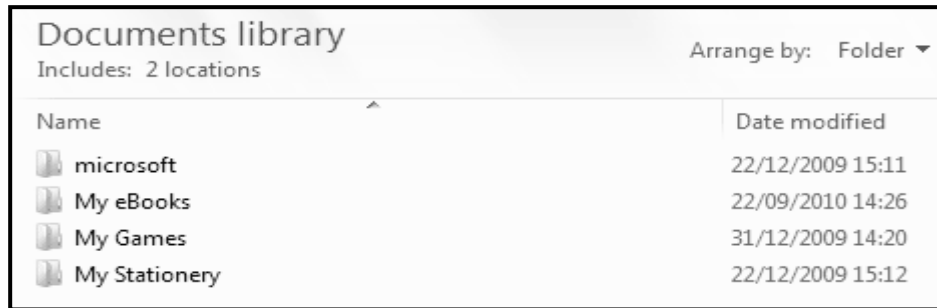


4. Click the arrow in the top left. This is "Where" is set right at the top. The default location is in the **Documents** folder on your computer.



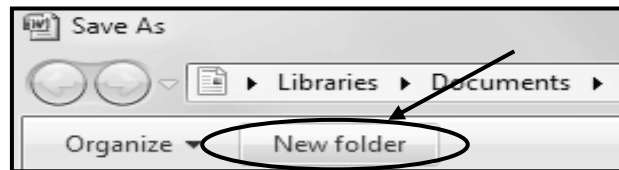
5. The dropdown menu is a list of locations on your computer. The image above is from Windows 7 and shows that we are in the **Libraries** folder.

Inside the Libraries folder is another one called **Documents**. We are saving it to this folder. The larger area of the Save As dialogue box shows you the folders that are already in the Documents folder:



The Documents Library showing the content

6. You can create folders of your own to hold your work. So click the **New Folder** button at the top:



7. Check to see that a new yellow folder appears in the main area of the Save As dialogue box, with some blue highlighting:

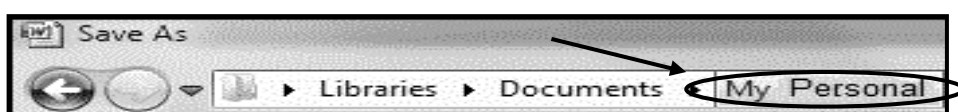


The blue highlighting means that it is ready to be typed over. Type the name **My Personal**. Then press the enter key on your keyboard (or just click away). The folder will then be renamed:



If you get it wrong, click back onto the folder. Now click again, and you should see the same blue highlighting. Or just right click the folder to see a new menu appear. Select **Rename** from the menu. This lesson of renaming files will be elaborated further at the later part of this lesson.

8. Double click the folder name to move inside of it. Notice the location area at the top:



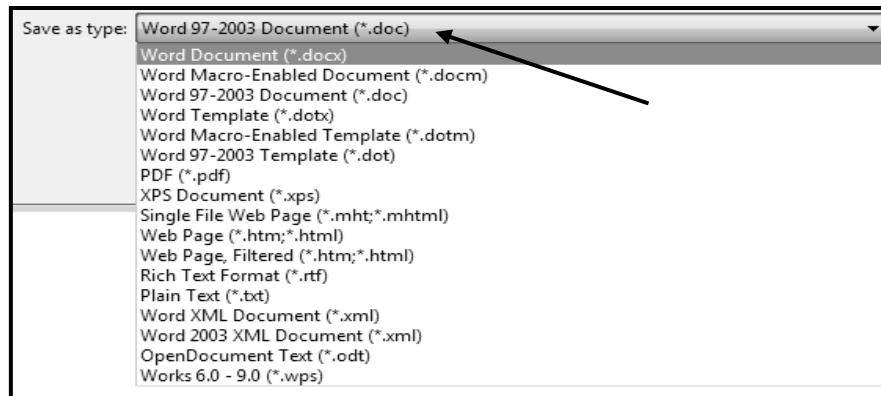
The name of our folder has been added to the right of Documents, indicating that this new folder is inside of the Documents folder. In other words, there is a folder called **Libraries**, and inside of that another one called **Documents**. The

folder we have created, the **My Personal** one, is inside of the Documents folder.

9. Come up with a name for this particular document that we are saving.

If you have a look at the bottom of the Save As dialogue box you will see two areas: one called **File Name**, and the other called **Save as Type**.

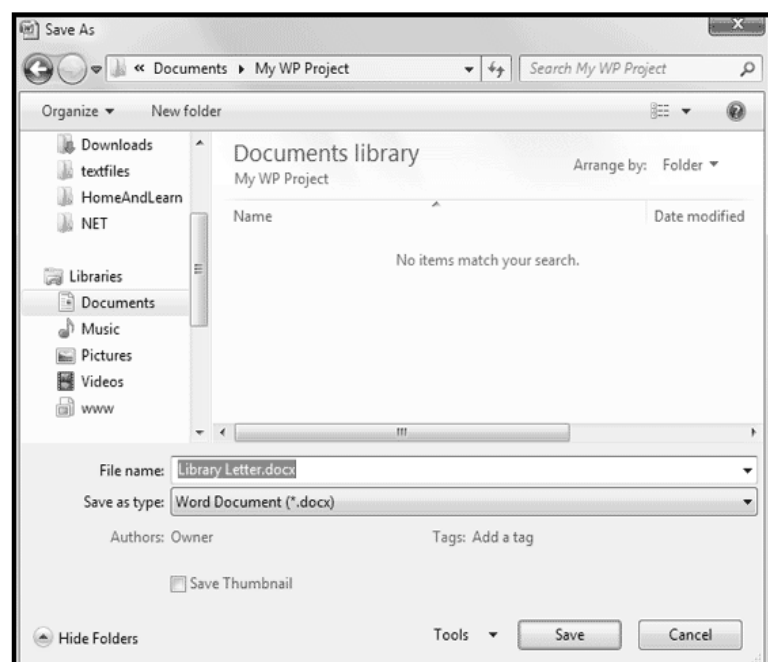
Microsoft Word allows you to save documents in a wide range of different formats. Click anywhere inside of the Save as Type area to see a list of the different formats.



The image shows that we have **Word 97 - 2003 Document** in the Save as Type area. The three letter extension shows **.doc**. The first one on the list, however, is **Word Document .docx**, which is the one we want. Make sure this one is selected in your Save As dialogue box.

10. Now have a look at the **File Name** area. It should say **Doc1.docx**. (It might just say Doc1, however, if you have not enabled file extensions on your computer.

If you clicked the **Save** button now, your file will be called "Doc1" (or whatever you have in the File Name area). That is not a very descriptive name for a document, so we will change it to something else. To give your document a different name, simply click inside the **File Name** text box. Delete everything in the text box. Type in a new name, something like **Library Letter**.



11. When it does, click the **Save** button:
12. You have now saved your work to your hard drive. Word 2007 and Word 2010 users will be returned to the main document area, with the letter displayed.

How to Rename a File or a Folder

There are instances that the saved file or named folder needs to be edited or needs to be given a new filename, this is done by renaming the file or folder.

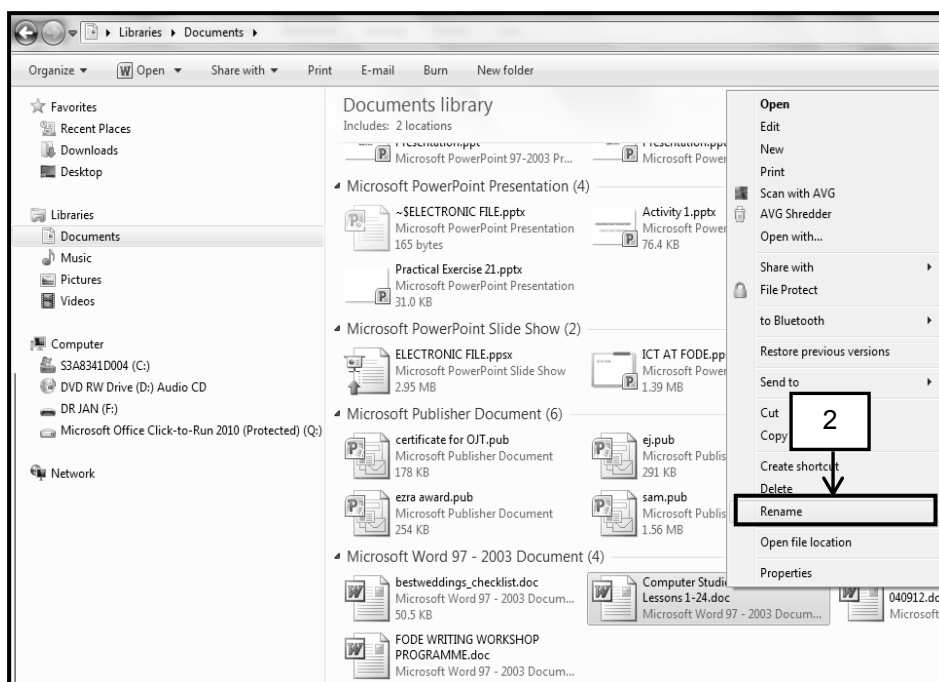
The following are ways on how to rename a file or folder:

To rename a file or folder in Windows Explorer once it has been created and named

1. Click the file or folder to select it, press **F2** key on your keyboard, and enter a new name in the text box.

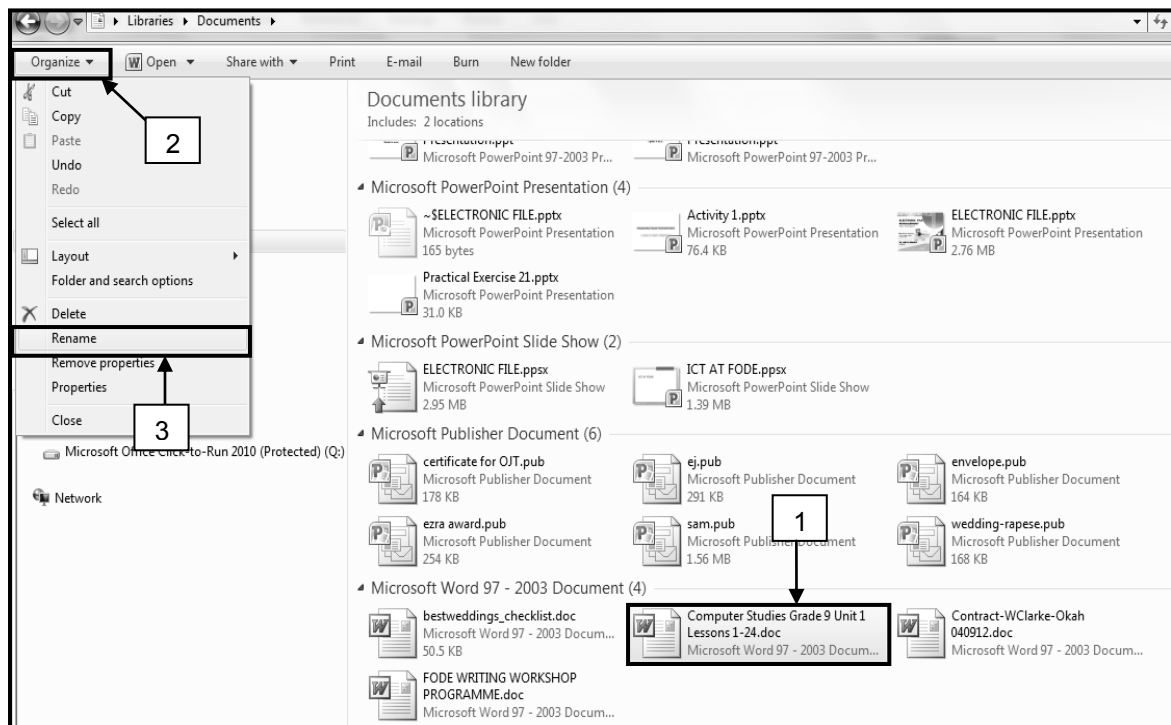
To rename a file or folder in Windows Explorer through the use of “right-click”

1. Right click the file or folder, a dialog box will appear.
2. Choose **Rename**.



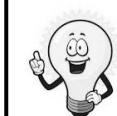
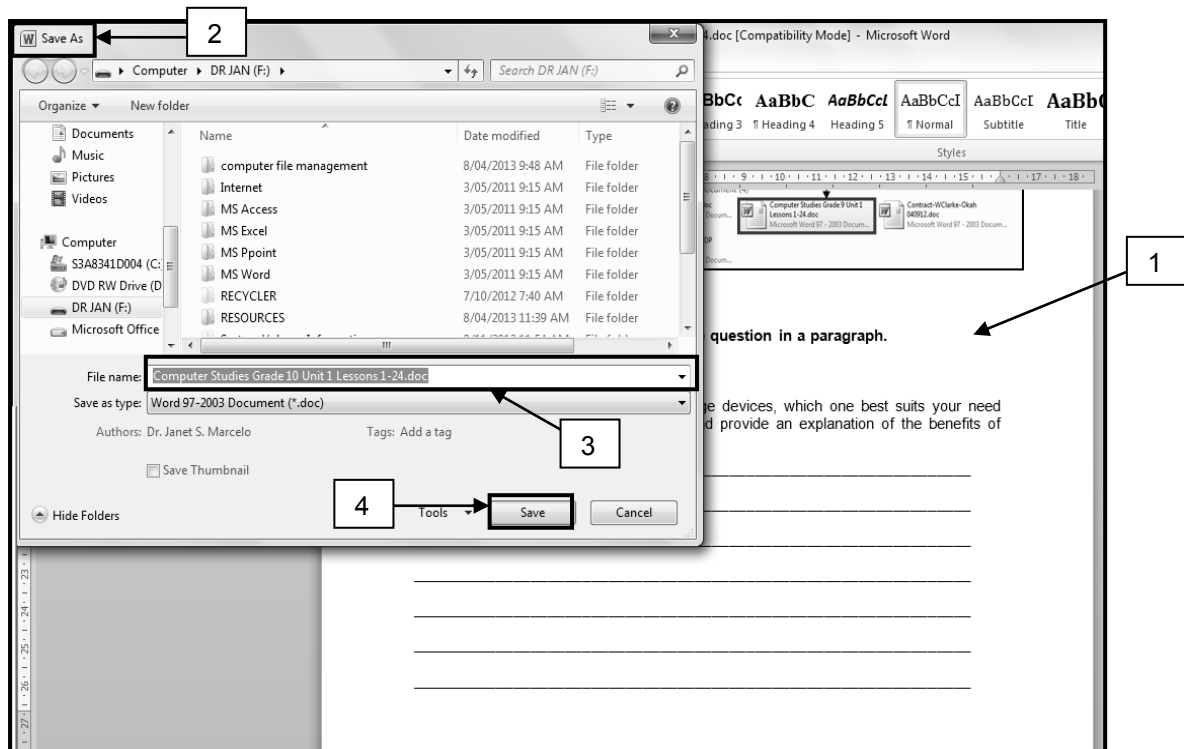
To rename a file or folder in Windows Explorer through the use of “Organize”

1. Select the file or folder.
2. From the **Organize** tab, click on the dropdown menu.
3. Select **Rename**.
4. Type a new filename and press the **Enter** key.



To rename a file through the use of “Save As”

1. Open the file.
2. Go to the **File Menu** and select **Save As**.
3. On the **Save As** dialog box, enter a new name for the file
4. Click **Save**.



Using Save As creates a new file with a different filename stored in the same or another location.



Activity 1: Follow the given instructions below to practice your skill on how to rename files.

1. Open the Windows Explorer.
2. Go to Libraries → Pictures.
3. Select and open Sample Pictures folder.
4. Select the file Penguins.jpg. 
5. Rename the file to Happy Feet.jpg.
6. Use —**E**” or —right-click” or —**O**rganize” to rename the file.

Thank you for completing this activity. Make sure you do the necessary corrections before moving on to the next part of this lesson.



Summary

You have come to the end of Lesson 16. In this lesson, you learnt how to name and rename files and identified the importance of naming and renaming files.

NOW DO PRACTICE EXERCISE 16 ON THE NEXT PAGE.

Practice Exercise 16**A. Follow the given instructions in naming and renaming files and folders:**

1. Look at the picture below. This is found in Pictures under the folder sample Pictures. Following the naming scheme given, give a filename to the picture as it will be saved in a .jpg file.



- a. Date of Creation _____
 - b. Description of Content _____
 - c. Name of Creator _____
2. Print some screenshot pictures of how you have created the folder, named the folder and the file and saved the folder in Libraries under the Pictures folder.

Create this folder with the filename —~~dis~~” and inside this folder save the picture above as a .jpg file.

Save the .jpg file with the filename —~~linging Out~~”. Save the folder and the .jpg file in Libraries under the Pictures folder.

CHECK YOUR WORK. ANSWERS ARE AT THE END OF TOPIC 3.

Answer to Activity

Check the boxes if you have done the steps below.

- ☐ 1. Opened the Windows Explorer.
- ☐ 2. Went to Libraries → Pictures.
- ☐ 3. Selected and opened Sample Pictures folder.
- ☐ 4. Selected the file Penguins.jpg. 
- ☐ 5. Renamed the file to Happy Feet.jpg.

Lesson 17: How to Delete Files



Welcome to Lesson 17 of Unit 1. In Lesson 16 you learnt about how to name and rename files and recognised the importance of naming and renaming files.

In this lesson you will learn about how to delete files.



Your Aims:

- define “delete” file
- define recycle bin
- identify the steps on how to delete files
- identify the importance of deleting files

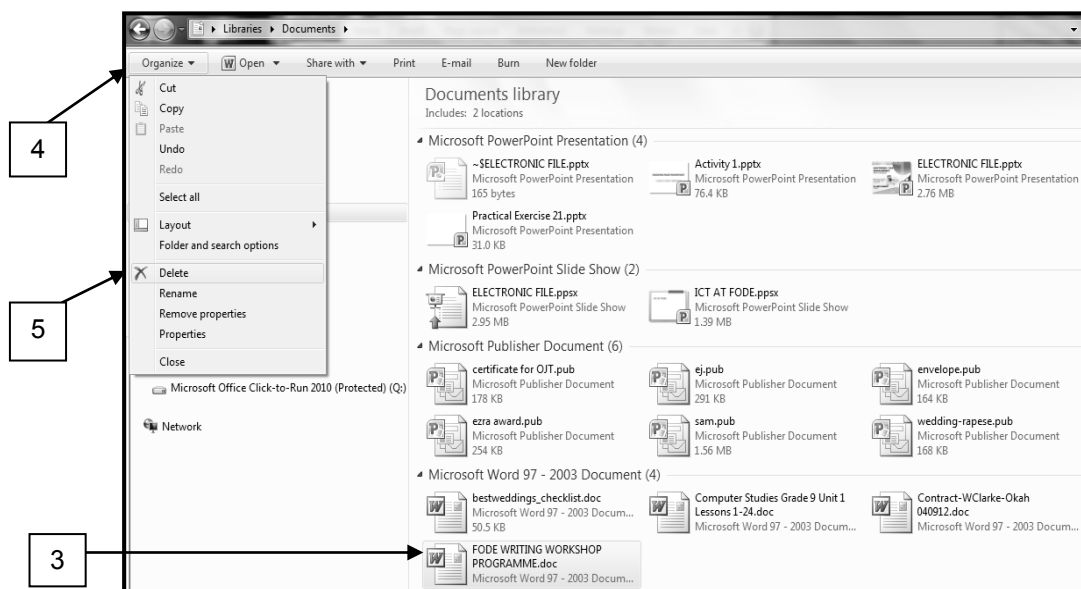
Delete Files

As files can be created, they can likewise be deleted or renewed from its location. Deleting files is necessary as it will “clean” the computer from files not needed any longer as decided by the user. This will free more space to increase the disk capacity of the computer to store more needed files.

To delete a file or a folder study the following ways:

To Delete a File or a Folder using “Organize” in Windows Explorer

1. Open **Windows Explorer**.
2. Locate the file or folder you want to delete.
3. Select the file or folder to be deleted.
4. From the **Organize** tab, click the dropdown menu.
5. Choose **Delete**  and the file or folder will be deleted.

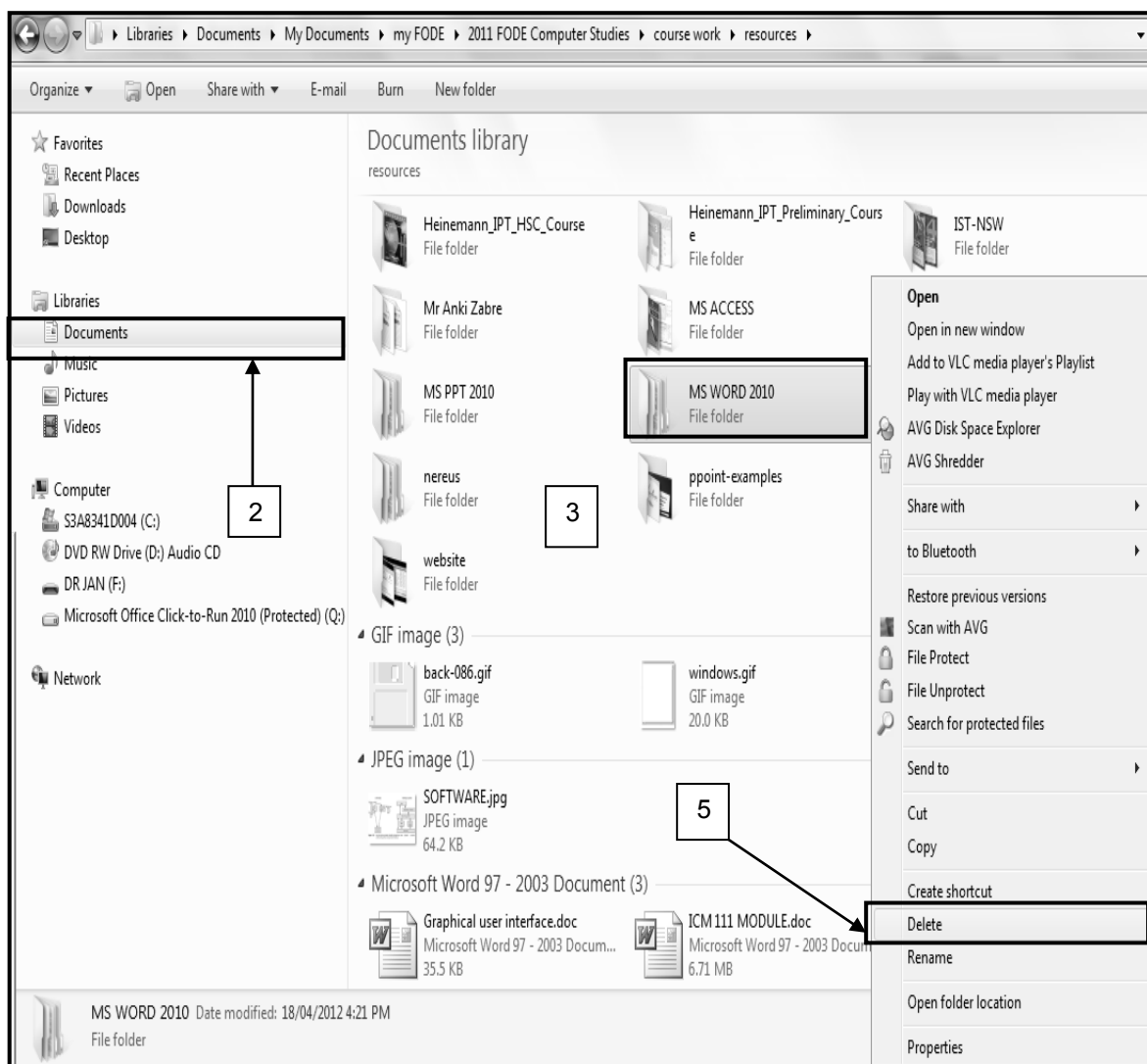


To Delete a File or a Folder using the keyboard “Delete key”

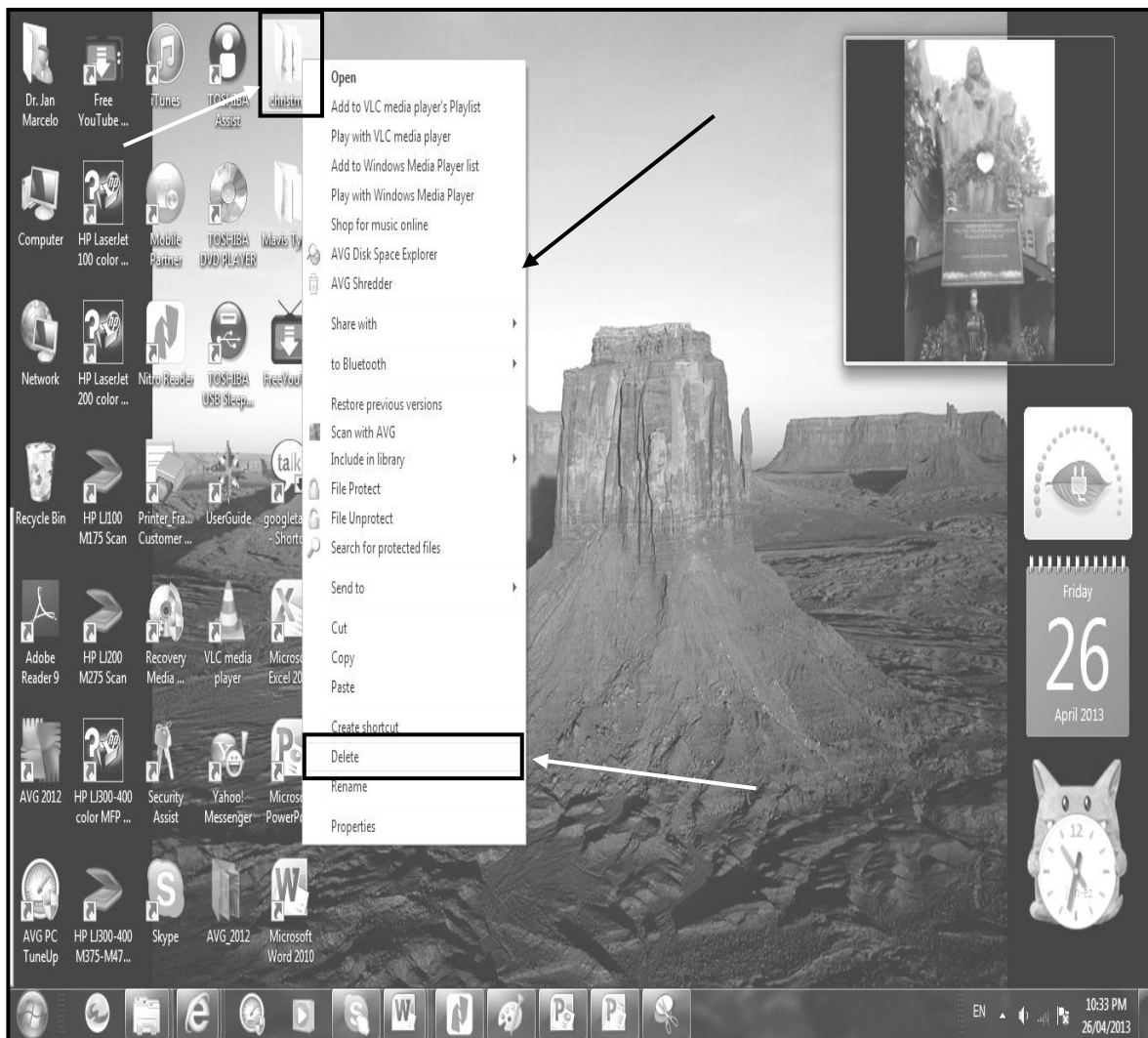
1. Open **Windows Explorer**.
2. Locate the file or folder you want to delete.
3. Select the file or folder to be deleted.
4. From the keyboard, press down the **Delete** key.
5. The file or folder will be deleted.

**To Delete a File or a Folder using the “Right-click”**

1. Open **Windows Explorer**.
2. Locate the file or folder you want to delete.
3. Select the file or folder to be deleted.
4. Right click on the selected file or folder.
5. From the dialog box, select **Delete** and the file or folder will be deleted.



This Right-click method can also be applied even if the file or folder is located at the Desktop. Steps 3-5 of deleting file or folder using right-click applies to this situation.

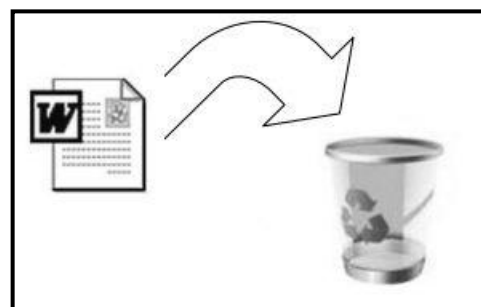


The screen displaying drop down menus by the right-click the mouse.

To Delete a File or a Folder using the “Recycle Bin”

The Recycle Bin or Trash Bin is a special folder to store deleted files. The Recycle Bin is one of the features of the Graphical User Interface or the GUI which was discussed in Lesson 9.

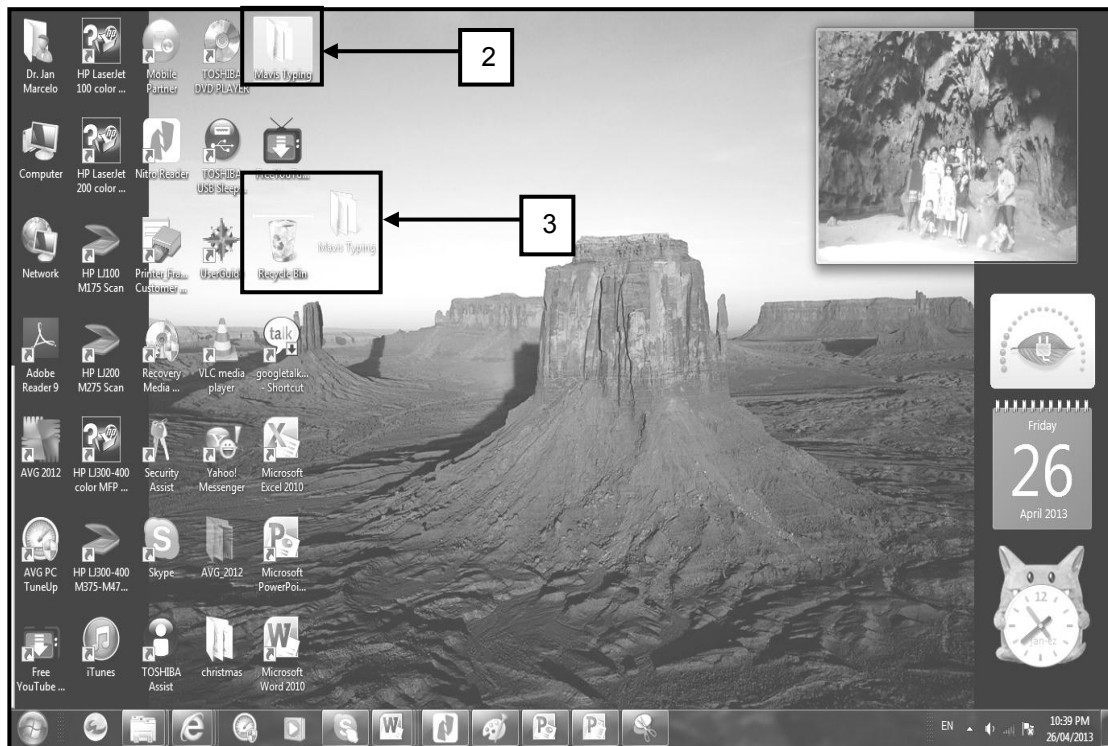
Files and folders that are in the Desktop can be —drag— to the Recycle Bin.



Here is how:

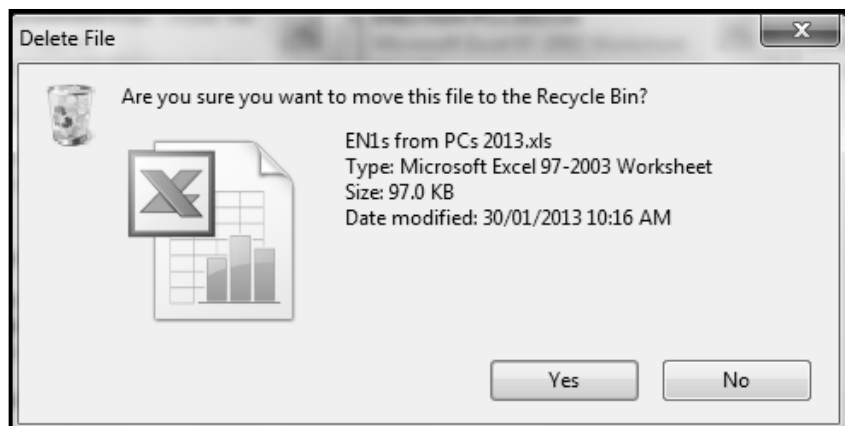
1. Locate the file or folder in the **Desktop**.
2. Select the file or folder.
3. —**Drag**— the file or folder to the **Recycle Bin**.

Study the picture on the next page as this illustrates steps 1-3.



Things to Remember When Deleting a File or Folder

1. Remember that when you delete a folder or subfolder, you also delete all the files within it.
2. Window displays a **Confirm Folder Delete** or **Confirm File Delete** message box to make sure you really want to delete the file or folder.



Confirm File
Delete
message
box.

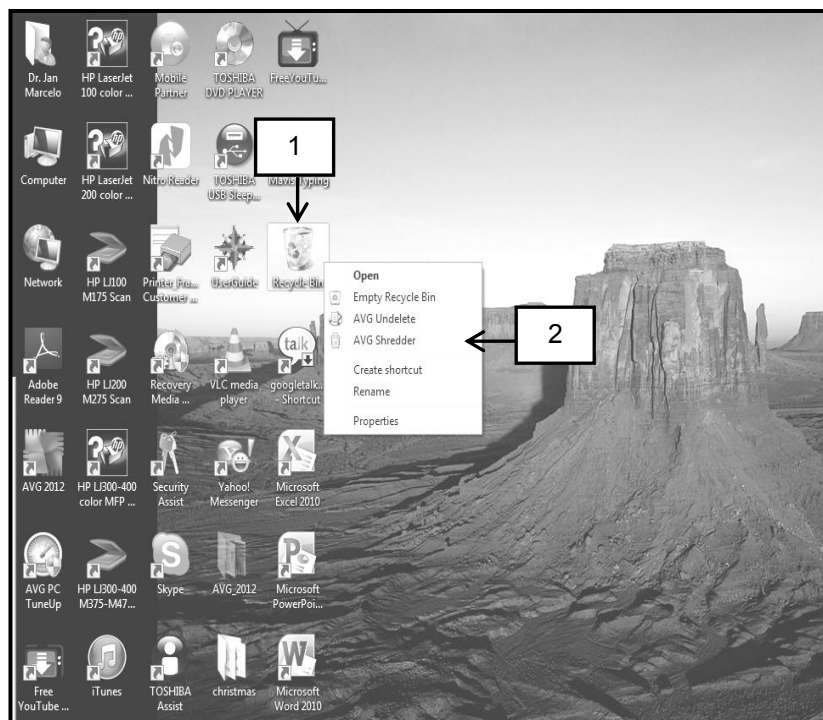


Confirm
Folder
Delete
message
box.

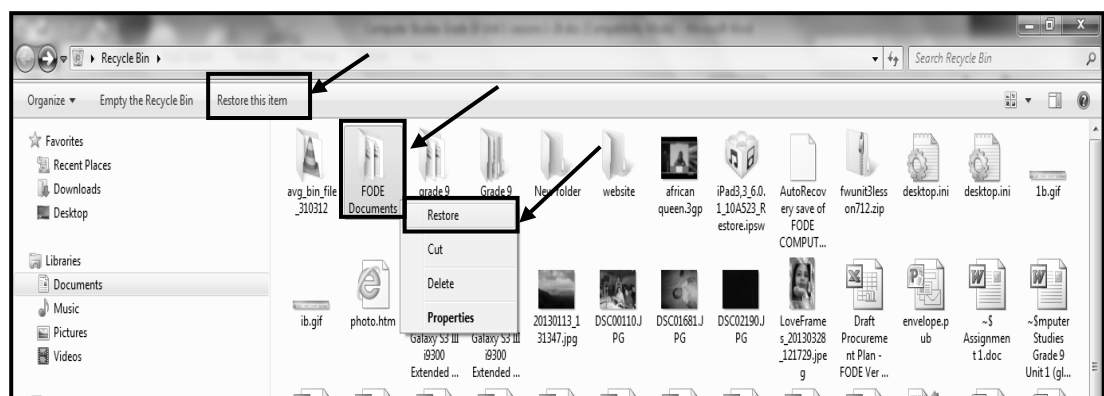
3. Files and folders deleted are ~~thrown~~ to the Recycle Bin which can also be restored. The recycle bin is a virtual trashcan where all your deleted files and folders are tossed into. By default, Microsoft Windows uses 10% of available disk space to save files so it functions as a temporary storage location. This means that as long as deleted items remain in there, you can always browse through them and restore them back to their original location in case they were deleted by accident or if you decided you needed them again. This gives your files a layer of protection from complete deletion.

Here is how:

1. Right- click the **Recycle Bin**, a context menu appears.
2. Choose **Open** or double click the Recycle Bin to **Open**.



3. Items in the recycle-bin cannot be accessed unless restored back to their original location. You can restore them by double clicking on the trashcan icon. This will open a new window, and then select the files and/or folders that you want to restore. After selecting them, right click on the files and select the option Restore.





Activity 1: Follow the given instructions below to practice your skill on how to delete and restore files.

1. Open the Windows Explorer.
2. Go to Libraries → Pictures.
3. Select and open Sample Pictures folder.
4. Select the file Koala.jpg.  or any .jpg file.
5. Using the following methods – —Organize”, —Delete Key” and —Right-click”, delete the Koala.jpg file.
6. Go to Recycle Bin and applying the steps on how to restore files, restore the Koala.jpg file.

Repeat the steps in order for you to master the skill. Make sure to do all the necessary corrections before moving on to the next part of this lesson.



Summary

You have come to the end of Lesson 17. In this lesson, you learnt about facts and information on what —delete file” is and recycle bin, learnt how to delete files or folders and identified the importance of deleting files.

NOW DO PRACTICE EXERCISE 17 ON THE NEXT PAGE.

Practice Exercise 17

- A. Follow the given instructions in deleting and restoring files and folders. Make sure to take screenshot pictures of how you have typed, saved, deleted and restored file.

1. Open a New blank Word document.

2. Type the following:

After you have sorted the file list, you can select a set of files that are listed consecutively on the list. This will allow you to move or copy a block of files rather than one at a time.

First select the topmost file on the list. The selected file will appear with a light blue background, hold the **Shift** key and immediately click on the bottom-most entry. All of the files should now appear with a light blue background. Once the block is selected, you can move, copy, delete or rename it in a single procedure. Once selected, DO NOT click the mouse anywhere else, it will deselect your selection.

3. Save the file as —Contiguous Selection”
4. Under Libraries → Documents, create a folder with the filename —Selection” and save the —Contiguous Selection” file.
5. Now, open Documents folder and select the —Contiguous File”. Applying the —Right-Click” method, delete the file from the Documents folder.
6. Open the Recycle Bin, locate and select the file.
7. Click Restore this item.

CHECK YOUR WORK. ANSWERS ARE AT THE END OF TOPIC 3.
--

Answer to Activity 1

Check the boxes if you have done the steps below.

- | | | |
|--------------------------|----|---|
| ☐ | 1. | Went to the Windows Explorer. |
| ☐ | 2. | Went to Libraries → Pictures. |
| ☐ | 3. | Selected and opened Sample Pictures folder. |
| ☐ | 4. | Selected the file Koala.jpg.  any .jpg file. |
| ☐ | 5. | Used the following methods —Organize”, —Delete Key” and —Right-click”, delete the Koala.jpg file. |
| ☐ | 6. | Went to Recycle Bin and applied the steps on how to restore files, restore the Koala.jpg file. |

Lesson 18: How to Create Back Up for Files



Welcome to Lesson 18 of Unit 1. In Lesson 17 you learnt about facts and information on what “delete file” is and recycle bin, learnt how to delete files or folders and identified the importance of deleting files.

In this lesson you will learn how to create back up for files.



Your Aims:

- define back up of files
 - identify the different ways on how to create back up for files
 - identify the importance of creating back up for files
-

Creating Back Up of Computer Files

Create back- ups (copies) of important files on your desktop computer or laptop onto a CD or DVD, in case it gets lost or damaged. The backup files on the CD/DVD can then be used instead of the originals you no longer have.

You would not want to think that your desktop computer or laptop might get damaged or lost, but having backups safely stored on a CD or DVD disc helps if it does. In case your laptop does not have a CD/DVD drive built in, you can purchase an external CD/DVD drive and connect it to your laptop.

Aside from CD's and DVD's, you can also use the following storage devices to create back up for your computer files.

- Flash drives
- External Hard Drives

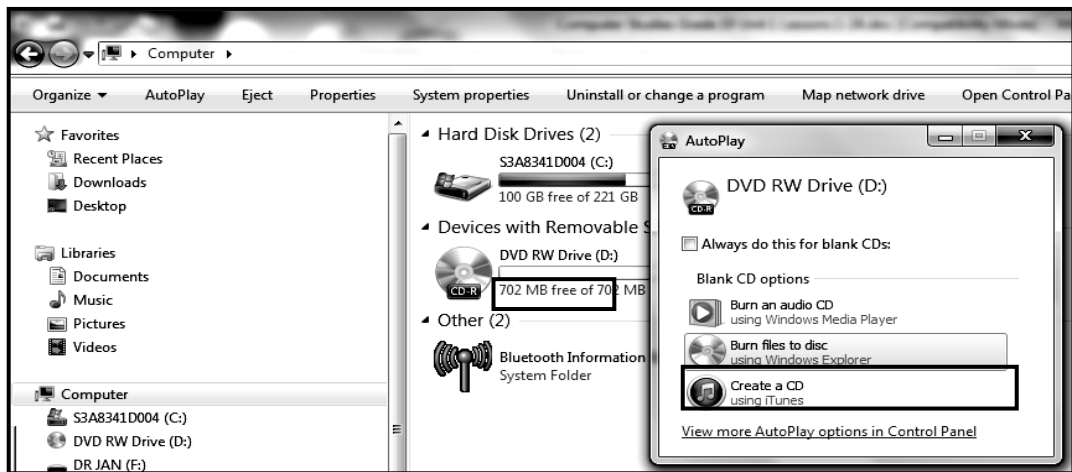
Creating backup files for your computer would enable you to always have access to your files in case anything happens to your computer. —Prevention is always better than cure”. This holds true to this situation as it will save you from cramming and getting frustrated over lost files.

How to Create Back Up for Files

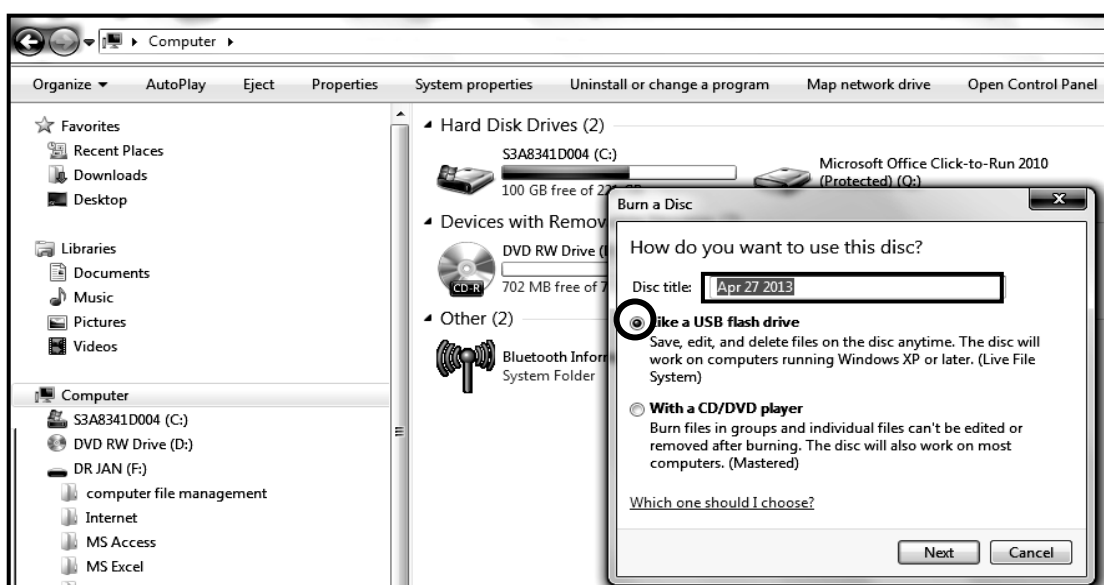
The following are ways on how you can create backup files for your computer files.

Creating Backup Files Using CDs and DVD's

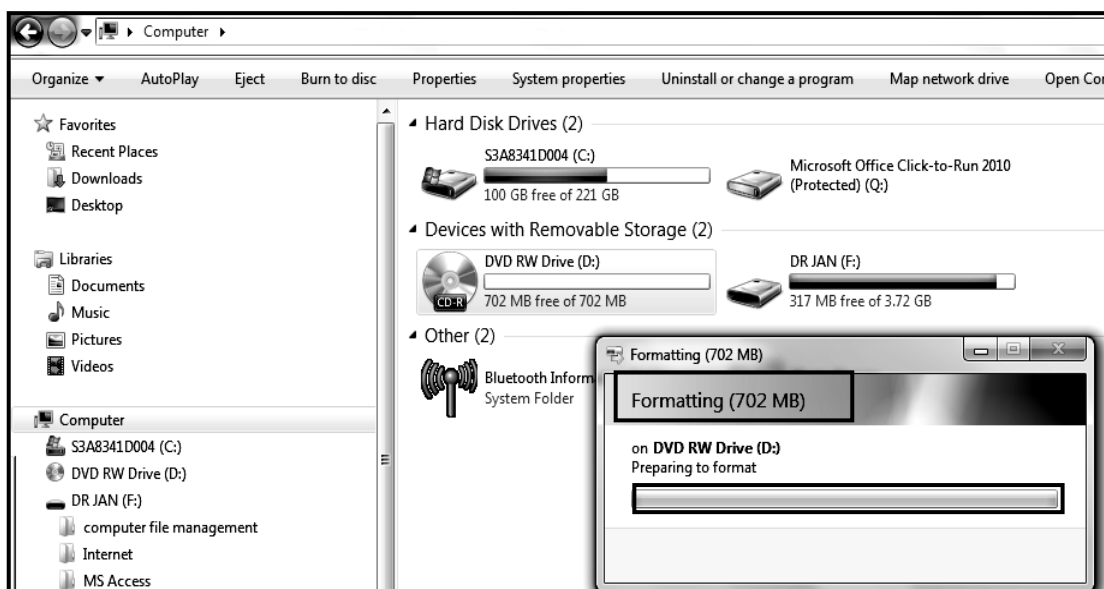
1. Place a blank writable CD-R/RW (read/writable) or DVD-R/RW in your CD-RW or DVD-RW drive.
2. Open **Windows Explorer**.
3. Auto Play dialog box opens. Choose **Burn files to disc**.



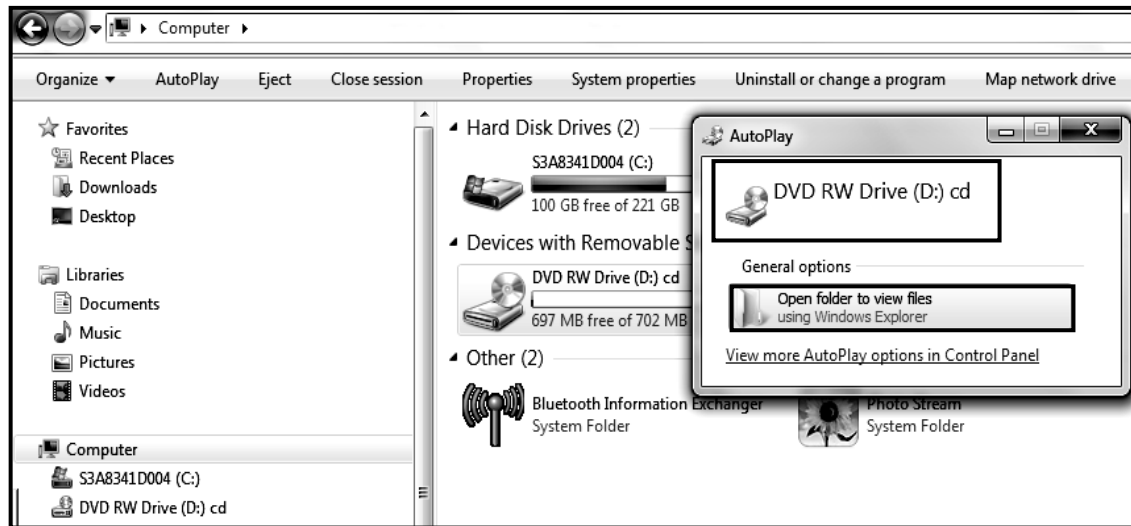
4. The **Burn a Disc** dialog box opens. Click **Like a USB flash drive**. Click on the **Disc title** and type in a title for the CD.



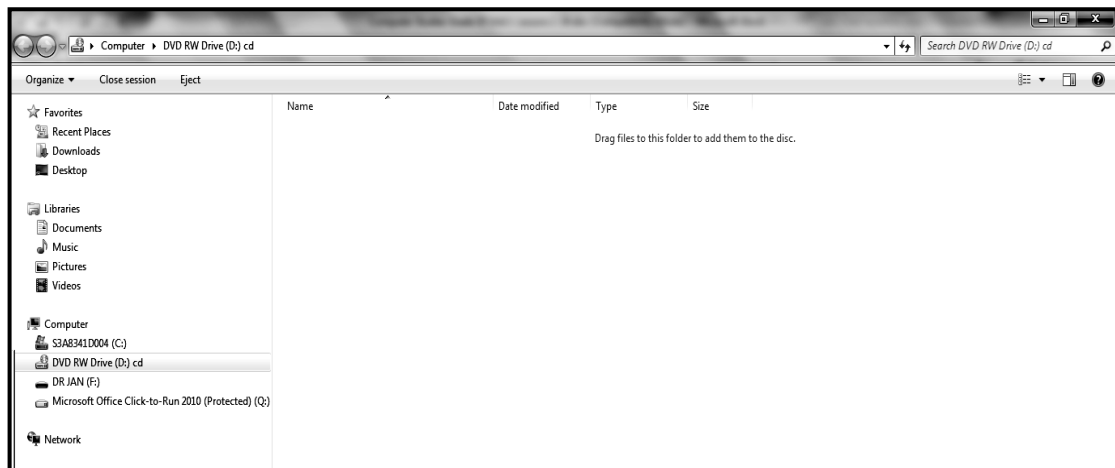
5. The CD or DVD will now undergo formatting. Wait until the progress bar turns all green.



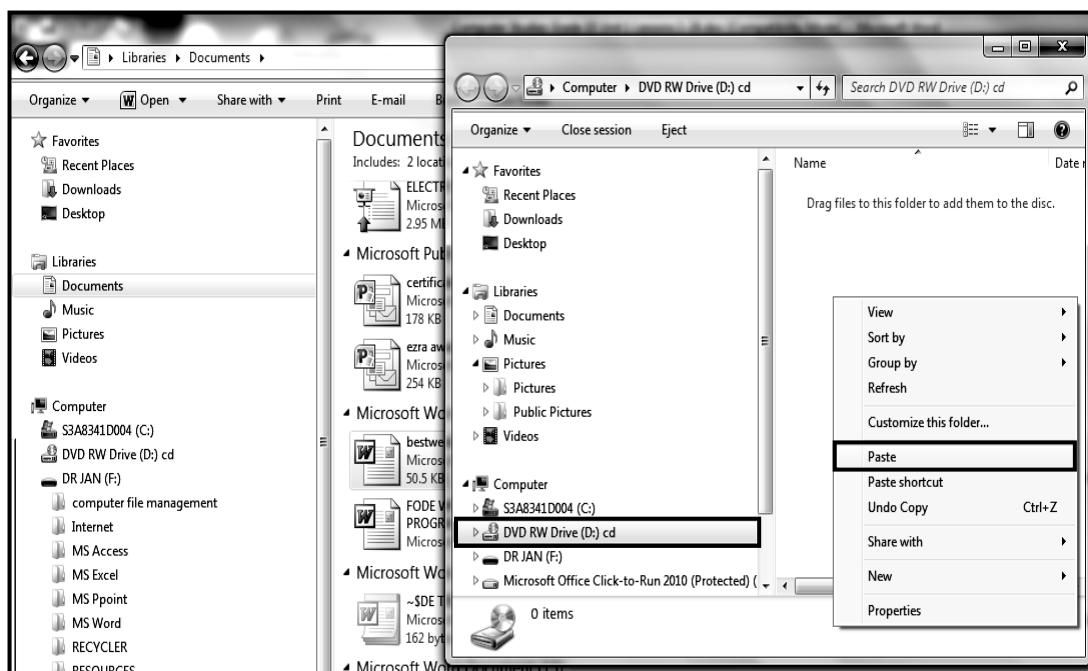
6. The **DVD-RW Drive Auto Play** dialog box now opens. Choose **Open** to view files.



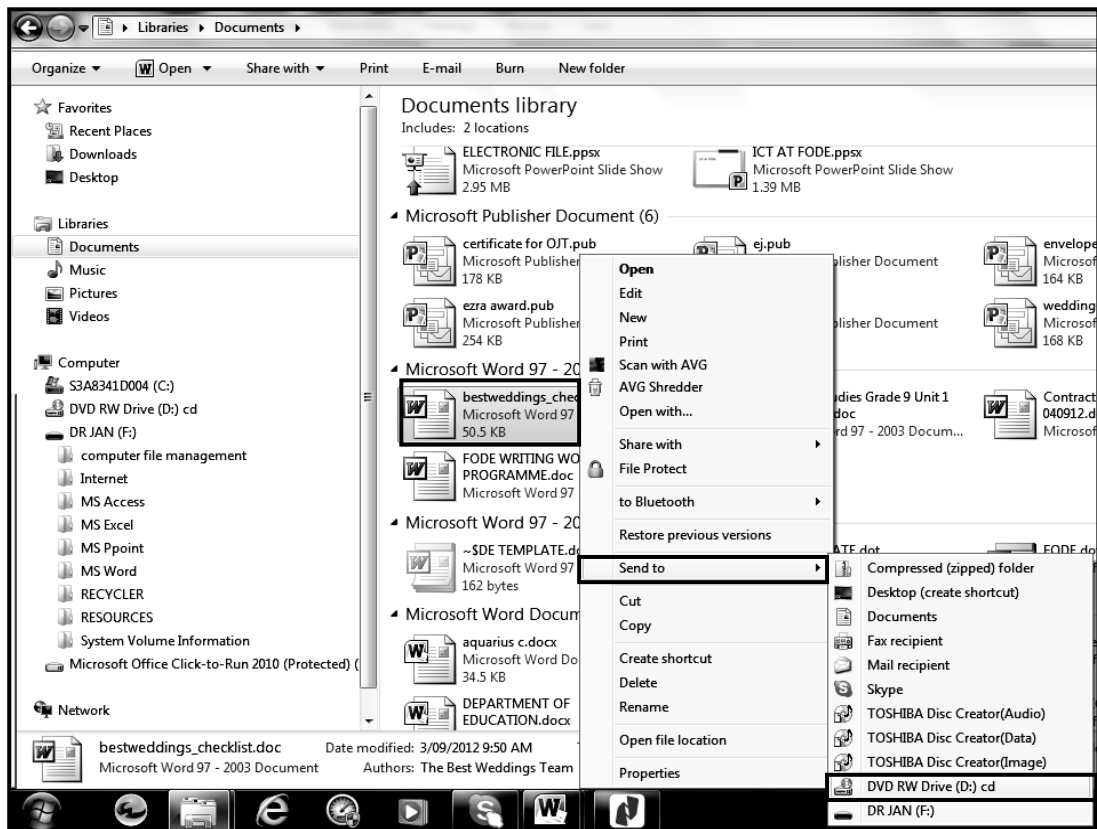
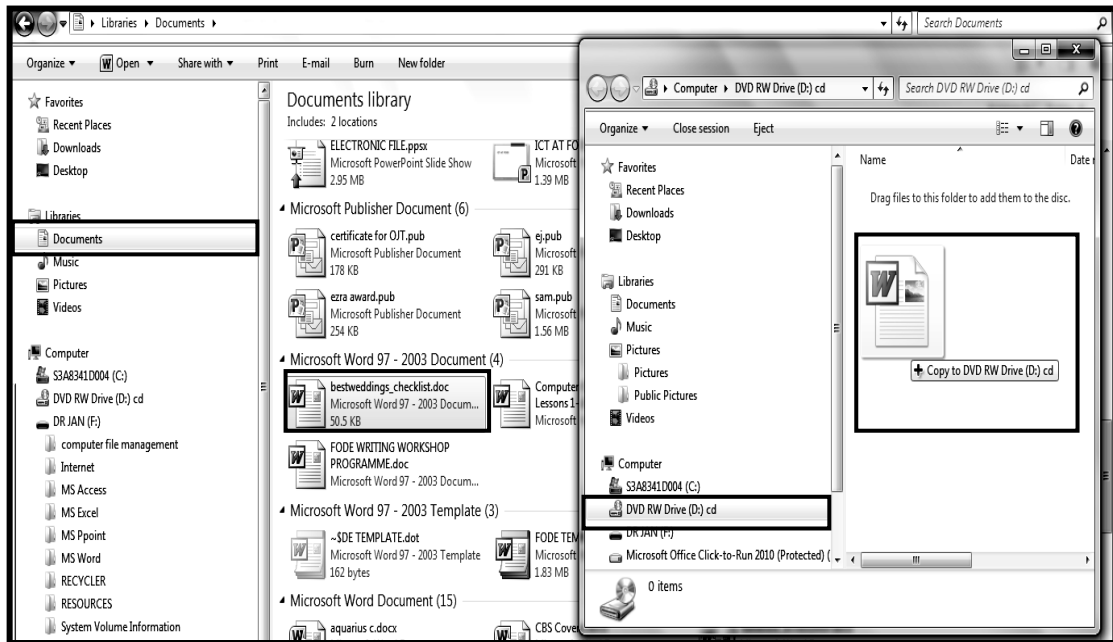
7. The **DVD-RW drive** window is now open. You can now copy files



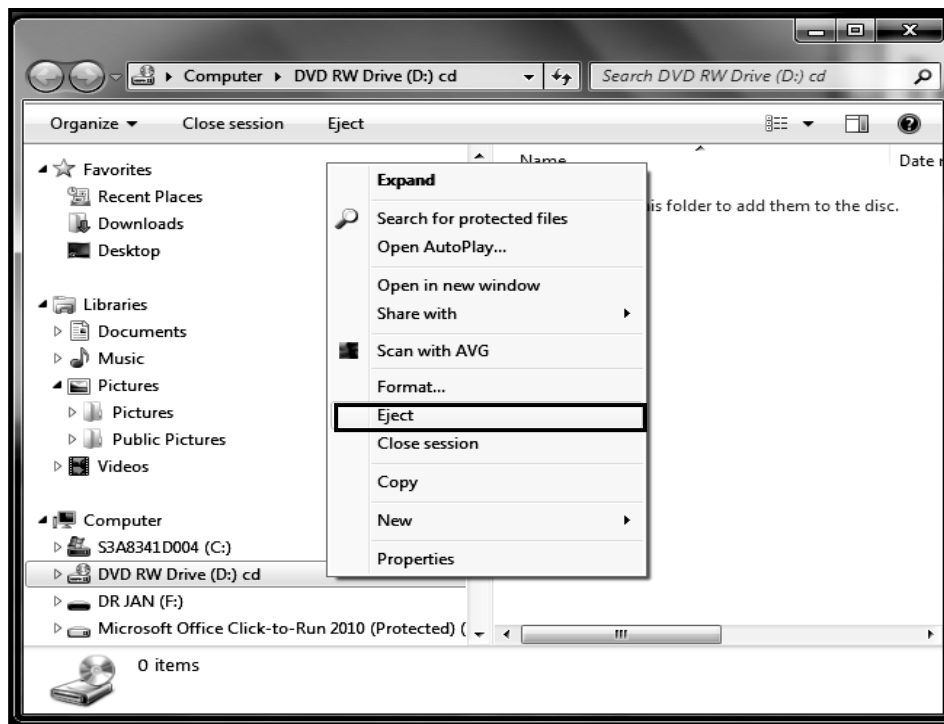
8. Copy files by doing right click to the file and when context menu appears, choose **Copy** then go to the DVD-RW drive window. Right click and choose **Paste**.



You can also drag some files from a location to your DVD-RW drive.



9. After copying all the files you need, you can now eject the CD by doing a right click and when context menu appears, choose **Eject** or you can simply press the eject button of your DVD-RW drive in your desktop computer or laptop.



Creating Backup Files Using Flashdrives and External Hard Drives

Flashdrives and external hard drives are commonly used to store files for backup and provide an easy portable way of file transfer from one computer to another.

These removable storage devices come in different sizes, from 1 GB to Terabytes which can store a great number of files. You must always take care of these storage devices to prevent them from being exposed to heat, moisture and water causing it to be damaged or from virus infected machines that can cause its breakdown.

1. Insert your flashdrive or external hard drive to any USB port available.
2. Open **Windows Explorer**.
3. Click onto the flashdrive or external hard drive location to open its window.
4. The flashdrive or external hard drive window is now open. You can now copy files to it.

There are different ways on how you can copy files to your flashdrive or external hard drive.

- By selecting the file, doing a right click, a context menu appears, mouse down to choose **Copy**. Go to the flashdrive or external hard drive window, right click and select **Paste**.
- By selecting the file, doing a right click and when context menu appears, choose Send to then mouse down to **DVD-RW Drive**.
- You can also drag some files from a location to your flashdrive or external hard drive window.

Notice that the steps on how to copy files to your DVD-RW Drive is the same with how you can copy files to your flashdrive and external hard drive. This is because these three are all removable storage devices.



Activity 1: Follow the given instructions below to practice your skill on how to create backup files.

1. Open the Windows Explorer.
2. Go to Libraries → Pictures.
3. Select and open Sample Pictures folder.
4. Select the file Desert.jpeg. 
5. Using the following methods to create back up files – “Using CD or DVD” and “Using Flashrive or External Hard Drive”, create a backup file for the Desert.jpeg file.

Thank you for completing this activity. Make sure to perform all the steps on how to create backup files for your computer files. You may now go to the end of the lesson to check your answers. Make sure to do the necessary corrections before moving to the next part of the lesson.



Summary

You have come to the end of Lesson 18. In this lesson, you learnt about the definition of back up of files and identified the different ways on how to create back up for files and the importance of creating back up for files.

NOW DO PRACTICE EXERCISE 18 ON THE NEXT PAGE.

Practice Exercise 18**A. Follow the given instructions in creating backup for files:**

1. Be sure to take screenshot pictures of how you have created backup of files using the three files. Open Windows Explorer.
2. Open Windows Explorer.
3. Go to Libraries → Documents.
4. Following the method on how to create backup of files using a CD or DVD, create a backup of five Word document files.

CHECK YOUR WORK. ANSWERS ARE AT THE END OF TOPIC 3.

Answer to Activity 1

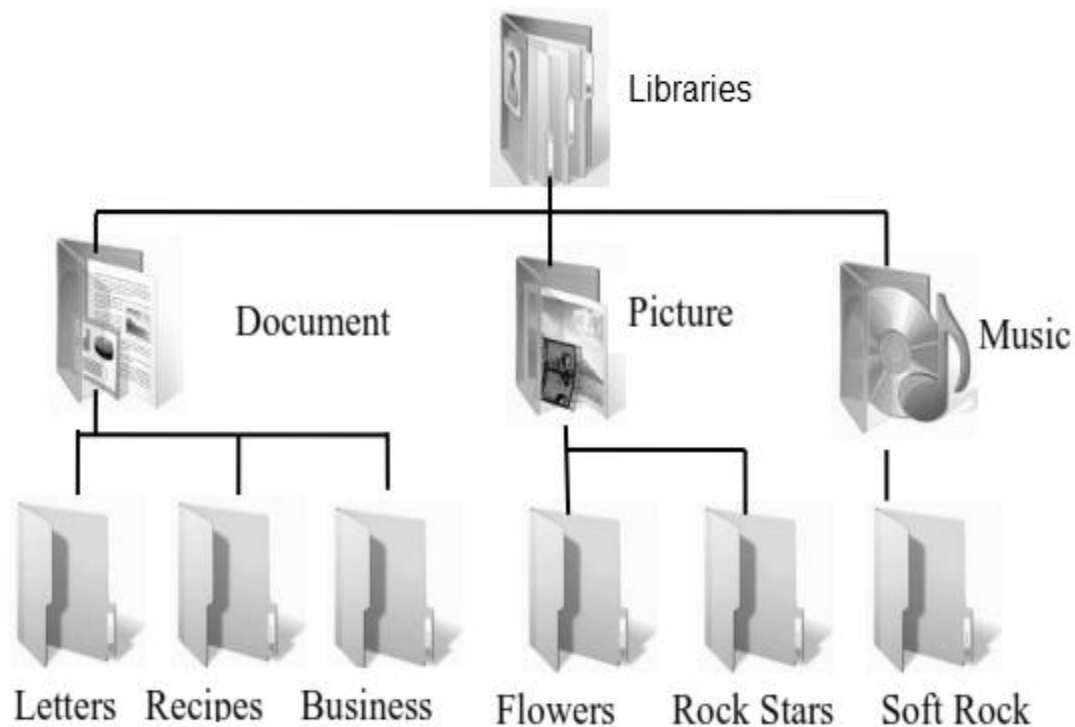
Tick (✓) the boxes if you have done the steps below.

- ☐ 1. Opened the Windows Explorer.
- ☐ 2. Went to Libraries → Pictures.
- ☐ 3. Selected and opened Sample Pictures folder.
- ☐ 4. Selected the file Desert.jpg 
- ☐ 5. Used the following methods to create back up files – “Using CD or DVD” and “Using Flashrive or External Hard Drive”, create a backup file for the Desert.jpg file.

Answers to Practice Exercises in Topic 3

Practice Exercise 13

Your folder structure should look like this:



Practice Exercise 14

A.

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

B.

1. File is one document, one image, one something. Folders contain files; files cannot contain folders.
2. * Any of the steps below can be the answers.

Using the Start Menu

- a. Click **Start Up** button.
- b. Look for the program used by the file on the **Start Menu** and on the cascading menu click on the file.
- c. Check if the chosen file is opening up.

Using The Computer

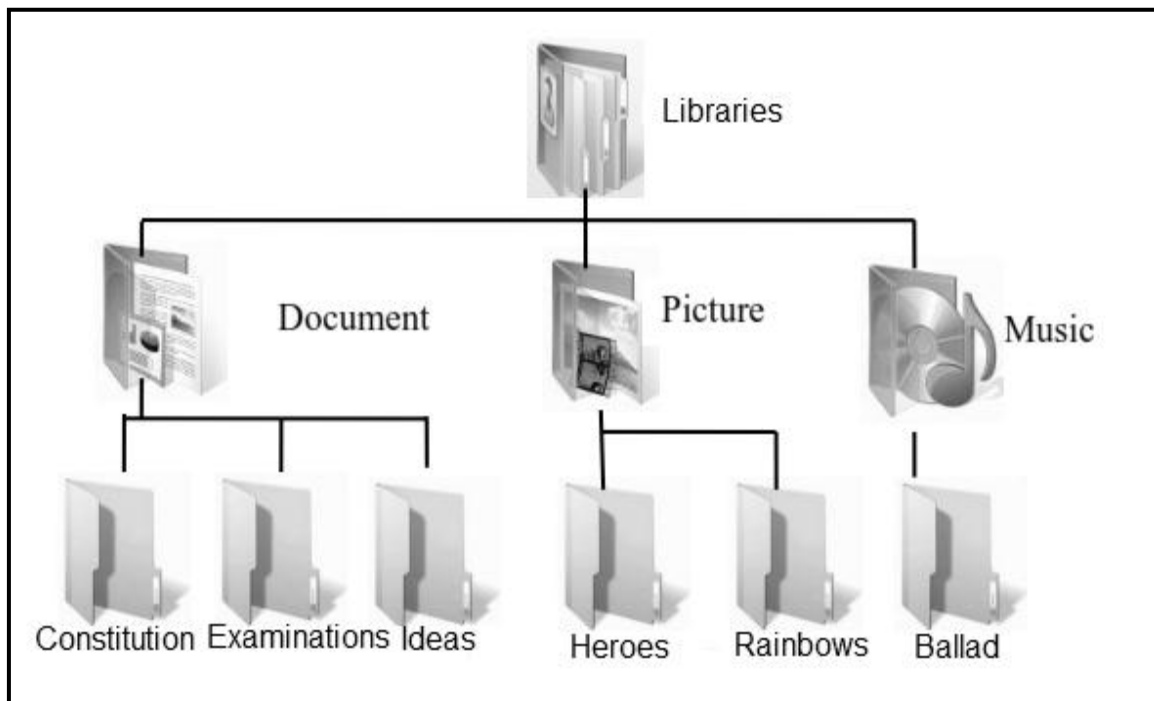
1. Click **Start Up** button.
2. Click on **Computer**.
3. Choose the location of the file. Click on the location of the file.
4. Browse over the saved files and click on the file.
5. Check to see that the selected file is now open.

Using the File Tab

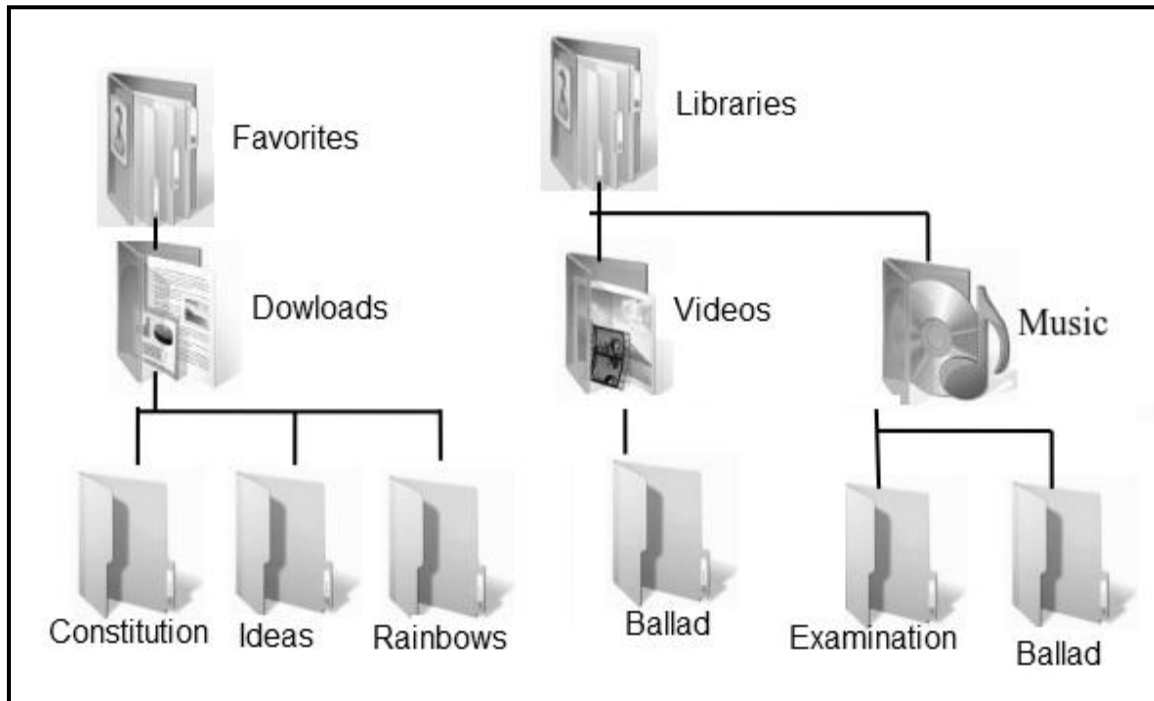
1. Open the Program of the needed file.
2. Go to **File** Tab.
3. Click on **Recent**.
4. Scroll up or down to locate the needed file. Clicked the file.
5. Check if the chosen file is now open.

Practice Exercise 15

A. Your folder structure should look like this:



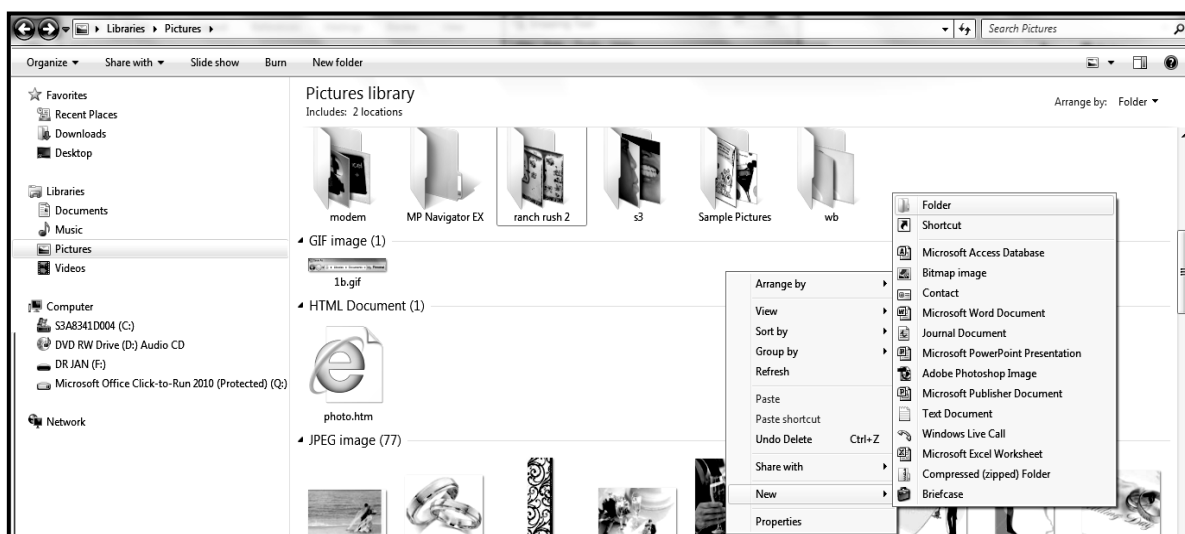
After copying the subfolders, your structure should now look like this:

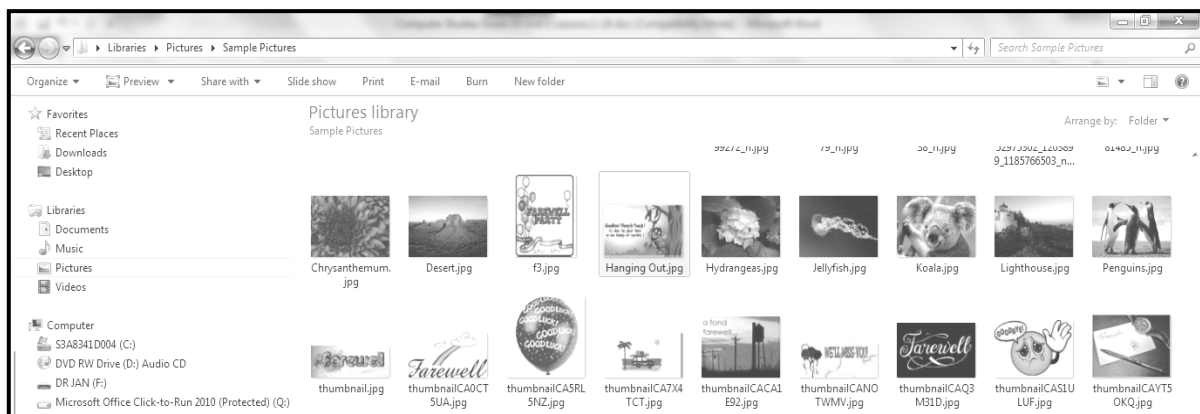
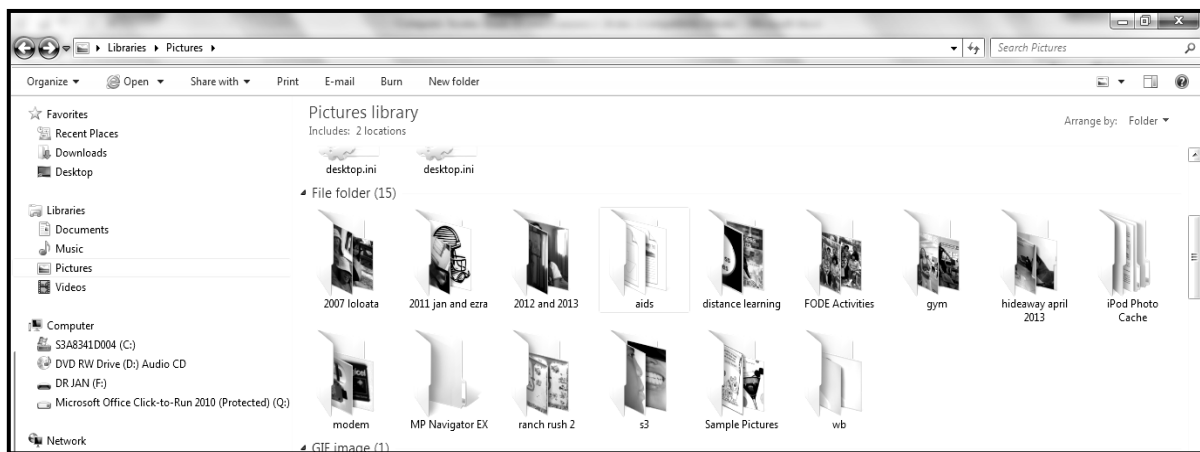


Practice Exercise 16

A. Your answers should look something like the following:

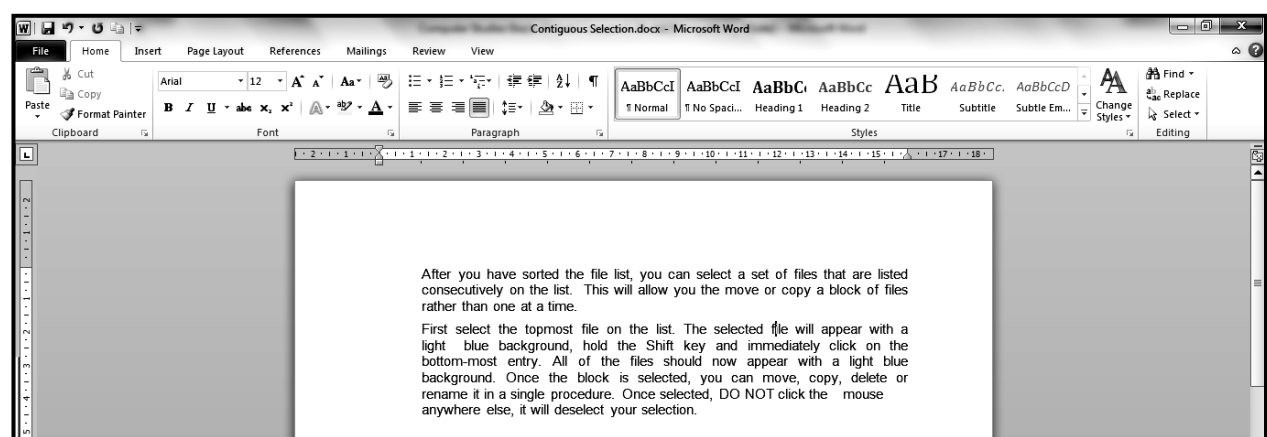
1.
 - a. May 10, 2013
 - b. Koala Bear
 - c. Ezra Subagan
- 2.

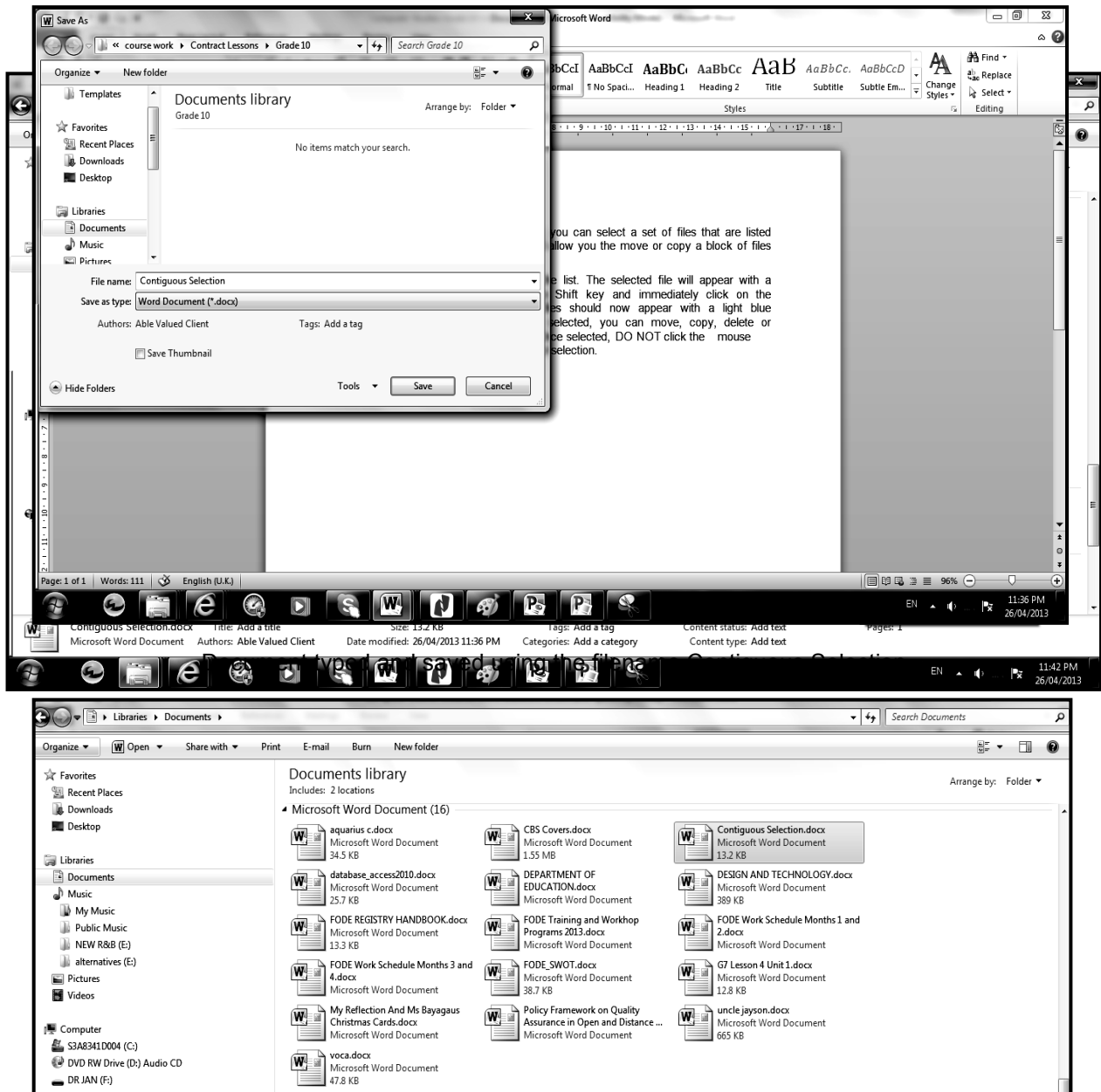




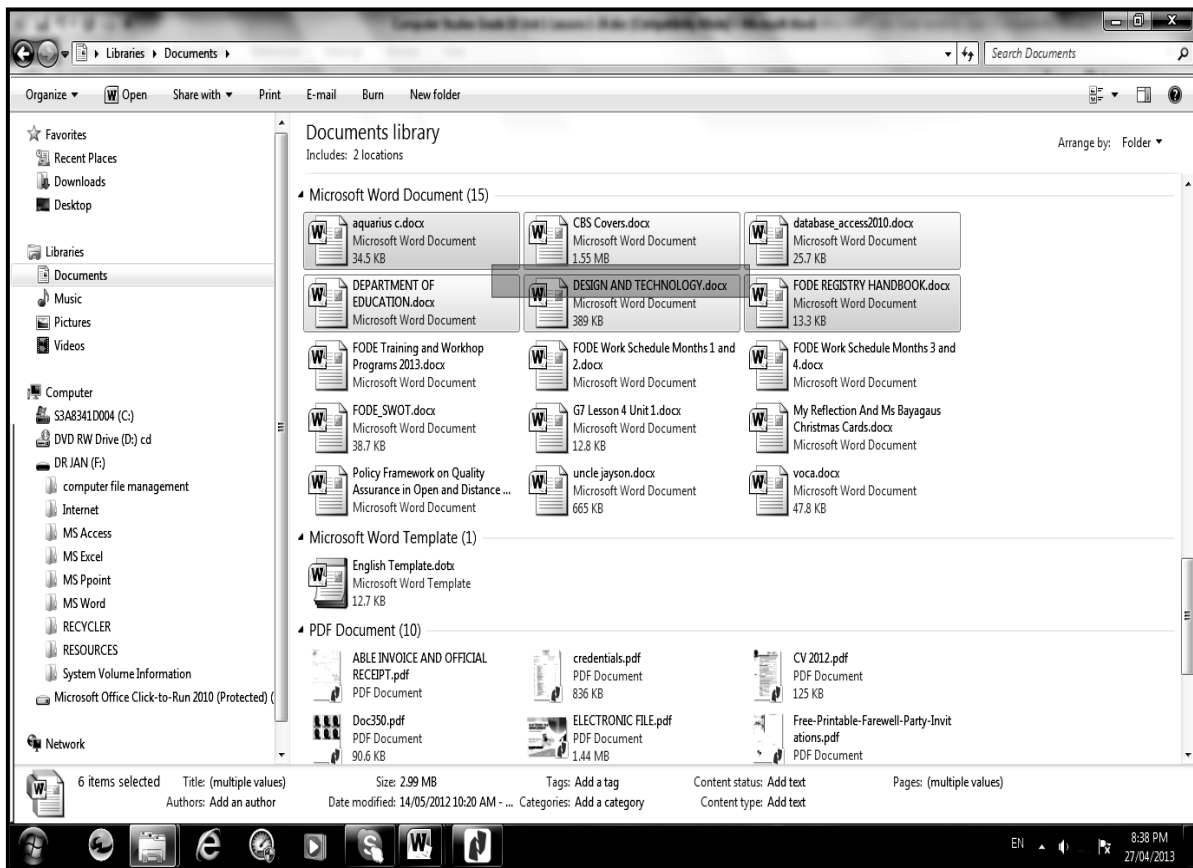
Practice Exercise 17

A. Your answers should look something like the following:





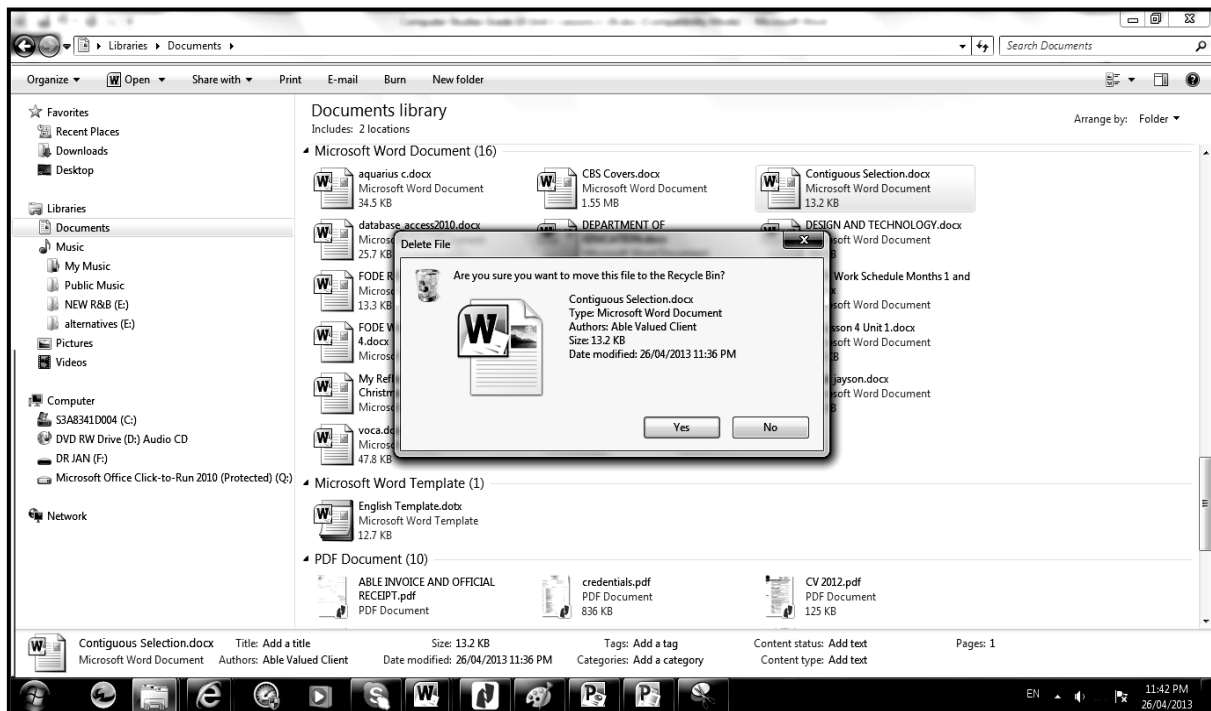
Contiguous Selection saved inside the Documents Library



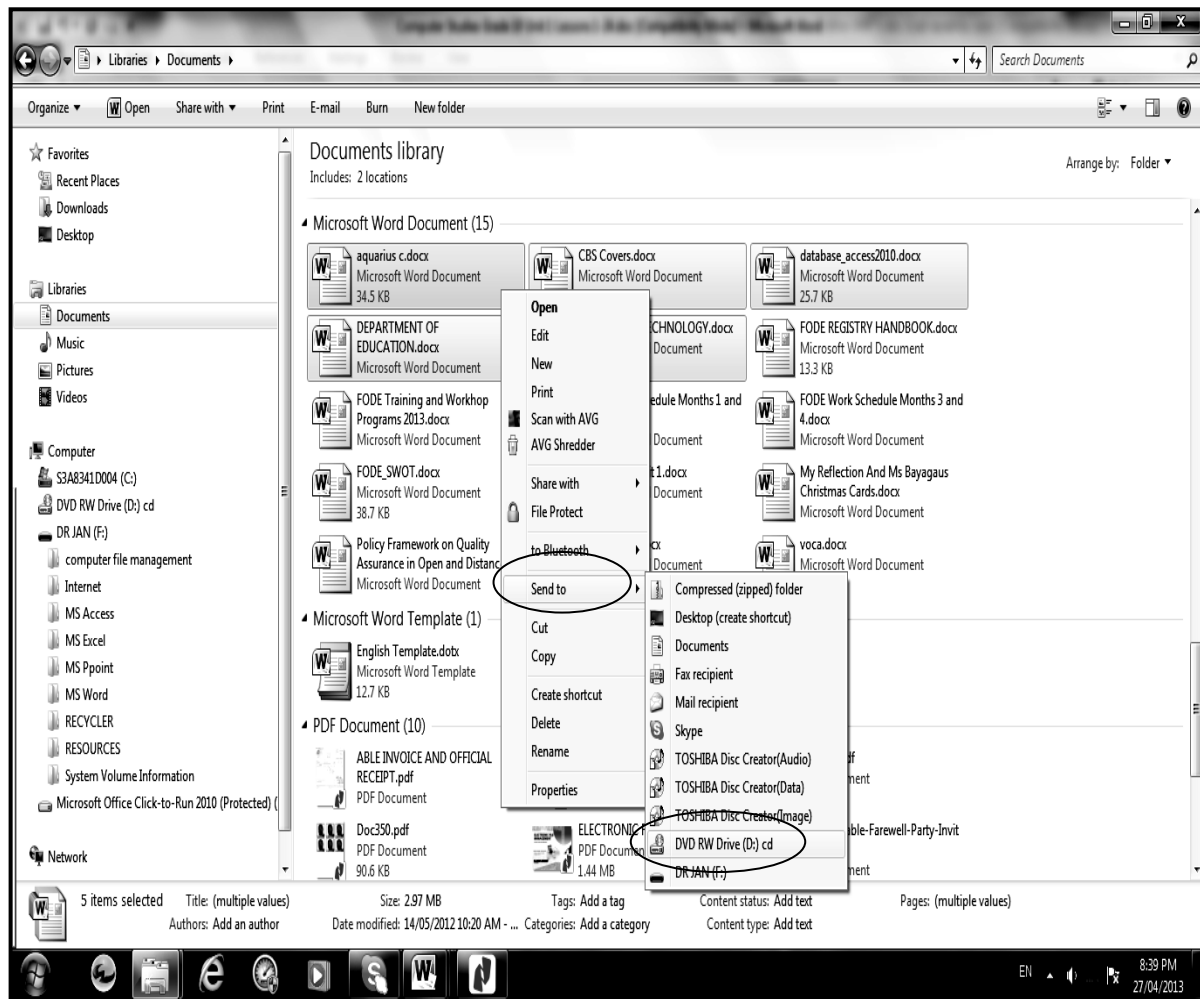
The Documents Library showing 5 selected files that will be created a back-up.

Practice Exercise 18

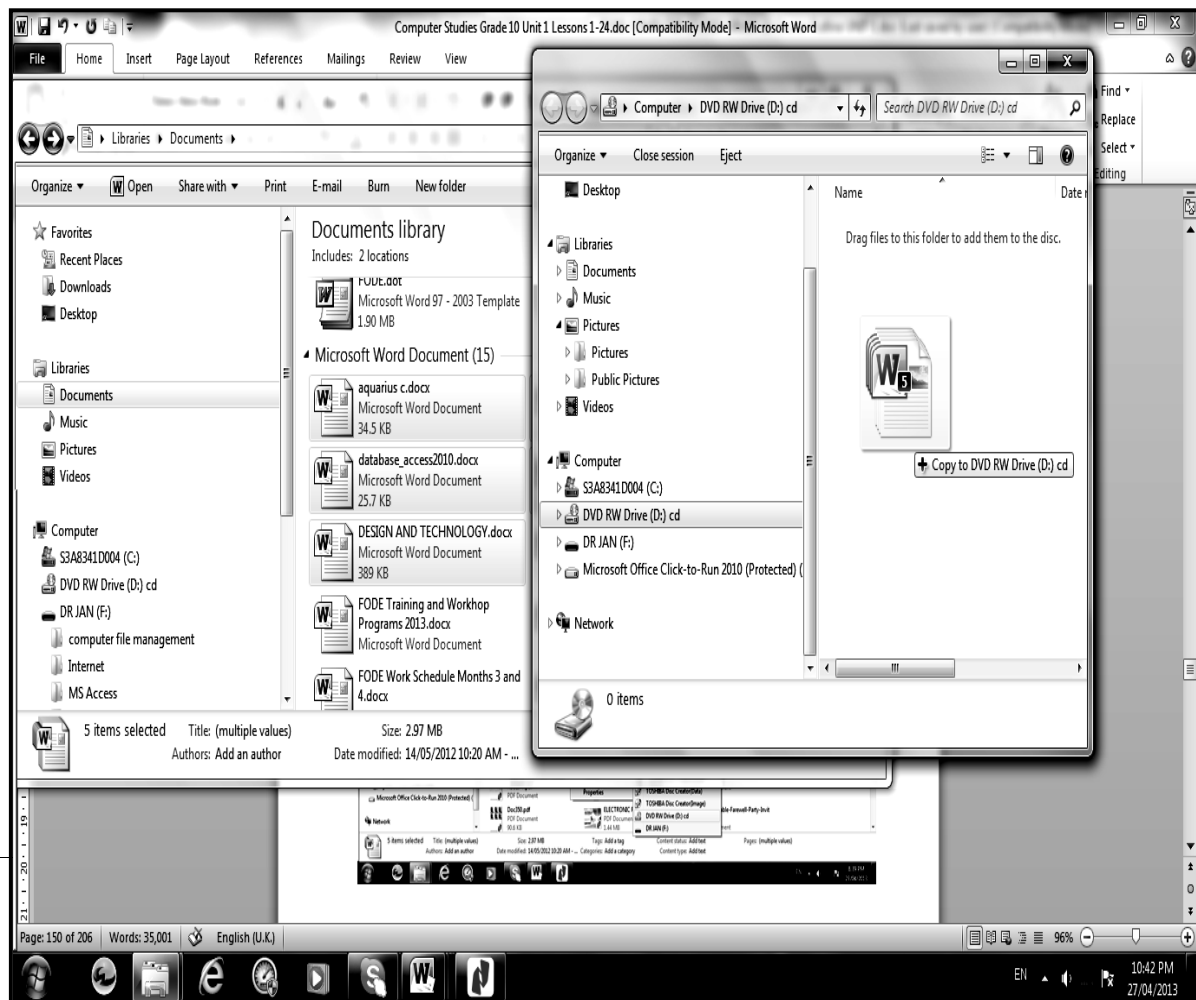
A. Your answers should look something like the following:



A dialogue box confirming the deletion of the file.



The screen shot displays the Send to drop-down menu and the location where you will create your back-up.



The screen shot showing the 5 documents send to the DVD drive.

End of Topic 3.

Now Do Exercise 3 in Assignment Book 1. Then Go to Topic 4.

TOPIC 4:

BASIC SOFTWARE APPLICATIONS REVIEW

Lesson 19: Review on Word Processing 1

Lesson 20: Review on Formatting Documents

Lesson 21: Review on Basic Presentation Skills

Lesson 22: Review on Adding Basics to the Presentation

Lesson 23: Review on Spreadsheet 1

Lesson 24: Review on Creating and Formatting Spreadsheet

TOPIC 4: BASIC SOFTWARE APPLICATIONS REVIEW

Topic 4 will consist of a comprehensive review on all basic software applications that were thoroughly discussed in Grade 9 Design and Technology-Computing. Its purpose is to re-establish the mastery of knowledge and skills learnt in the previous grade which will be of significant use you will advance his study with Grade 10 Design and Technology-Computing.

Specifically, the following lessons will be discussed:

Lesson 19 covers the review on the basics learnt on Word Processing 1.

Lesson 20 contains the elaborated review that focuses on how to format Word documents.

Lesson 21 consists of a review on the basic skills of how to create a Presentation.

Lesson 22 outlines a review on how to add the basics of an enhanced Presentation.

Lesson 23 covers the review for the basics on what a Spreadsheet is.

Lesson 24 gives a focused review on how to create and format a Spreadsheet.

By the end of Topic 4, you should be able to identify and demonstrate appropriate use of a range of software applications and use a range of computer skills and techniques.

Lesson 19: Review of Word Processing 1



Welcome to Lesson 19. In this lesson you will revise on concepts and lessons learnt in Unit 2 of Grade 9 Design Technology - Computing.



Your Aims:

- define word processing
 - identify the program used for Word Processing
 - identify the steps on how to open a document word file
 - identify the steps on how to save a word file
 - identify the importance of Word Processing
-

Word Processing

Word processing is the creation, editing, formatting, storing and printing of electronic text-based document. Examples of word processing documents are letters, reports, essays, and other text materials that you create in the computer.

Importance of Word Processing

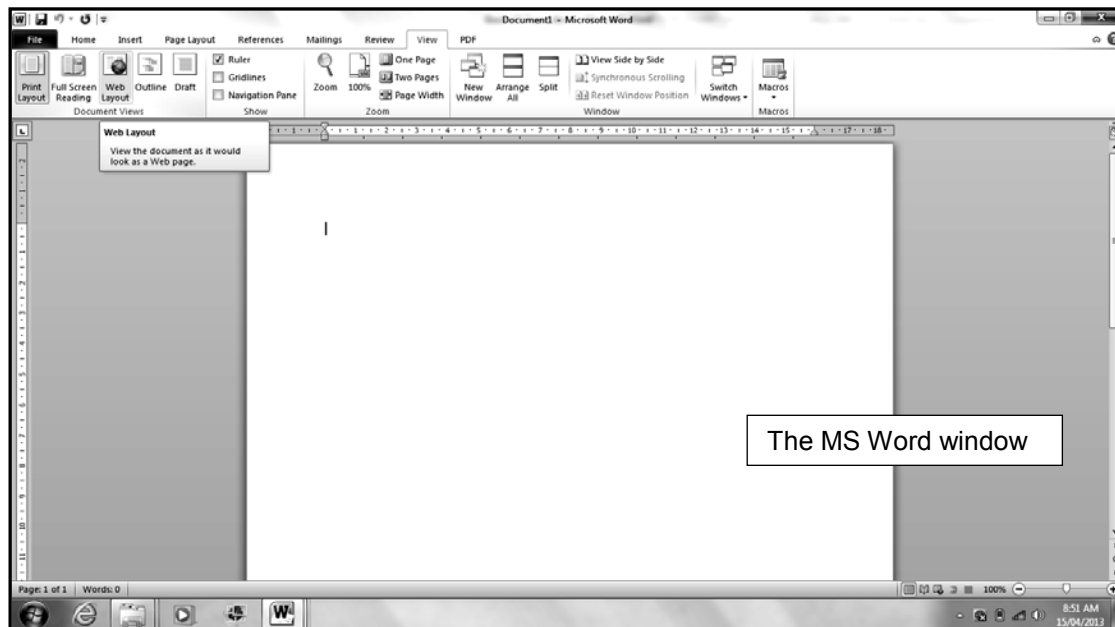
Typewriters were first used to make encoding of important documents easier. A century later, Word processors were for the same purpose, only this time it has gone beyond its original intention.

As a student and a computer user, you might have seen the importance of using Word processing. This could be from a simple letter to creating the following documents:

- letters, fax, report, thesis or book.
- flyers and newsletter.
- clip art to a document
- columns
- tables and perform simple calculations
- graphics
- indexes
- table of contents
- headers and footers
- texts

Programs Used for Word Processing

There are many programs used for Word processing. From the simple typewriter like word processor to the most advanced word processing software. Today, the most popular word processing software used in the business is the MS Word software created by Microsoft.



Document

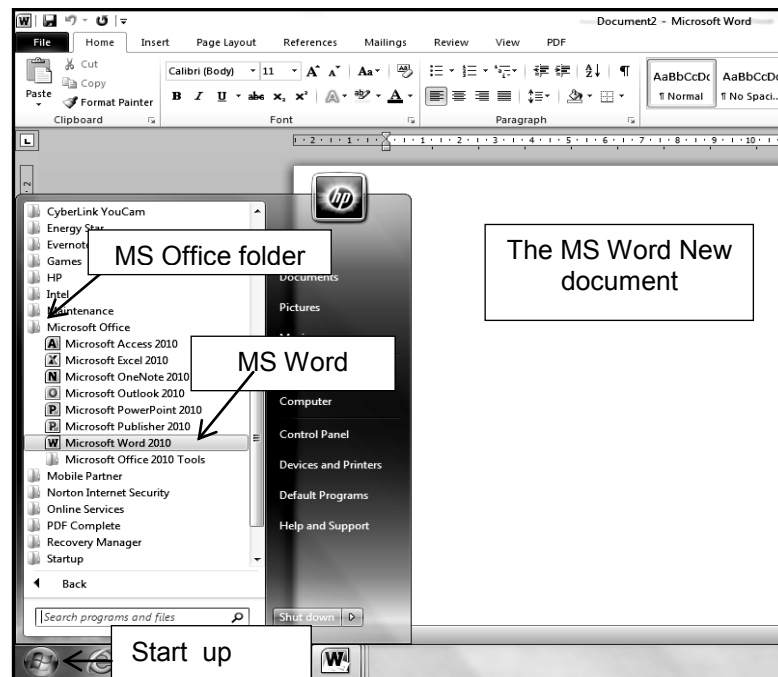
In computing, the term Document is used to refer to files created using a word processing program. In MS Word, **Document 1** is a temporary name given to your work before it is saved.

A. Opening a New Document Word File

1. Click the **Start** button and choose **All programs**.
2. Scroll up or down to look for **MS Office** folder.
3. Click MS Office folder and select **Microsoft Word 2010**
4. The MS Word document opens.
5. Close **MS Word**.

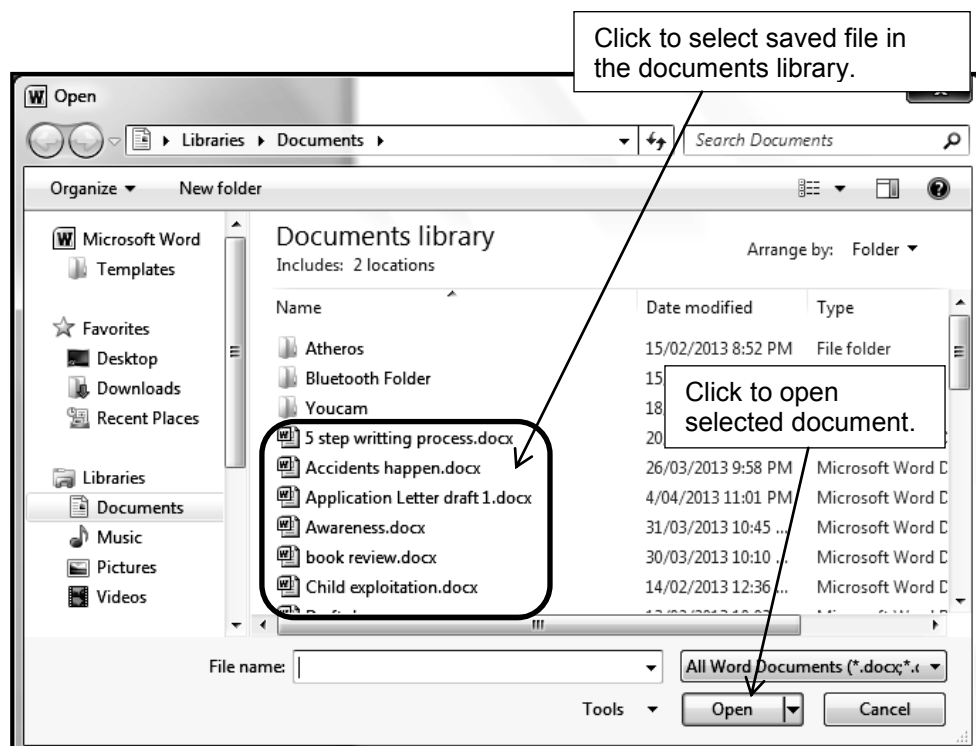


There are other ways of opening a new document word file. Refer to Topic 2 of Lesson 1 on the different ways you could open a new document word file.



B. Opening a Saved File in the Documents Library

1. Open **MS Word** program.
2. Click the **File** tab and choose **Open**.
3. The computer automatically goes to the **Documents library**.
4. Choose the file you want to open and click **Open**.



5. Open any files you have previously saved.

6. Close your document.

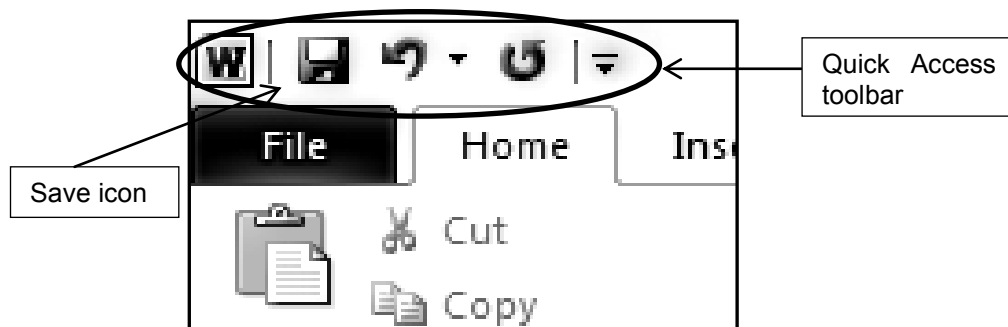


Topic 2 Lesson 1 provides the other ways on how to open a new document word file while Topic 2 Lesson 4 provides the different ways you could open a previously saved document word file.

Save Changes to a Word File

Follow the steps below on how to save changes to a Word file.

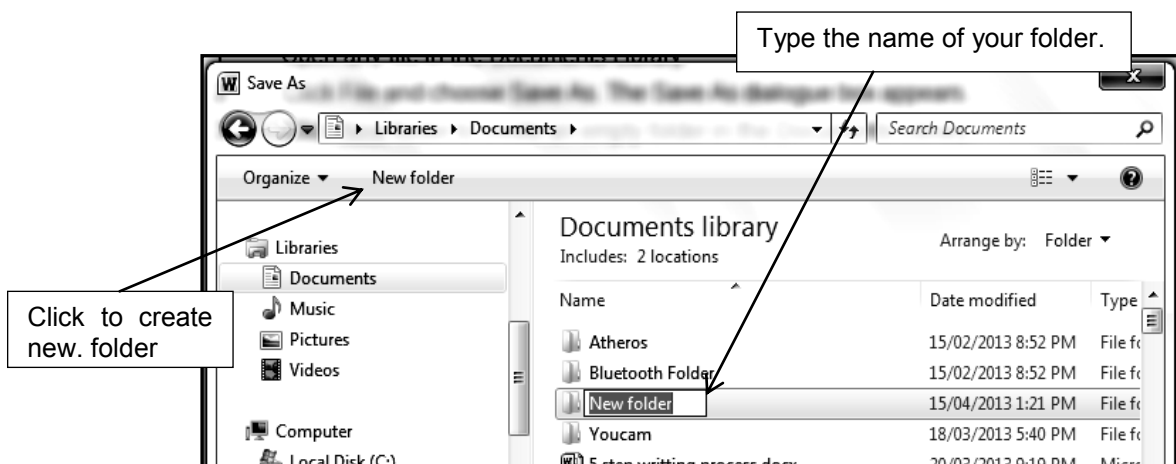
1. Open a **MS Word** file.
2. Write your name at the beginning of the document.
3. Click the **Save** icon in the Quick Access toolbar.



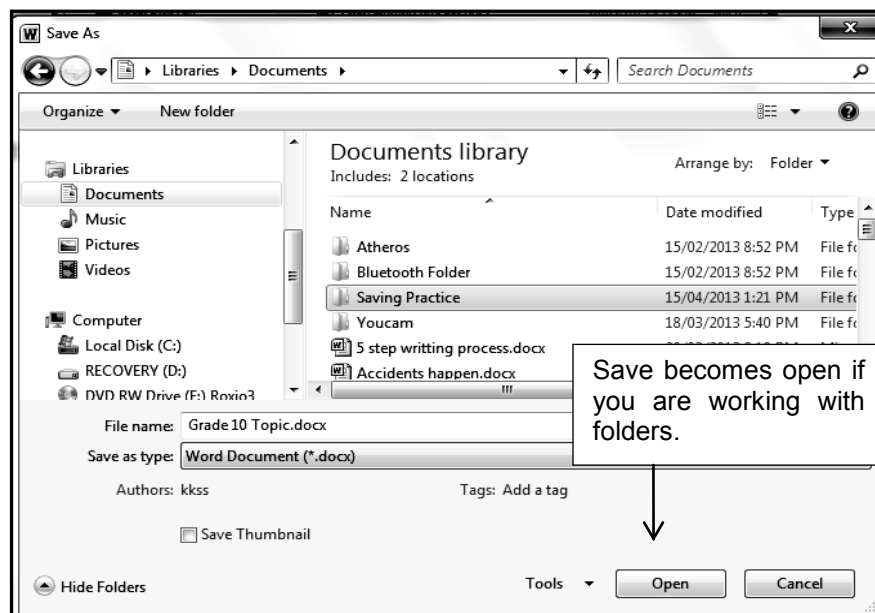
ACTIVITY 1:

Follow the instructions below to open and save a document in a different directory.

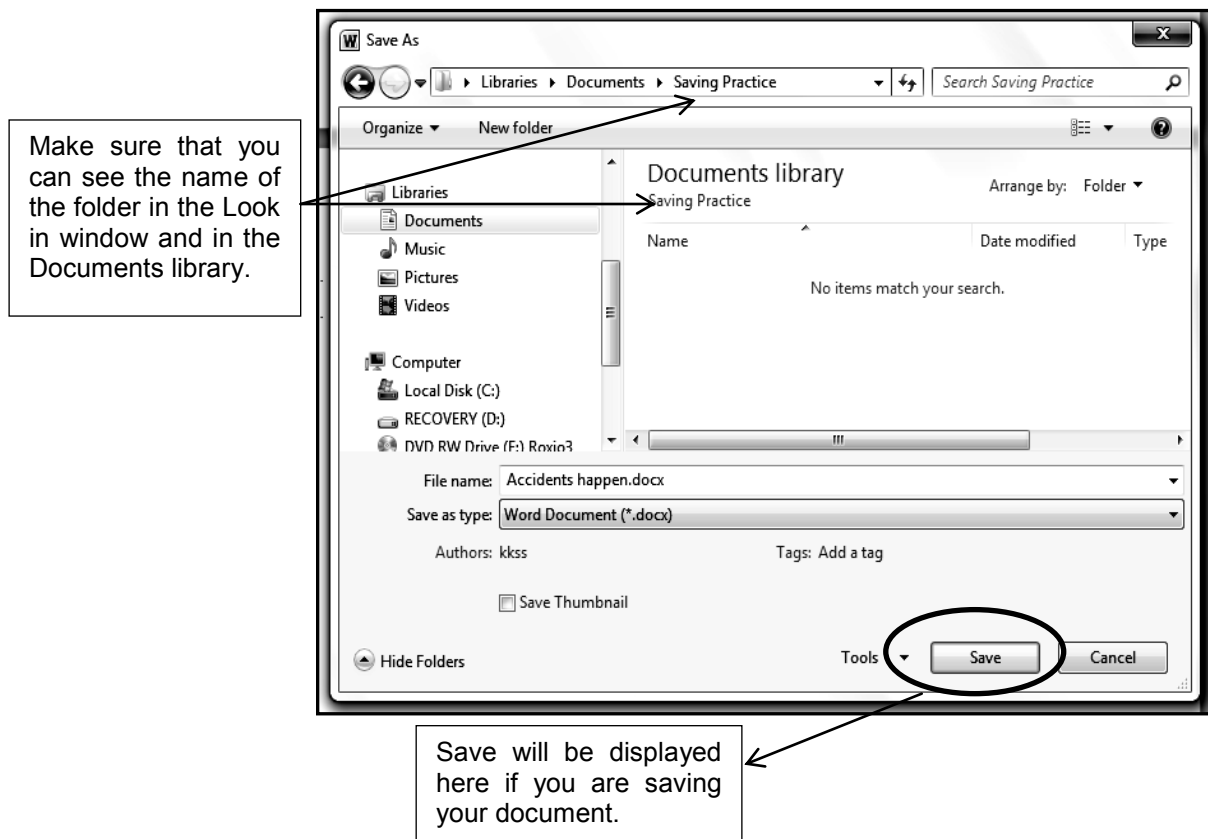
1. Open any file in the Documents Library.
2. Click File and choose Save As. The Save As dialogue box appears.
3. Click New folder to create an empty folder in the Documents Library.



4. Write **Saving Practice** as the name of your new folder.
5. Click **Open**. The content of your new folder will be displayed in your screen.



6. Click **Save** to create a copy of your document inside your folder.



7. Locate and insert the flash drive in your computer.
8. Select the external flash drive and click **Save**. This will create a copy of your document in another directory.

Thank you for completing this activity. In this activity you have learnt how to open and save your document in another directory. Try to do the task again without opening your handbook. Compare your work with the output provided at the end of this lesson.



Summary

You have come to the end of Lesson 19. In this lesson you learnt and revised on the concepts of Word processing. You have also practiced your skills in Opening and Saving documents as well as working with Folders and Directories.

NOW DO PRACTICAL EXERCISE 19 ON THE NEXT PAGE.

Practical Exercise 19

A. Briefly write the steps you will perform to complete the following task.

1. Open MS Word Document.

2. Save your document for the first time.

3. Save changes to your work.

4. Save your document in another location.

5. Create folder in the documents library.

B. Complete the following exercise without using your course book as guide. The exercise is quite simple and should be easy to follow.

1. In a New Blank Document, type the following text.

Word Processing

Word processing is the creation, editing, formatting, storing and printing of electronic text-based document. Examples of word processing documents are letters, report, essay, and other text materials that you created in a computer.

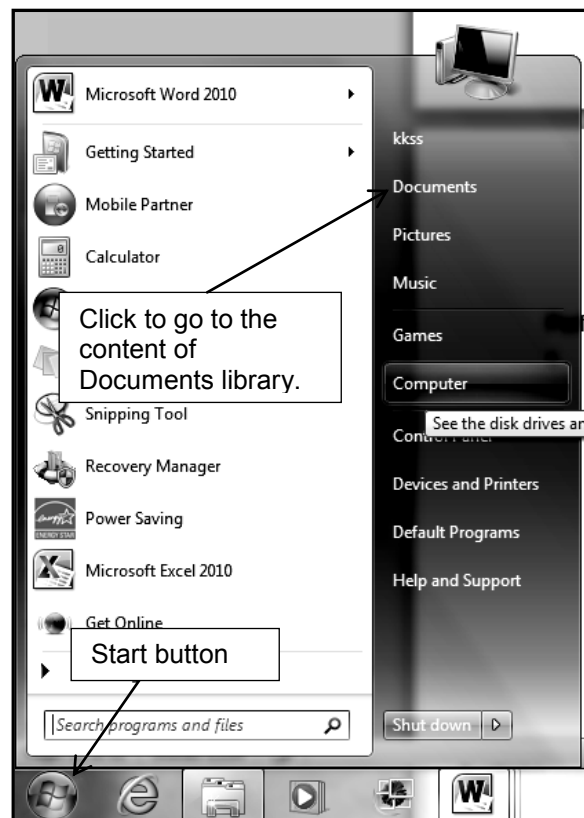
2. Save your work in the Documents Library.
3. Use the filename **Word Processing**.
4. Write your name at the beginning of your text.
5. Save the changes to your work.
6. Create a folder inside your flash drive. The name of the folder is **WORD EXERCISE**.
7. Save the document inside the Word Exercise folder.
8. Before saving, change the file name of the document to **Practice Saving**.
9. Click **Save** to save your document inside your folder.

CHECK YOUR ANSWERS AT THE END OF TOPIC 4

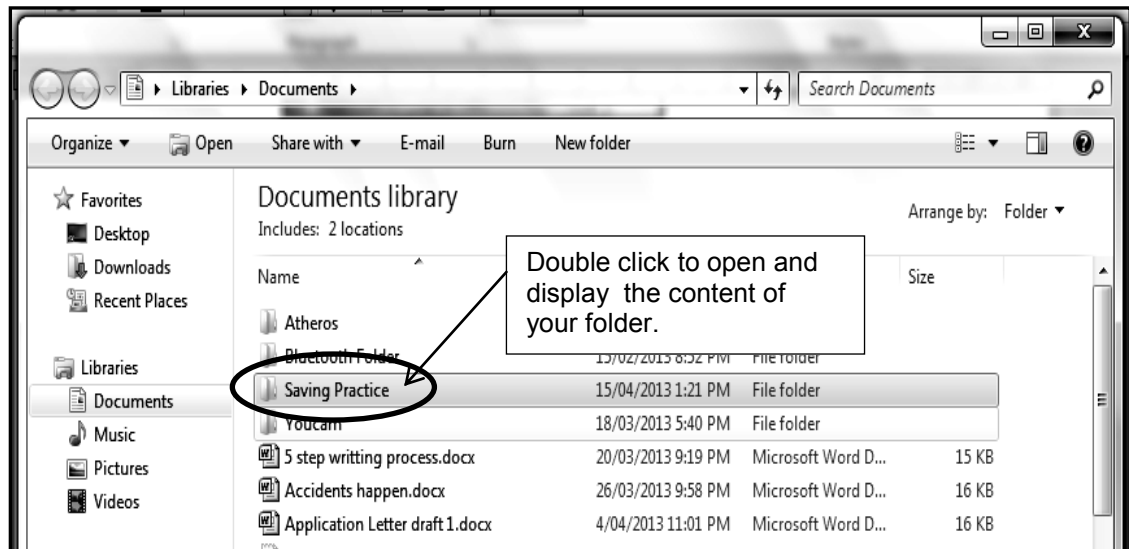
Answers to Activity 1

Perform the following task to check if you have successfully completed this activity.

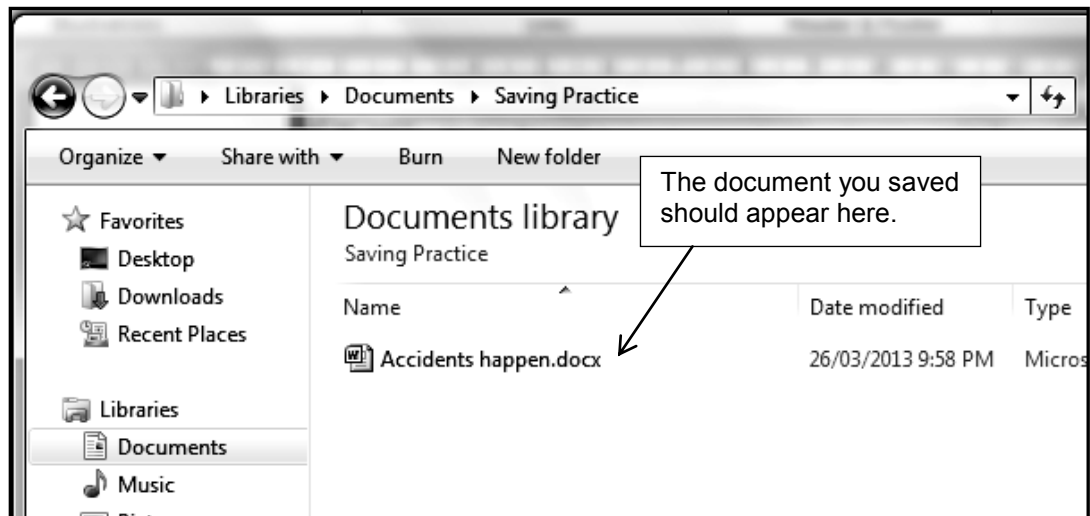
1. Click Start and choose Document from the menu located at the right side of your screen.



2. The Document Library will appear. (Do not worry if your screen does not look exactly like the illustration on the next page).
3. Locate the Saving Practice folder and double-click to display the content of the folder.



4. Locate your flash drive and double click to open it.
The document you have saved there should be inside your folder.



Lesson 20: Review on Formatting Documents



Welcome to Lesson 20. In lesson 19, you learnt and revised the concepts of Word processing.

In this lesson you will revise formatting your documents to present it in a different way.



Your Aims:

- define format of documents
 - modify font style and size
 - use word and line spacing
 - use indent and justify the text
 - change the case of the text
-

Formatting Document

The concepts and skills in this lesson have already been learnt in Unit 2 of Grade 9 Design Technology-Computing. Study the topics below to review and polish your skills in formatting documents.

In word processing, you have control on how your document will look like. Formatting a document means you can change things such as size, style, spacing and colour of text. You can also arrange text using columns, tables and lists. You can even insert pictures in your document.

The following tasks were done in your in Grade 9 Design and Technology–Computing previous lessons. Let us revise this lesson and your hands-on skills.

Font Style and Size

The most common format you could apply to your text is changing its font style and size. Perform the following task. If you are unsure, you could always refer to Lesson 7 of Unit 2 Grade 9 Design and Technology – Computing. Follow the steps below on how to change the font style and size of your text.

1. Type the following text on the next page. The article was taken from The National newspaper dated, 15 April 2013. Just type the text with applying any format.

New Uni for Highlands

By Miriam Malawa

The Office of the Higher Education will begin preparatory work for a new university in the Highlands region, according to Prime Minister Peter O'Neill.

He made the revelation at the University of Papua New Guinea graduation last Friday.

O'Neill said the reason was a lack of space in existing institutions.

He said 17,000 students completed Grade 12 last year but only 4,000 could be fitted into the higher education system, which was a major concern.

"This is unacceptable. How can any responsible government live with this by denying our children the right to a decent life?" he said.

"The government has increased spending in the crucial areas of health services, education and training, and law and order and infrastructure by 50% in just one year."

He said the seriousness of the government's commitment to the real needs of the nation's long term human resource, economic and social development was reflected prominently in the 2013 national budget.

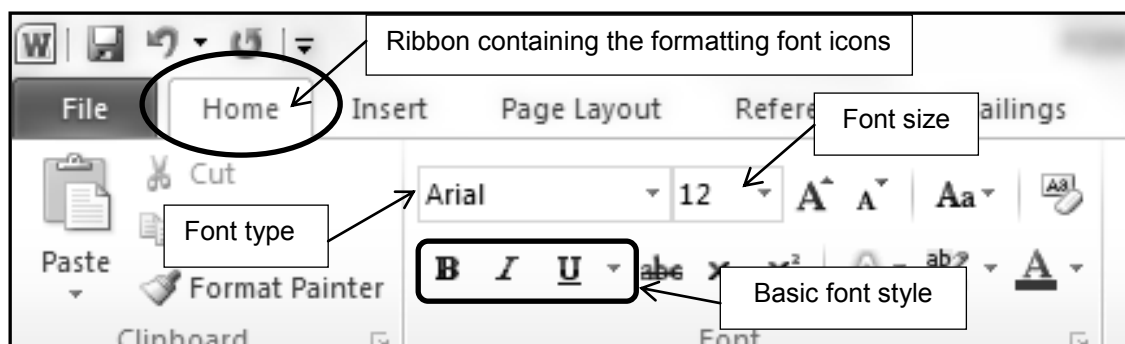
He told the students that the universities and training colleges would be renovated so that they were restored as the country's highest learning institutions.

"Our oldest universities – University of Technology and University of Papua New Guinea – are our national icons, our national pride and identity," he said

"Their prestige must be restored and that is what our government has undertaken to do."

He said the government would review the administration of these institutions and weed out a culture of inefficiency, nepotism and complacency.

2. Apply formatting to your document. Do not forget to highlight before changing your font style and size. Use the icons below as guide when changing. You could also go back to Lesson 13 Topic 2 of your Grade 9 Design and Technology – Computing.



3. Use the table on the next page to guide you on how to change your font format. You may substitute any font if it is not available in your computer.

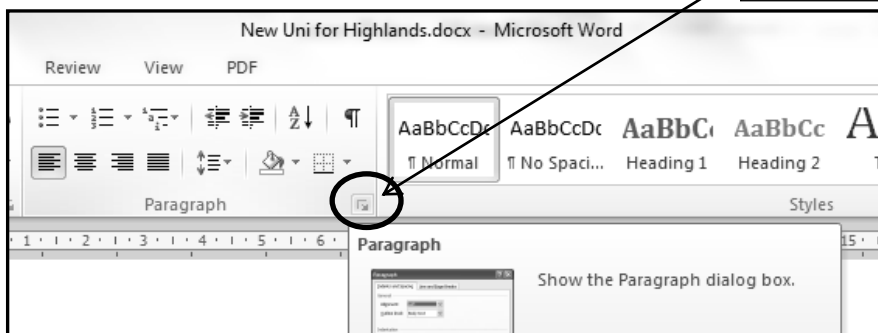
	Title	Author	Paragraph
Font type	Bookman Old Style	Cambria	Cambria
Font size	16 pts	14 pts	12 pts
Font style	Bold	Bold	

Word and Line Spacing

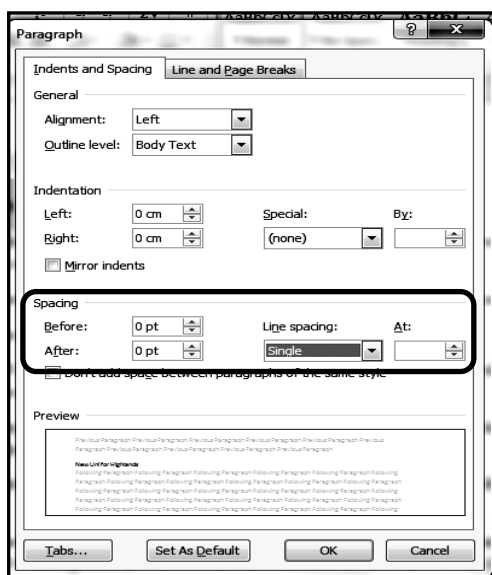
Notice the distance between your paragraph spacing and line spacing. These spaces can be removed. Refer to Lesson 9 of Unit 2 Design and Technology – Computing. Follow the steps below on how to apply word and line spacing to your document.

1. Highlight the title and author of the document.
2. Click the **Paragraph** dialogue box icon.

Click to display the Paragraph dialogue box.



3. Change the Spacing After to **0 pt** and the Line Spacing to **Single**
4. Click **OK** to apply changes to your text.

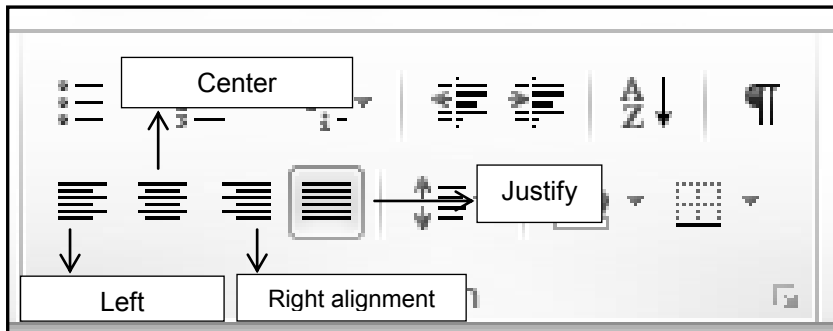


5. Highlight the entire paragraph.
6. Change the Spacing After to **6 pt** and the Line Spacing to **Single**.
7. Click **OK** when finished.

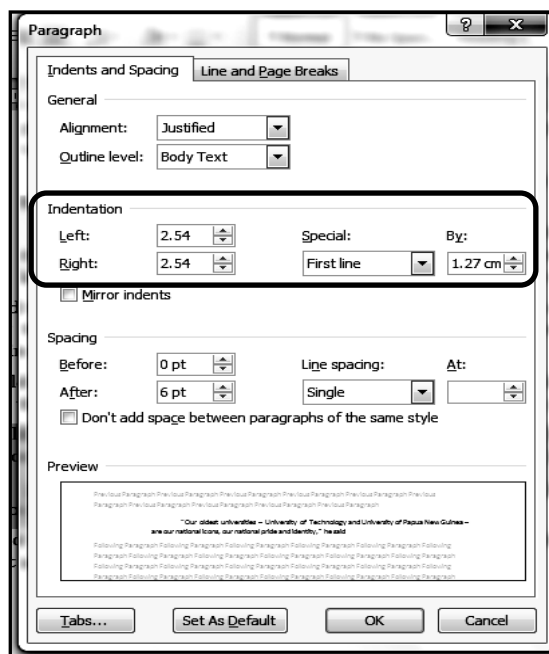
Justify Text

You have learnt to apply Indention and justify text in Lesson 10 of Unit 2 of Grade 9 Design and Technology – Computing. Revise on this lesson to perform the task or you could try performing the task without the aid of your handbook. Follow the instructions below on how to justify text.

1. Highlight the Title and Author of the paragraph.
2. Change the alignment to **Center**. You can locate this icon in the Paragraph option of the Home ribbon.



3. Highlight the entire paragraph.
4. Change the alignment of the paragraphs to **Justify**.
5. Make sure that all the paragraphs are still highlighted. Open the Paragraph dialogue box.
6. Change the Special Indention to Hanging with a measurement of **1.27 cm**.
7. Click **OK** to apply changes to your paragraphs.
8. All the paragraphs that start and end with a quotation (—) symbol must have a Left and Right Indention of **2.54 cm**.



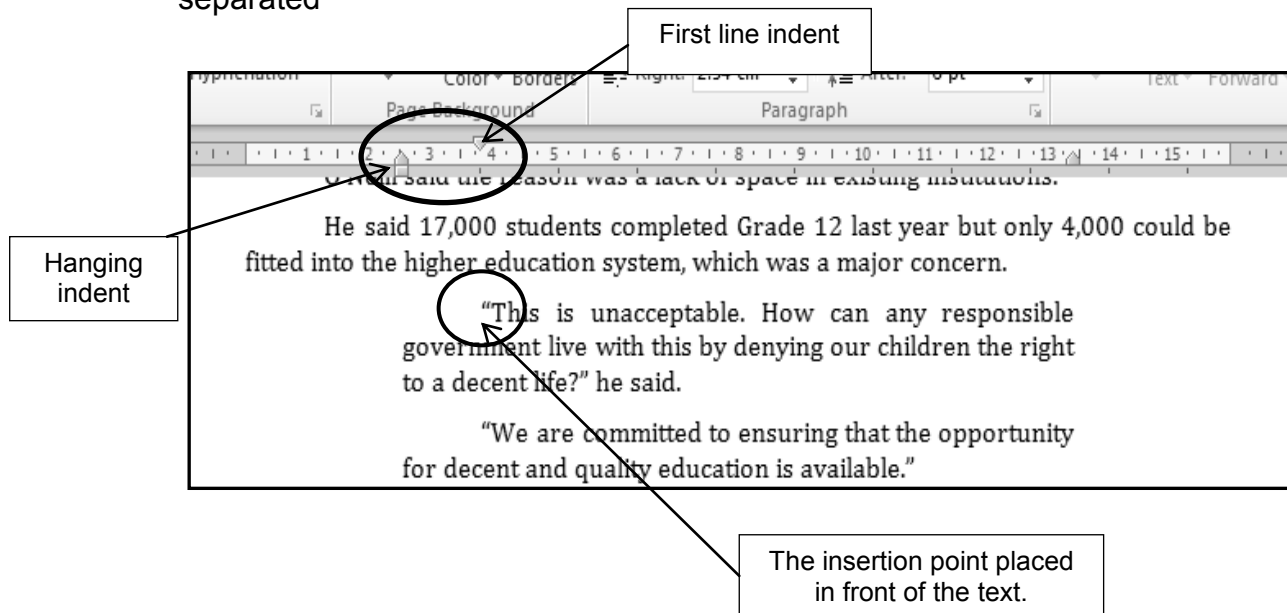
9. Do not forget to click **OK** to apply changes to your paragraphs.

Apply Indents

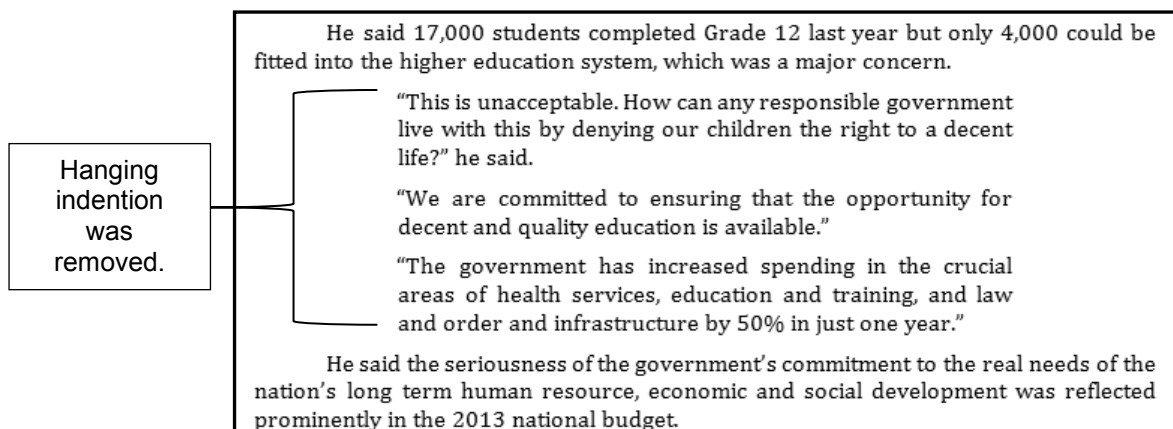
Indents refer to how the paragraph is presented within the document. You could revise on applying Indents by going through your Lesson 10 Unit 2 of Grade 9 Design and Technology – Computing. Follow the steps below on how to apply indents.

Move your mouse pointer at the paragraph with quotation (—.)

1. Click the mouse; position the insertion point in front of the paragraph.
2. Observe how the First line indent marker and the Hanging indent are separated



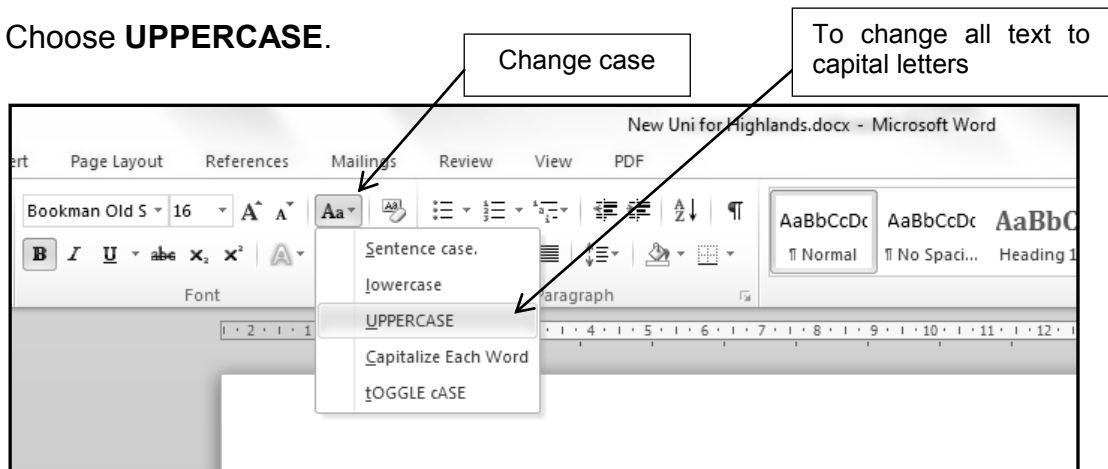
3. Position the cursor at the First line indent tab.
4. Click, hold and drag the mouse to move it towards the Hanging indent tab.
5. Observe how the paragraph indentation moved. Do the same for all the paragraphs with Hanging indents.



Change Case

A text that is already typed need not be encoded again when changing case to capital letter or other sentence case. You can revise on how to Change Case in Lesson 10 Topic 2 of Grade 9 Design and Technology – Computing. Follow the steps below on how to change case of your text.

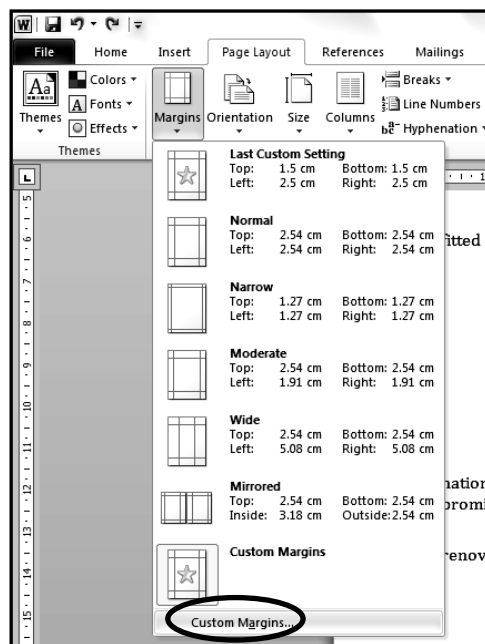
1. Open a new Word document.
2. Highlight the title of the document.
3. Locate the **Change Case** option in the Home ribbon.
4. Choose **UPPERCASE**.



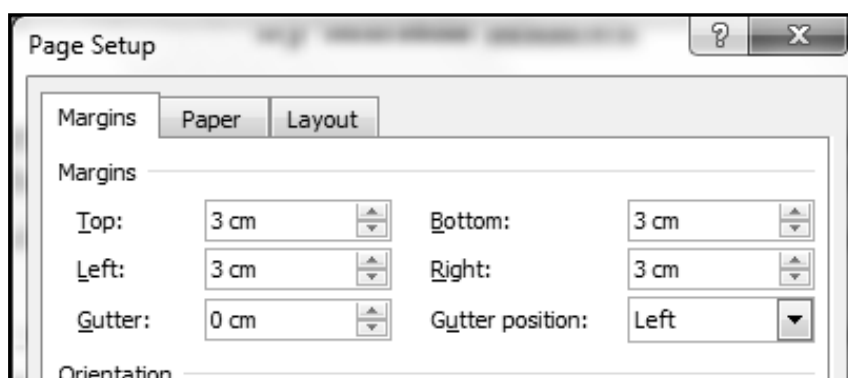
Changing Margins

It is important to change the margins of your document to suit the type of document you are the making. If you are still unsure on changing Margins you could to back to Lesson 9 Topic 2 of Grade 9 Design and Technology – Computing lesson. Follow the steps below on how to change the margins of your document.

1. Open a new Word document.
2. Choose **Margins** in the **Page Layout** ribbon.
3. Scroll down and click **Custom Margin**.



4. Change the Top, Bottom, Left and Right margins to **3 cm**.



- Click **Ok** to apply changes to your document.

Saving and Printing

The last step of every work is to create a soft copy and hard copy of your work. Follow the steps below on how to save and print.

- Save your work as **New University** inside your Documents Library.
- Print your work.
- Your work should look like the example below when finished.

NEW UNI FOR HIGHLANDS
By Miriam Malawa

The Office of the Higher Education will begin preparatory work for a new university in the Highlands region, according to Prime Minister Peter O'Neill.

He made the revelation at the University of Papua New Guinea graduation last Friday.

O'Neill said the reason was a lack of space in existing institutions.

He said 17,000 students completed Grade 12 last year but only 4,000 could be fitted into the higher education system, which was a major concern.

"This is unacceptable. How can any responsible government live with this by denying our children the right to a decent life?" he said.

"We are committed to ensuring that the opportunity for decent and quality education is available."

"The government has increased spending in the crucial areas of health services, education and training, and law and order and infrastructure by 50% in just one year."

He said the seriousness of the government's commitment to the real needs of the nation's long term human resource, economic and social development was reflected prominently in the 2013 national budget.

He told the students that the universities and training colleges would be renovated so that they were restored as the country's highest learning institutions.

"Our oldest universities - University of Technology and University of Papua New Guinea - are our national icons, our national pride and identity," he said

"Their prestige must be restored and that is what our government has undertaken to do."

He said the government would review the administration of these institutions and weed out a culture of inefficiency, nepotism and complacency.



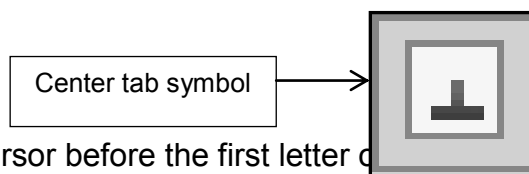
ACTIVITY 1: Follow the instructions below to apply formatting to documents.

1. In a new blank document, type the following text.

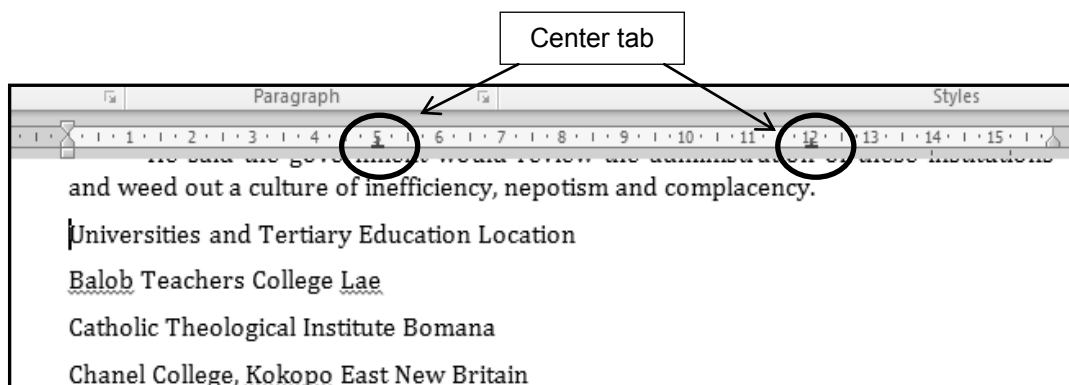
Universities and Tertiary Education Location
Balob Teachers College Lae
Catholic Theological Institute Bomana
Chanel College, Kokopo East New Britain
Christian Leaders Training College Western Highlands
Divine Word Universtity Madang
Kandep Provincial High School Wabag
Goroka Babtist Bible College Eastern Highlands
Institute of Business Studies NCD
Kudjip College of Nursing WHP
Madang Teachers College Madang
Madang University Centre Madang
Melanesian Nazarene Bible College Western Highlands
Pacific Adventist University NCD
Pacific Bible College Western Highlands
PNG University of Technology Lae
Port Moresby Business College NCD
Tambul Bible College Western Highlands
University of Goroka Eastern Highlands
University of PNG NCD
University of Natural Resources ENBP
Don Bosco Technological Institute NCD
Sacred Heart Teacher's College NCD

2. Save your work as **Universities & Tertiary in PNG**. Do not close your document.
3. Open **New Universities** document.
4. Copy text from **Universities & Tertiary in PNG** and paste the text to the New Universities document.
5. Apply any formatting to your use the same styles you used for font type, font style, alignment and line spacing.

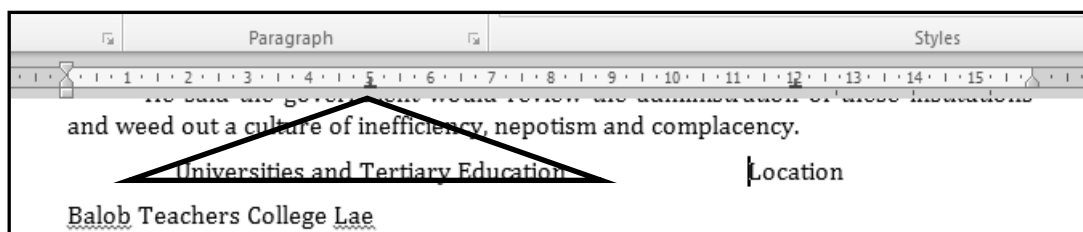
6. Make sure that the Tab selector displays the Center tab symbol located at the upper left side of the window. Refer to Unit 2 Lesson 12 of Grade 9 Design and Technology – Computing on how to apply tab to document.



7. Position your cursor before the first letter of the paragraph you pasted.
8. Click the mouse at the 5 cm and 12 cm of your horizontal ruler. The Center tab will be placed where you click the mouse.

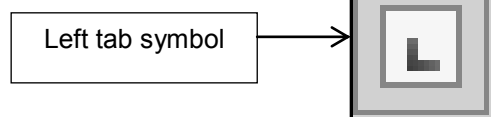


9. Press the Tab key located in your keyboard. Observe how your paragraph line was centered left and right of the Center tab you inserted.
10. In the same paragraph, position your cursor in front of the word Location.
11. Press the Tab key and observe how the word —Location” was centred left and right of the Center tab.



12. Position your cursor at the first letter of the word —Lae”

13. Change your tab symbol to Left tab



14. Click the mouse pointer at 10 cm. The left tab symbol will be inserted.
15. Press the tab key. The word —Lae” will move at the point where the Left tab was located.

Paragraph										Styles									
and weed out a culture of inefficiency, nepotism and complacency.																			
Universities and Tertiary Education										Location									
Balob Teachers College										Lae									
Catholic Theological Institute Bomana																			

16. Repeat Steps 15 to 16 for the rest of the document.
17. Use the example below as guide when changing your indentions.

Universities and Tertiary Education	Location
Balob Teachers College	Lae
Catholic Theological Institute	Bomana
Chanel College, Kokopo	East New Britain
Christian Leaders Training College	Western Highlands
Divine Word University	Madang
Kandep Provincial High School	Wabag
Goroka Baptist Bible College	Eastern Highlands
Institute of Business Studies	NCD
Kudjip College of Nursing	WHP
Madang Teachers College	Madang
Madang University Centre	Madang
Melanesian Nazarene Bible College	Western Highlands
Pacific Adventist University	NCD
Pacific Bible College Western	Highlands
PNG University of Technology	Lae
Port Moresby Business College	NCD
Tambul Bible College	Western Highlands
University of Goroka	Eastern Highlands
University of PNG	NCD
University of Natural Resources	ENBP
Don Bosco Technological Institute	NCD
Sacred Heart Teacher's College	NCD

18. Save your work as Universities in PNG draft 1.
19. Print your work.
20. Your work should look like the on the next page.

Thank you for completing this activity. Now, you may go to the end of this lesson to check your answers. Make sure you do the necessary corrections before moving on to the next part of this lesson.



Summary

You have come to the end of Lesson 20. In this lesson revisited and learnt on the concepts of Word processing. You have also practiced your skills in formatting text, modifying font style and size, applying word and line spacing, using indent and alignment of text, changing case, applying margins and tabs to your document.

NOW DO PRACTICAL EXERCISE 20 ON THE NEXT PAGE.

Practical Exercise 20

- A. The following icons were used in this lesson. Write the name of the icons in the space provided.



1.



2.



3.



4.



5.



6.



7.



8.



9.

10.

- B. Apply changes to your document.

1. Open the **New Universities** document. This document should not contain any changes from the last time you saved it.
2. Print this document.
3. Look at the changes done to this document.
4. Edit the document using your own style of formatting.
5. Use the skills you have learnt in today's lesson and lessons done in Grade 9 Design Technology – Computing.
6. Create a folder called **-Editing Samples**".

7. Save your work inside Editing Samples folder use the filename **New Universities v1**.
8. Print your work and compare changes done from the original document.

CHECK YOUR ANSWERS AT THE END OF TOPIC 4.

Answer to Activity 1

1. Compare your print out from the sample given on the next page.
2. Take note of the following changes to the parts of the documents

Title -	Case	Uppercase
	Font	Book Old style, 16 pts, Bold
	Alignment	Center align
Author-	Case	Sentence Case
	Font	Book Old style, 14 pts, Bold
	Align	Center align
Normal Paragraphs-		
	Case	Sentence case
	Font	Cambria, 12 pts
	Alignment	Justified
	Special Indention	First line, 1.25 cm
Quoted Paragraphs		
	Case	Sentence case
	Font	Cambria, 12 pts.
	Alignment	Justified
	Indentions	Left and Right, 2.54 cm

title

NEW UNI FOR HIGHLANDS
By Miriam Malawa

author

The Office of the Higher Education will begin preparatory work for a new university in the Highlands region, according to Prime Minister Peter O'Neill.

He made the revelation at the University of Papua New Guinea graduation last Friday.

O'Neill said the reason was a lack of space in existing institutions.

He said 17,000 students completed Grade 12 last year but only 4,000 could be fitted into the higher education system, which was a major concern.

"This is unacceptable. How can any responsible government live with this by denying our children the right to a decent life?" he said.

"We are committed to ensuring that the opportunity for decent and quality education is available."

"The government has increased spending in the crucial areas of health services, education and training, and law and order and infrastructure by 50% in just one year."

He said the seriousness of the government's commitment to the real needs of the nation's long term human resource, economic and social development was reflected prominently in the 2013 national budget.

He told the students that the universities and training colleges would be renovated so that they were restored as the country's highest learning institutions.

"Our oldest universities – University of Technology and University of Papua New Guinea – are our national icons, our national pride and identity," he said

"Their prestige must be restored and that is what our government has undertaken to do."

He said the government would review the administration of these institutions and weed out a culture of inefficiency, nepotism and complacency.

Normal paragraph

Quoted paragraph

3. Check the changes you added to your document. Your work may or may not look exactly like the example below.

NEW UNI FOR HIGHLANDS
By Miriam Malawa

The Office of the Higher Education will begin preparatory work for a new university in the Highlands region, according to Prime Minister Peter O'Neill.

He made the revelation at the University of Papua New Guinea graduation last Friday.

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"This is unacceptable. How can any responsible government live with this by denying our children the right to a decent life?" he said.

"We are committed to ensuring that the opportunity for decent and quality education is available."

"The government has increased spending in the crucial areas of health services, education and training, and law and order and infrastructure by 50% in just one year."

He said the seriousness of the government's commitment to the real needs of the nation's long term human resource, economic and social development was reflected prominently in the 2013 national budget.

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"Their prestige must be restored and that is what our government has undertaken to do."

He said the government would review the administration of these institutions and weed out a culture of inefficiency, nepotism and complacency.

Universities and Tertiary Education	Location
Bajob Teachers College	Lee
Catholic Theological Institute	Bomana
Chanel College, Kokopo	East New Britain
Christian Leaders Training College	Western Highlands
Divine Word University	Madang
Kandep Provincial High School	Wabag
Coronel Baptist Bible College	Eastern Highlands

Page 1

Institute of Business Studies	NCD
Kudat College of Nursing	WHP
Madang Teachers College	Madang
Madang University Centre	Madang
Melanesian Nazarene Bible College	Western Highlands
Pacific Adventist University	NCD
Pacific Bible College Western	Highlands
PNG University of Technology	Lee
Port Moresby Business College	NCD
Tampul Bible College	Western Highlands
University of Goroka	Eastern Highlands
University of PNG	NCD
University of Natural Resources	ENBP
Don Bosco Technological Institute	NCD
Sacred Heart Teacher's College	NCD

Lesson 21: Review on Basic Presentation Skills



Welcome to Lesson 21 of Unit 1. In Lesson 20, you reviewed about formatting Word documents. In this lesson you will review about basic Presentation skills.



Your Aims:

- identify the program used for Presentation
 - identify how to open a PowerPoint file
 - identify how to save a PowerPoint file
 - identify the importance of PowerPoint Presentation
-

Basic Presentation Skills

Unit 3 of Grade 9 Design and Technology Computing had discussed all that you would need to create a competitive Presentation. This lesson will go over some of the basic skills you must refresh which will help you advance a level higher in studying the Microsoft PowerPoint.

These skills that you have learnt in Grade 9 and will be revised in this lesson and will help you advance your skills in creating a Presentation.

Let us go over the following basic skills:

1. using the PowerPoint Window and Ribbon
2. creating and opening Presentations
3. manipulating slides
4. manipulating text in slides
5. saving and printing slides

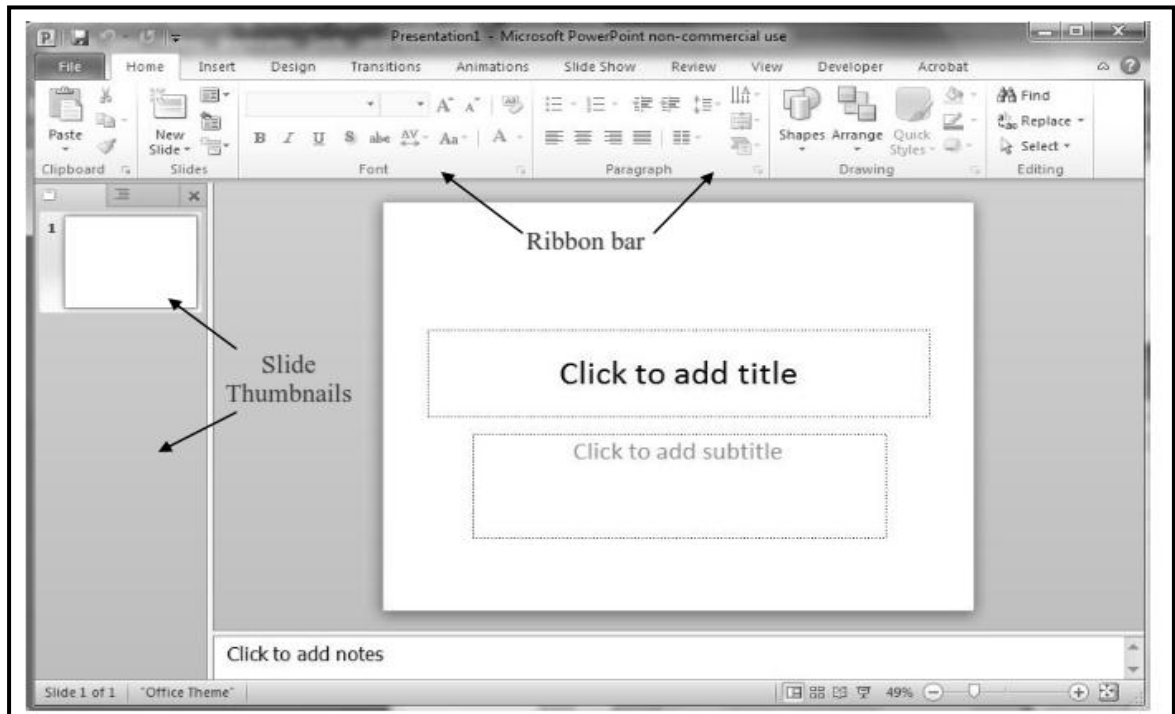
Microsoft PowerPoint is a powerful but easy-to-use presentation graphics program you can use to create professional-quality presentations. PowerPoint can be used in a variety of settings by people in many different career fields. For example, a day care worker may develop a presentation showing parents pictures of their children in all of the year's activities, or a pastor may utilize PowerPoint to display notes on the sermon or display song lyrics for the congregation. An instructor may use it for notes for a lecture to help keep the students focused and their notes organized, or a hotel manager may develop a presentation to help market their hotel at conferences and meetings. PowerPoint is also an effective tool for creating flyers and other printed products because of its versatile drawing and layout tools.

Moreover, PowerPoint Presentation is very important as it acts as an interactive and creative guide for presenters to communicate their ideas to a target audience. It provides a clear way of communicating a presenter's purposes to his clients. As a student, you can make use of this program when you need to present a good report or simply to bring an idea across to class. Teachers nowadays make full use of the PowerPoint Presentation as it makes their lesson delivery more exciting, interesting and interactive.

These lessons will now guide you on the basic Presentation skills. Study them one at a time and you can always refer back to your Grade 9 Design and Technology Computing Unit 3 Lesson 1-24 if you need more info.

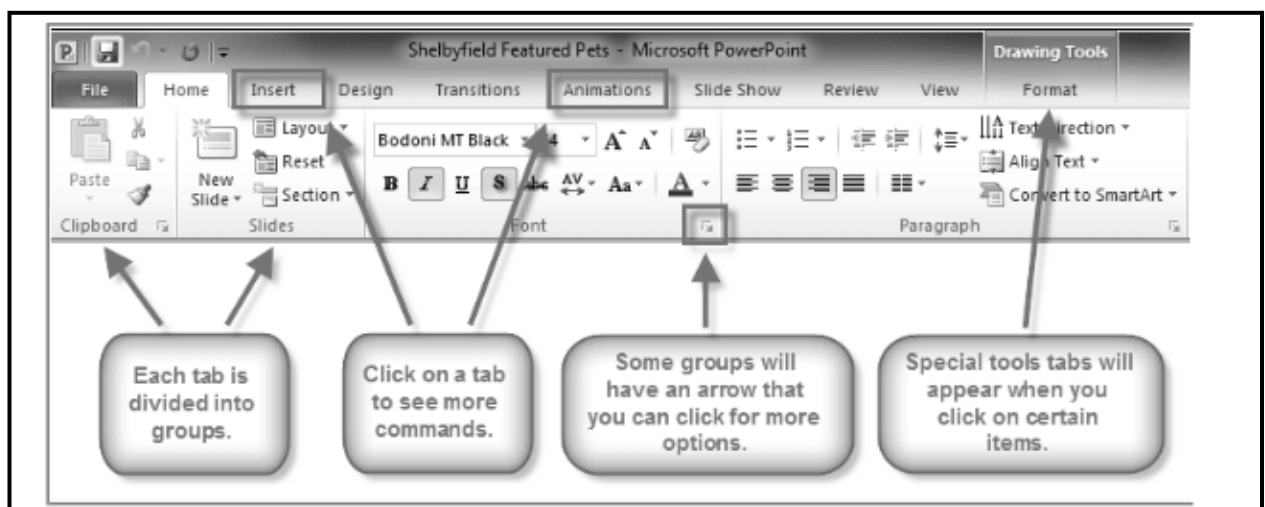
Using the PowerPoint Window

Getting familiar with the PowerPoint window is the basic step in order for you to level up your skill in making good Presentations. Look at the PowerPoint window on the below and study its parts.



The PowerPoint Window

Looking at the window, the Ribbon is an essential part of it. The Ribbon contains multiple **tabs**, each with several **groups** of commands. Some tabs, like "Drawing Tools" or "Table Tools," may appear only when you are working with certain items like images or tables. In addition, you can add your own customized tabs that contain your favorite commands.



The PowerPoint Ribbon

Creating and Opening Presentations

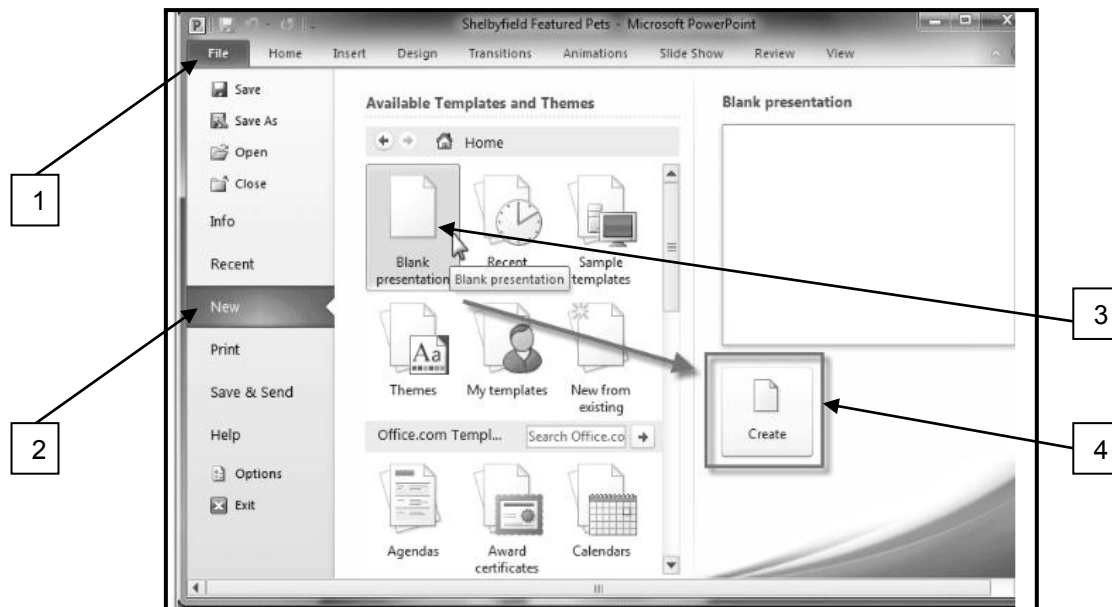
The next step after getting familiar with the PowerPoint Window and the Ribbon is to create a blank Presentation and opening existing Presentations.

The steps below will guide you how to create and open Presentations.

To Create a New, Blank Presentation

Follow the instructions below to create a new blank Presentation.

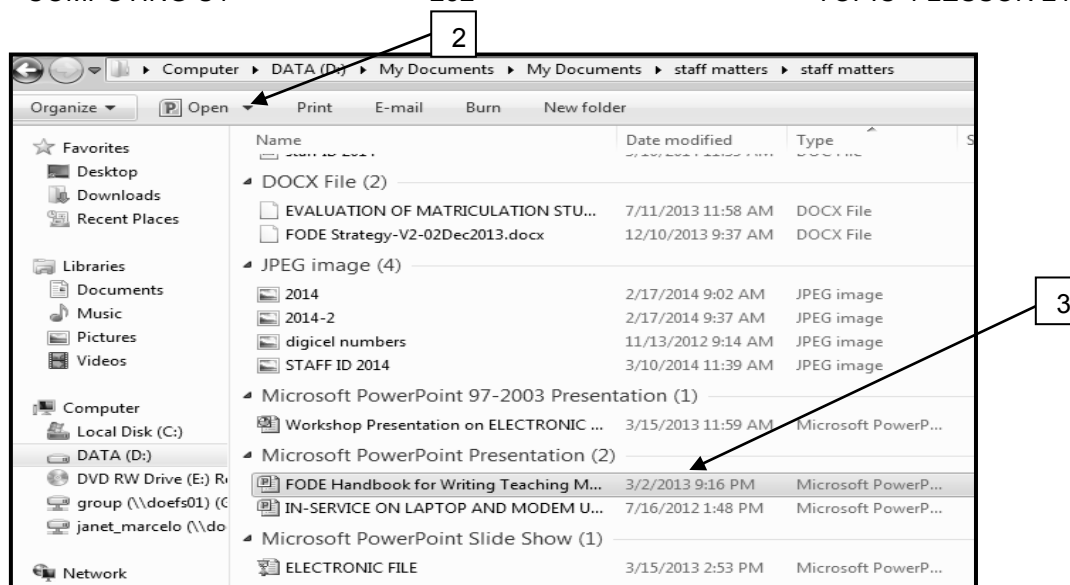
1. Click the **File** tab. This takes you to **Backstage view**.
2. Select **New**.
3. Select **Blank presentation** under **Available Templates and Themes**. It will be highlighted by default.
4. Click **Create**. A new, blank presentation appears in the PowerPoint window.



To Open an Existing Presentation

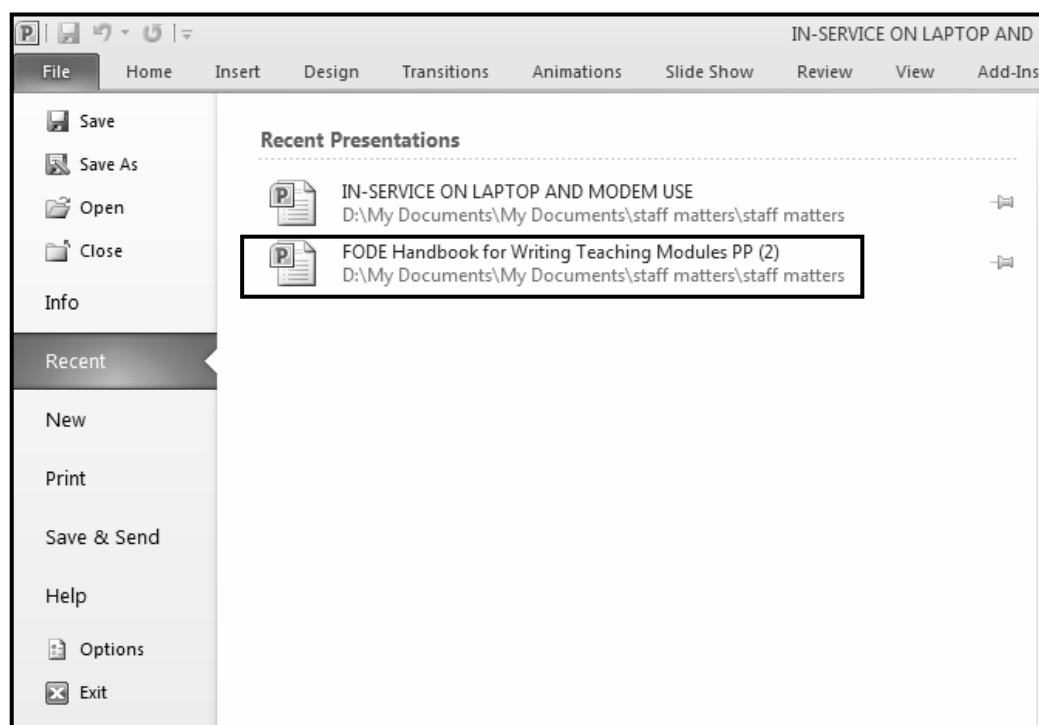
Follow the instructions below to open an existing Presentation.

1. Click the **File** tab. This takes you to **Backstage view**.
2. Select **Open**. The Open dialog box appears as shown on the next page.



3. Select your desired presentation and then click **Open**.

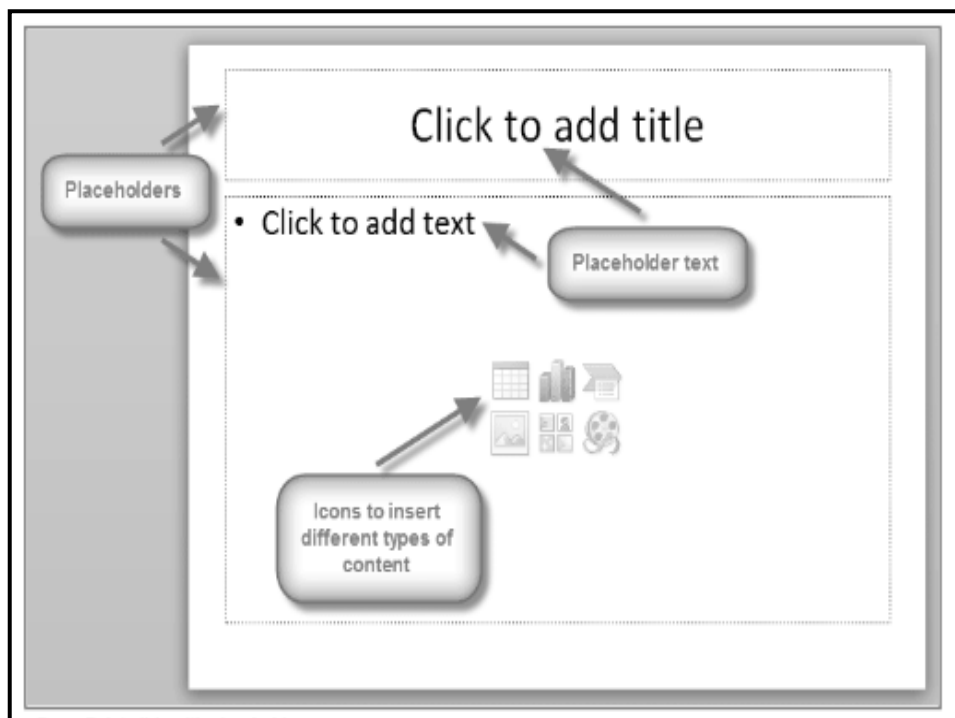
Another way to open an existing Presentation is if you have opened it recently, it may be easier to choose **Recent** from the **File** tab instead of **Open** to search for your Presentation.



Manipulating Slides

Slides contain **placeholders**, which are areas on the slide that are enclosed by dotted borders. Placeholders can contain many different items, including text, pictures, charts, and more. Some placeholders have **placeholder text**, or text that you can replace. They also have **thumbnail-sized icons** that represent specific commands such as Insert Picture, Insert Chart, and Insert Clip Art. In PowerPoint, hover over each icon to see the type of content you can insert in a placeholder.

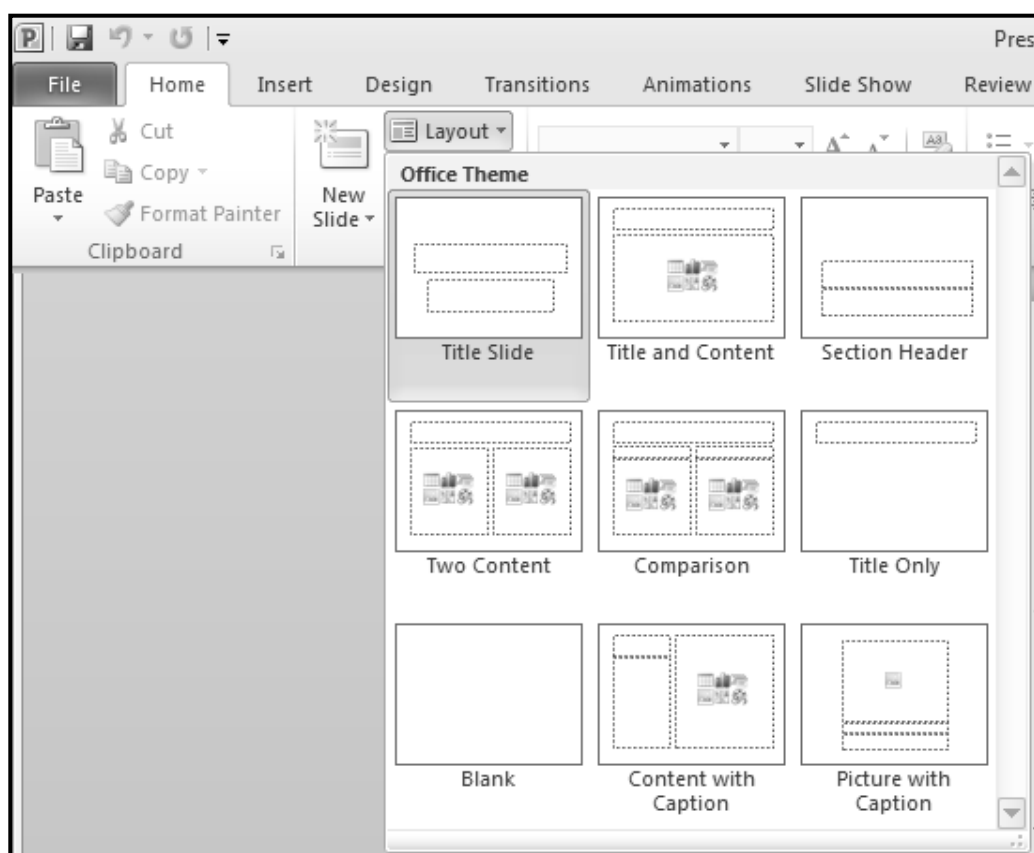
Study the picture below of a PowerPoint Slide.



The PowerPoint Slide

The Slide Lay Outs

The following are slide lay outs that you can use according to the purpose of your Presentation.



The Slide Layout Menu

You can always change the slide layout of your Presentation by choosing the slide you wish to change and going to the slide layout menu as shown above then clicking the desired layout. In doing this, you have changed the current layout of the slide.

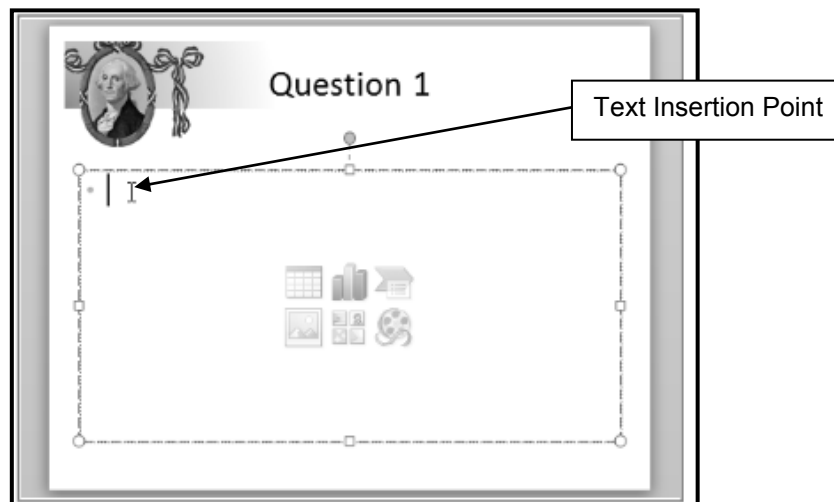
Manipulating Texts in Slides

It is important to review the basic tasks with texts when creating a Presentation. Do the steps below to guide you in this review.

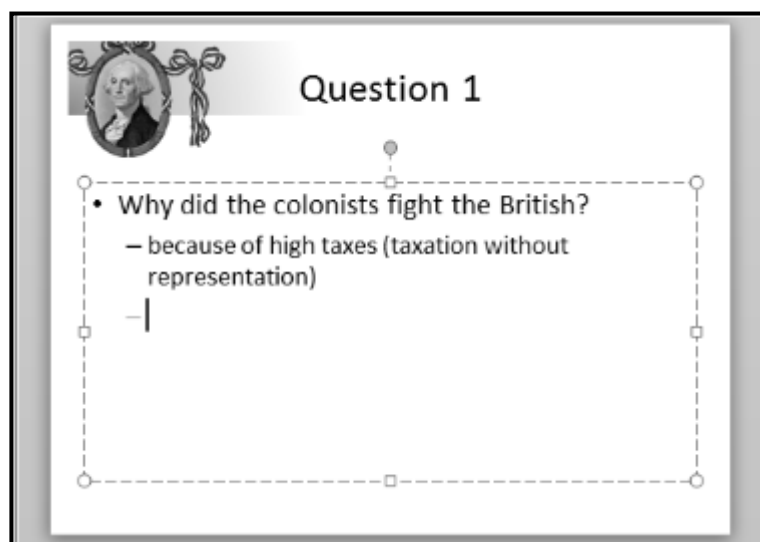
To Insert Text

Follow the instructions below on how to insert text.

1. Click the placeholder or text box where you want to insert text.
2. The **insertion point** appears.



3. Type directly into the placeholder or text box.



Take note that some placeholders automatically format your text in a **bulleted list**. This is because bulleted lists are so frequently used in PowerPoint. To remove the bullets, deselect the **Bullets** command in the **Paragraph** group on the **Home** tab.

To Delete Text

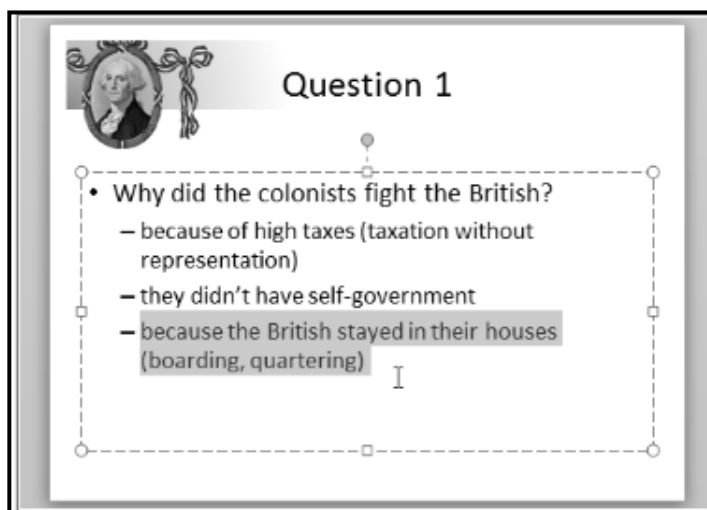
Follow the instructions below on how to delete text.

1. Place the insertion point next to the text you wish to delete.
2. Press the **Backspace** key on your keyboard to delete text to the left of the insertion point.
3. Press the **Delete** key on your keyboard to delete text to the right of the insertion point.

To Select Text

Follow the instructions below on how to select text.

1. Place the insertion point next to the text you wish to select.
2. Click the mouse button, and, while holding it down, drag the mouse over the text.
3. Release the mouse. The text will be selected. A highlighted box will appear over the selected text.



Take note that you can also cut and paste text in slides. The step is very similar in cutting and pasting text in a Word document. The difference lies only on where you will paste it, that is, on the slides.

Saving and Printing Slides

After you have done all to create your Presentation, it would be proper to refresh now how to save and print your Presentation.

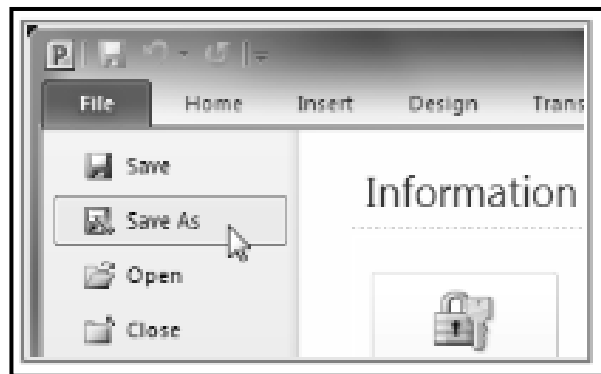
Be guided with the following steps below.

To Use the Save As Command

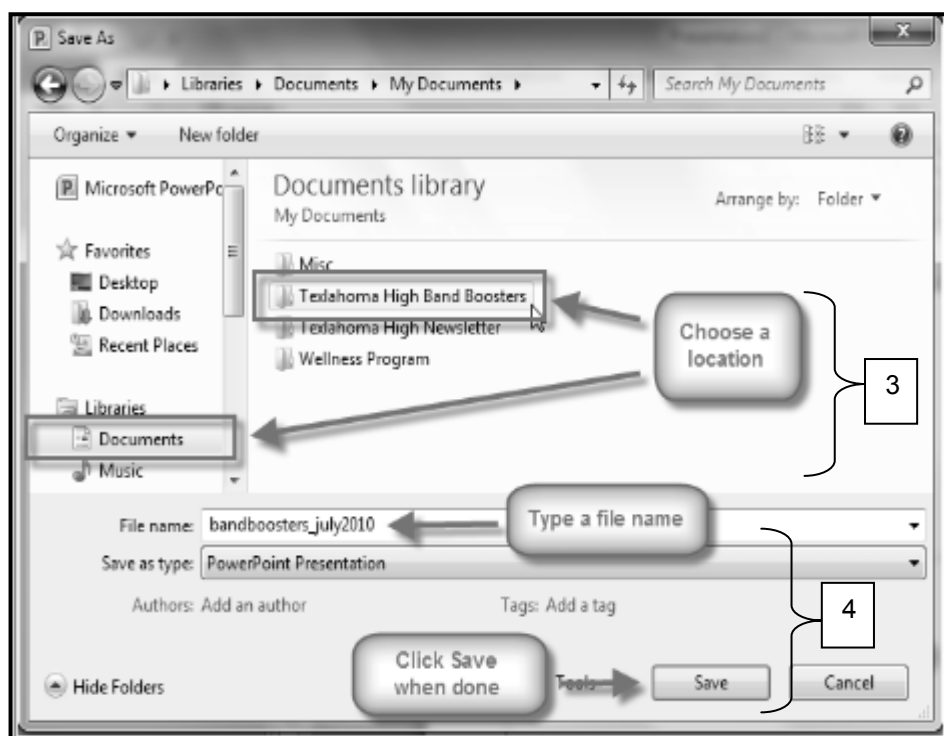
Save As allows you to choose a name and location for your presentation. It is useful if you have first created a Presentation or if you want to save a different version of a Presentation while keeping the original. Follow the steps below on how to use the Save As command.

1. Click the **File** tab.

2. Select **Save As**.



3. The **Save As** dialog box will appear. Select the location where you wish to save the Presentation.
4. Enter a name for the Presentation and click **Save**.



To Use the Save Command

Follow the instructions below on how to use the Save command.

1. Click the **Save** command on the **Quick Access Toolbar**.



2. The presentation will be saved in its current location with the same file name. If you are saving for the first time and select **Save**, the **Save As** dialog box will appear.

Printing

Remember that in previous versions of PowerPoint, there was a **Print Preview** option that allowed you to see exactly what the presentation looked like before printing it. You may have noticed that this feature seems to be gone in PowerPoint 2010. It actually has not disappeared; it's just being combined with the **Print** window to create the **Print pane**, which is located in Backstage View.

To View the Print Pane

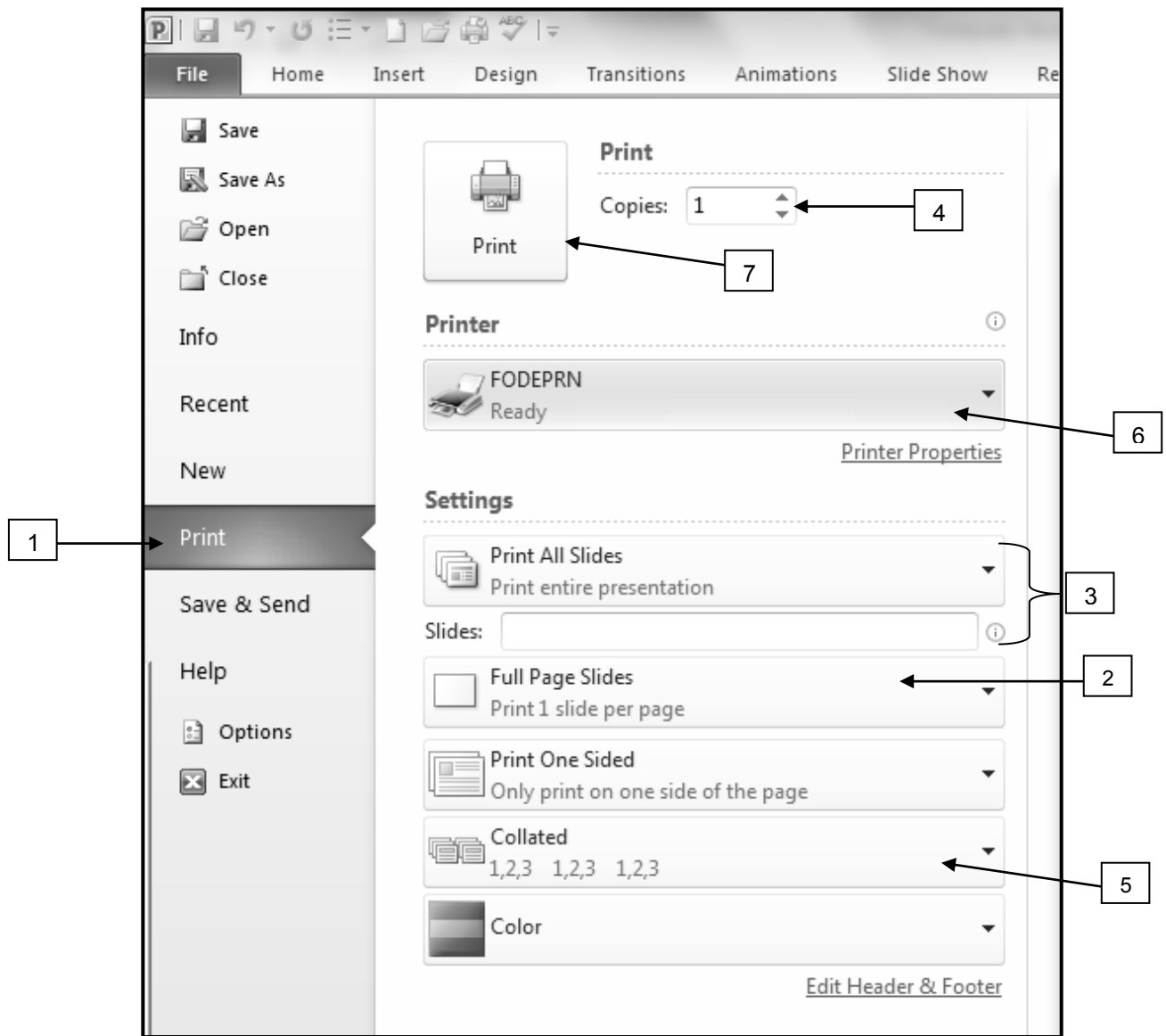
Follow the instructions below on how to view using the print pane.

1. Click the **File** tab to go to **Backstage view**.
2. Select **Print**. The Print pane appears, with the print settings on the left and the **Preview** on the right.

To Print

Follow the instructions below on how to print.

1. Go to the **Print** pane.
2. Determine and choose how you want the slides to appear on the page.
3. If you only want to print certain pages, you can type a **range** of pages. Otherwise, select **Print All Pages**.
4. Select the **number of copies**.
5. Check the **Collate** box if you are printing multiple copies of a multi-page document.
6. Select a **printer** from the drop-down list.
7. Click the **Print** button.



Activity 1: Follow the given instructions.

1. Open the PowerPoint program and a new slide will appear.



2. Click in the space labelled —Click to add title—. Type the name of your favourite style of music. E.g. Rock, Reggae or R&B.

3. Click in the space labelled "Click to add subtitle". Type your name, press [Enter] and then type the name of your class. E.g. "Grade 10".
4. Save the file as "My Music Presentation.ppt" in your C drive.

Thank you for completing this activity. Now, you may go to the end of this lesson to check your answers. Make sure you do the necessary corrections before moving on to the next part of this lesson.

Summary



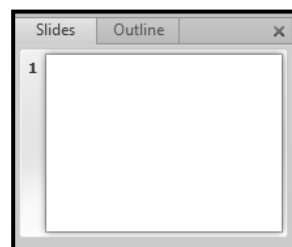
You have come to the end of Lesson 21. In this lesson, you learnt to identify the program used for Presentation, learnt how to open and save a PowerPoint file and learnt the importance of PowerPoint presentation.

NOW DO PRACTICAL EXERCISE 21 ON THE NEXT PAGE.

Practical Exercise 21

A. Create a Presentation by following the given steps below.

1. Open a New PowerPoint Presentation. Click on File tab and select New.
2. Select Blank Presentation.
3. Return to the File tab and choose Save As.
4. Name your Presentation as Practical Exercise 21 so you can find it again.
5. Once it is saved then look on the top of the screen – you should see your Presentation with the name you gave it.
6. On the first slide put in Hohola Public Library where it says “Click to add title”.
7. Click where it says “Click to add subtitle” and type Created by “Your Name”.
8. You are on the Home tab. Now find where you add a New Slide (but not the little arrow, just the image of New Slide ).
9. Your second slide will now allow you to add another title – click and write Hohola Library Hours.
10. Still in the second slide, this or type this where you see Click to add text:
Monday - Thursday 10:00 a.m. - 9:00 p.m.
Friday 10:00 a.m. - 6:00 p.m.
Saturday 10:00 a.m. - 5:00 p.m.
Sunday 1:00 p.m. - 5:00 p.m.
11. Switch to Outline View by clicking on the left sidebar.
12. Insert a new slide as you did before (remember you are entering text into the left hand outline pane).
13. Type Library Services for the title and press the Enter key.
14. Press the Tab key on your keyboard to get the first bullet and type
Programs for all ages
Computer Classes
Local History Archive
Research and Reference assistance



15. Go to File tab and Save your Presentation.

CHECK YOUR WORK. ANSWERS ARE AT THE END OF TOPIC 4.

Answers to Activity

Your answer must look something like the slide below.

- 1.



Lesson 22: Adding Basics to the Presentation



Welcome to Lesson 22 of Unit 1. In Lesson 21, you learnt about the the program used for Presentation, how to open and save a PowerPoint file and the importance of PowerPoint Presentation.

In this lesson you will have a good review about adding basics to your Presentation.

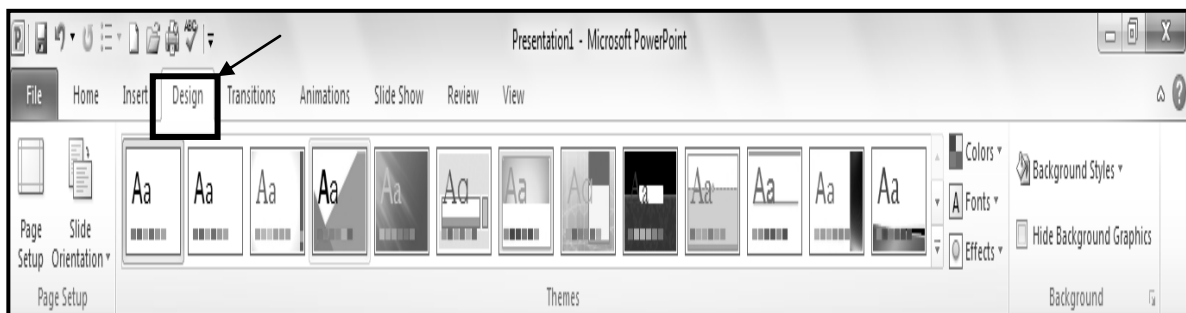


Your Aims:

- use a design template
- insert graphics, clip arts and pictures to the Presentation
- use word art in the Presentation
- insert sound and video file to the Presentation
- add custom animation and transition to the Presentation

The Design Template

In Microsoft 2010, PowerPoint Design Templates can be found in Design Tab where all preset slide design themes are available for your use.

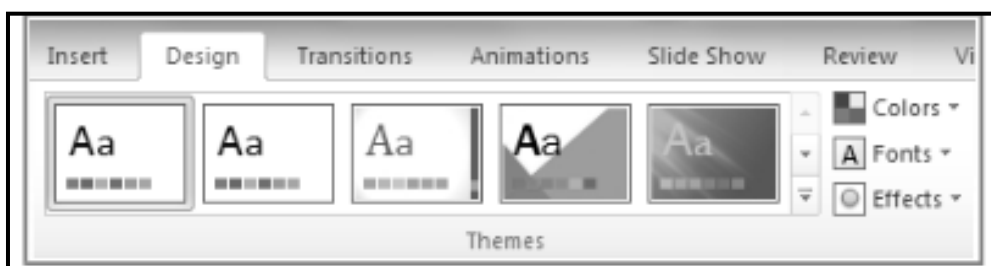


Let us go over the following steps in applying a theme for your Presentation.

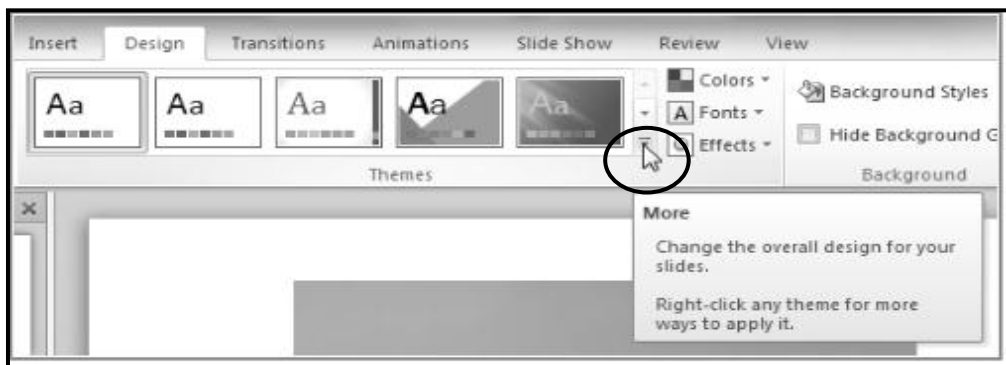
To Apply a Theme

Follow the instructions below on how to apply a theme.

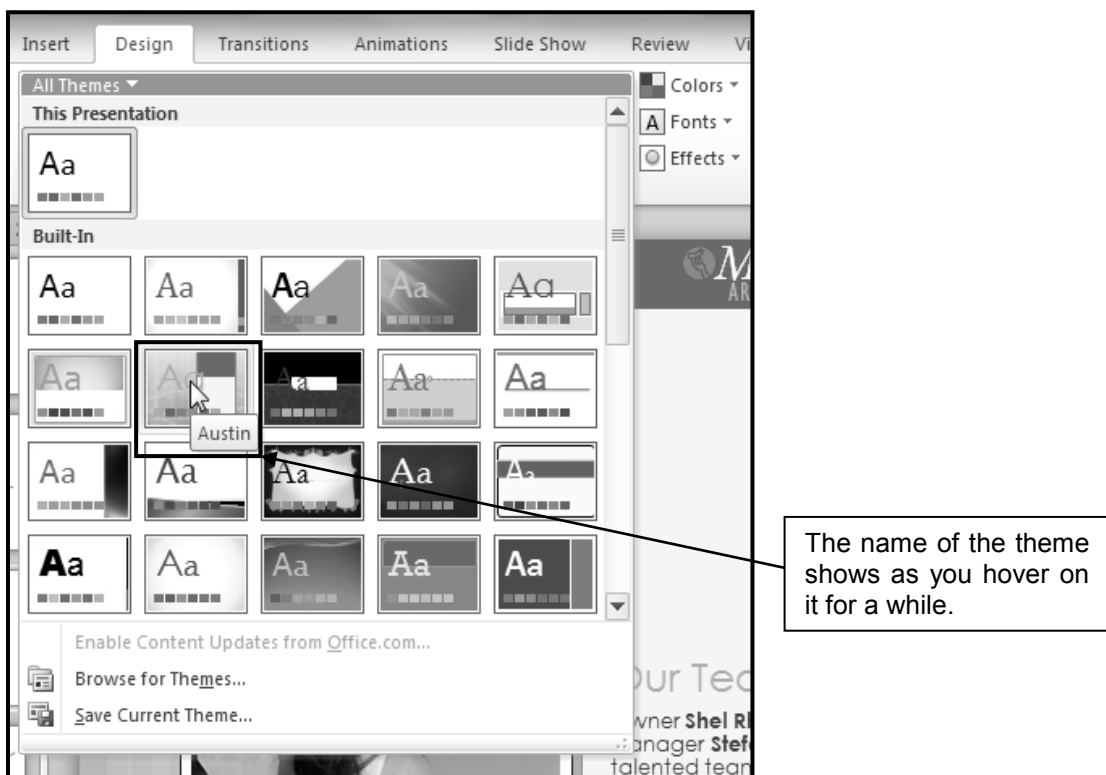
1. Go to the **Design** tab.
2. Locate the **Themes** group. Each image represents a theme.



- Click the drop-down arrow to access more themes.



- Click over a theme to see a **live preview** of it in the presentation. The name of the theme will appear as you click on it and stay there for a while.



- Once you have decided which theme to use, you can click on it to apply the theme to your presentation.

Graphics, Clip Arts And Pictures

Adding images to your Presentations makes them more interesting and engaging. This will enable your audience to relate more to what you are communicating with them.

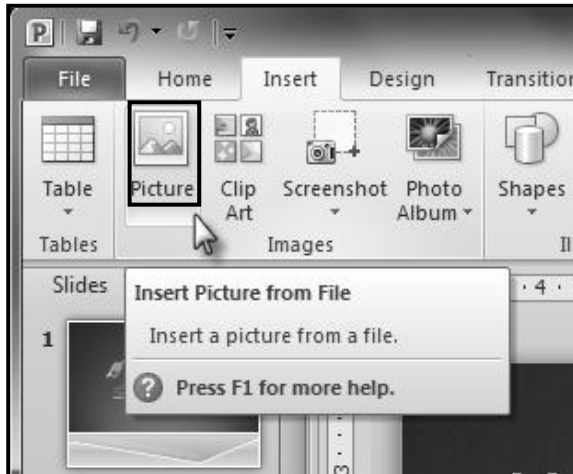
Pictures, clip art and screenshots can be inserted into PowerPoint to help you effectively communicate your ideas to your audience.

The following steps will guide you how to insert pictures, clip art and screenshots into your Presentation.

To Insert an Image From a File

Follow the instructions below on how to insert an image from a file.

1. Select the **Insert** tab.
2. Click the **Picture** command in the **Images** group. The Insert Picture dialog box appears.



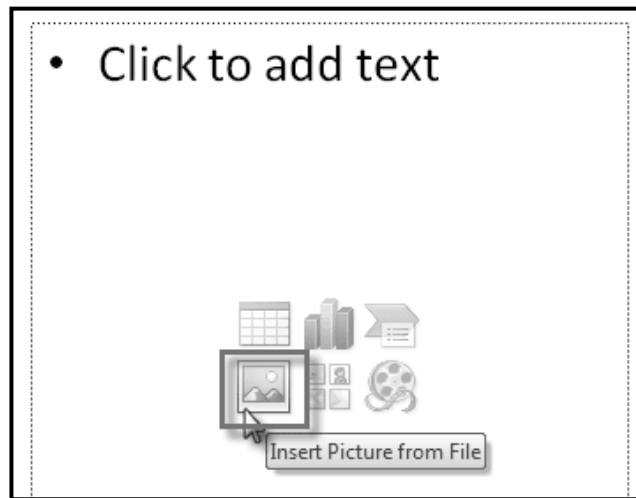
3. Select the desired image file and click **Insert**.



4. The picture will appear in your slide.



Another way of inserting pictures is through the **Insert Picture File** command from the placeholder of your slide. Once you click on it, it will prompt you to locate the desired picture to be inserted. Look at the picture below displaying the Insert Picture File command.



Clip Art can likewise be inserted in your Presentation. Study the following steps below.

To Insert Clip Art

Follow the instructions below on how to insert a Clip Art.

1. Review the results from a clip art search in the **Clip Art** pane.
2. Select the desired image.



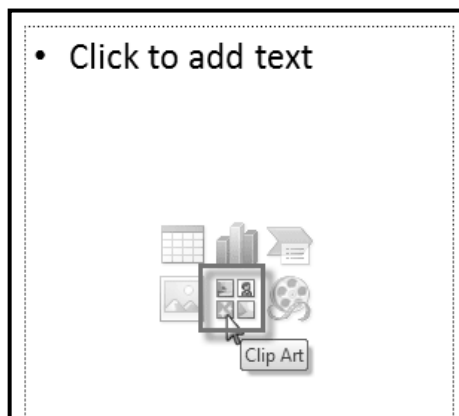
3. The clip art will appear in your slide.



Just like the previous lesson on Inserting Pictures, Clip Art can also be inserted by using the **Insert Picture File** command found in the slide place holder.

Using the same command, other graphics can be inserted like the Charts, Table, Smart Art Graphics and Media Clip by just clicking on the chosen graphics and following the prompts to find the location then clicking **Insert** to add it to your slide.

Check the following pictures below to further illustrate what has been discussed.



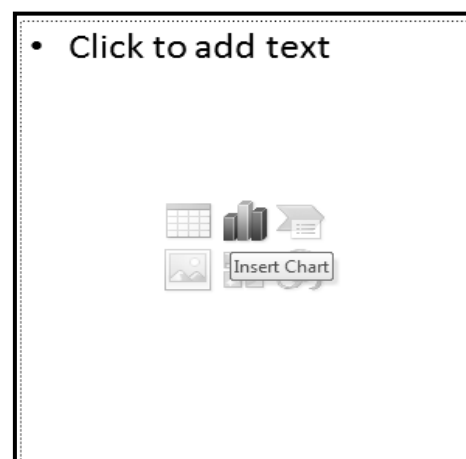
Insert Clip Art



Insert Media Clip



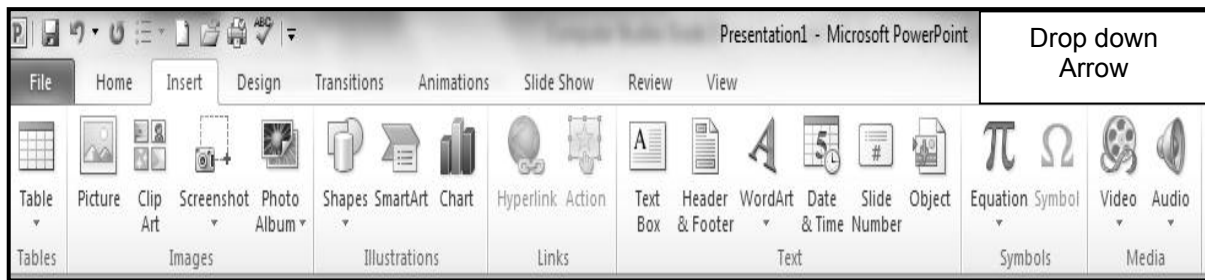
Insert Table



Insert Chart

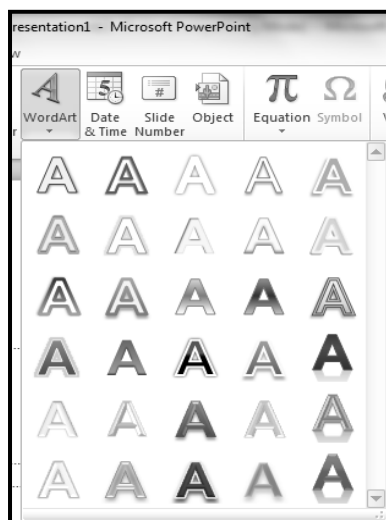
Word Art

The use of Word Art in Microsoft 2010 PowerPoint is found under the Insert tab.

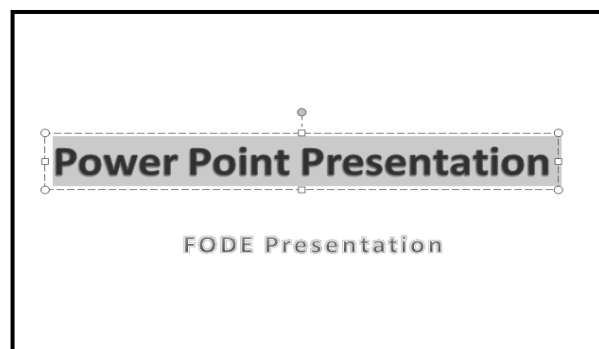


You can click the drop down arrow to view the different Word Art Styles. In addition, after choosing the word Art style, you can now type your text and also apply text effects to further modify your text according to your purpose.

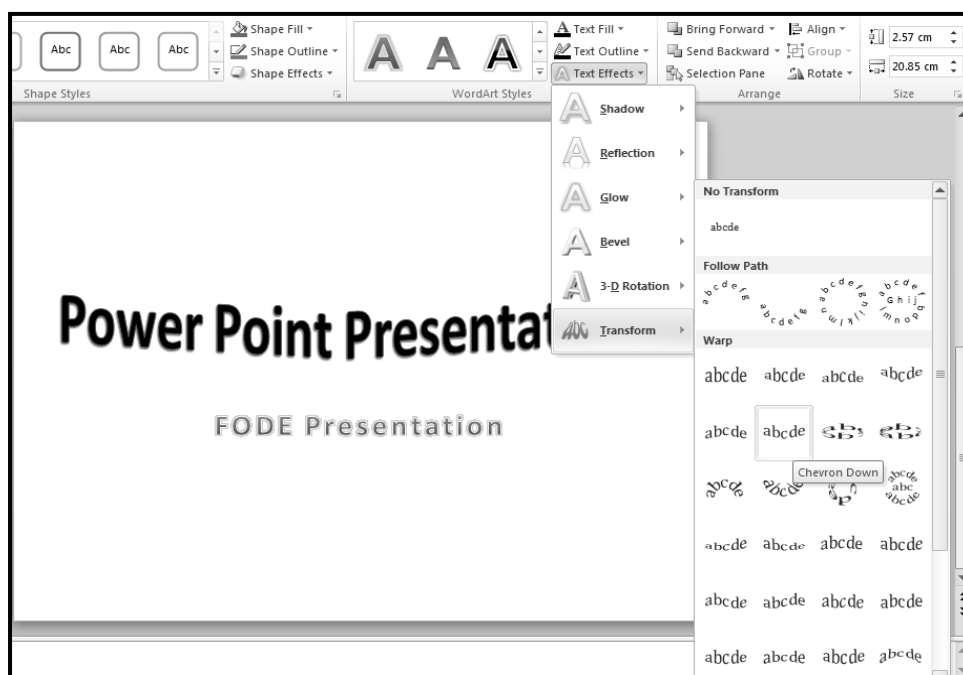
Study the following pictures below.



Word Art Styles



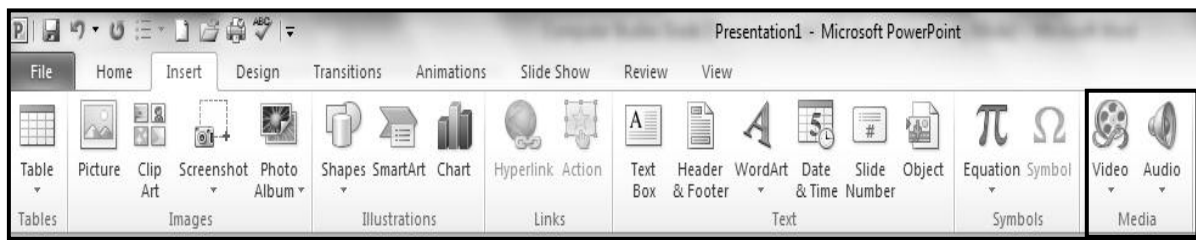
Slide with Word Art Application



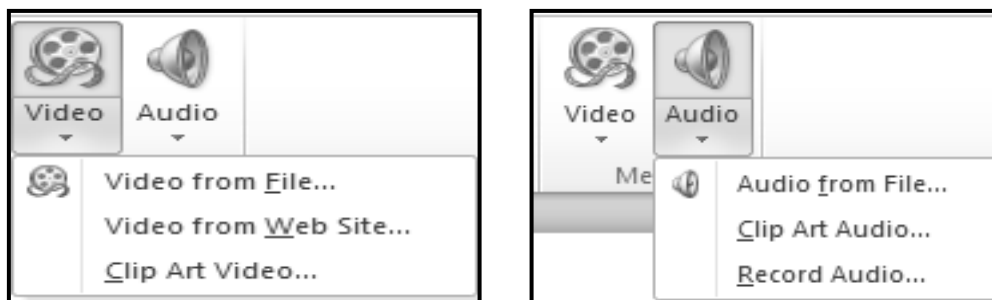
Applying Text Effects to Word Art

Sound And Video File

Similarly, inserting a sound and video file to your Presentation can be done by using the Insert tab.



You can also click the drop down arrow to select available media on video and sound stored in different locations in your computer.

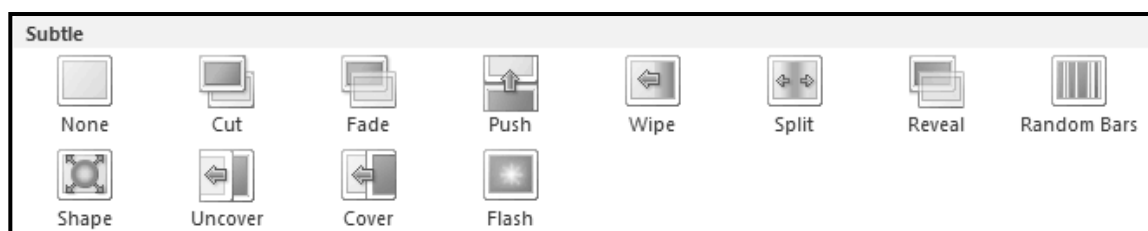


The Drop Down Arrow for Video and Audio Insert

Transitions and Animations

You can apply different transitions to some or all of your slides to give your presentation a polished, professional look. There are three categories of unique transitions to choose from, all of which can be found on the Transitions tab:

1. Subtle or Slight Transitions



2. Exciting or Strong Transitions



3. Dynamic Content (strong transitions that affect only the content, such as text or images)



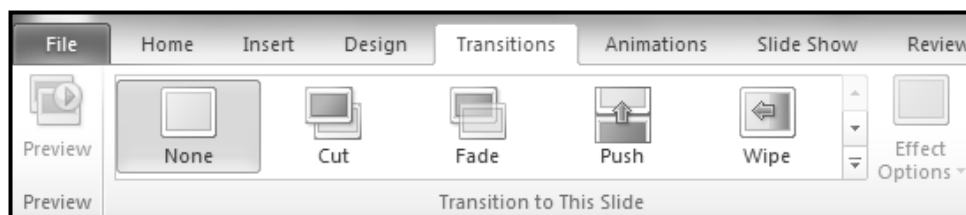
Choosing the appropriate Transition will give extra emphasis and impact to your Presentation but doing otherwise will bring distraction instead of attention to the message that you would like your audience to understand.

Follow the steps below on how to add Transition to your Presentation.

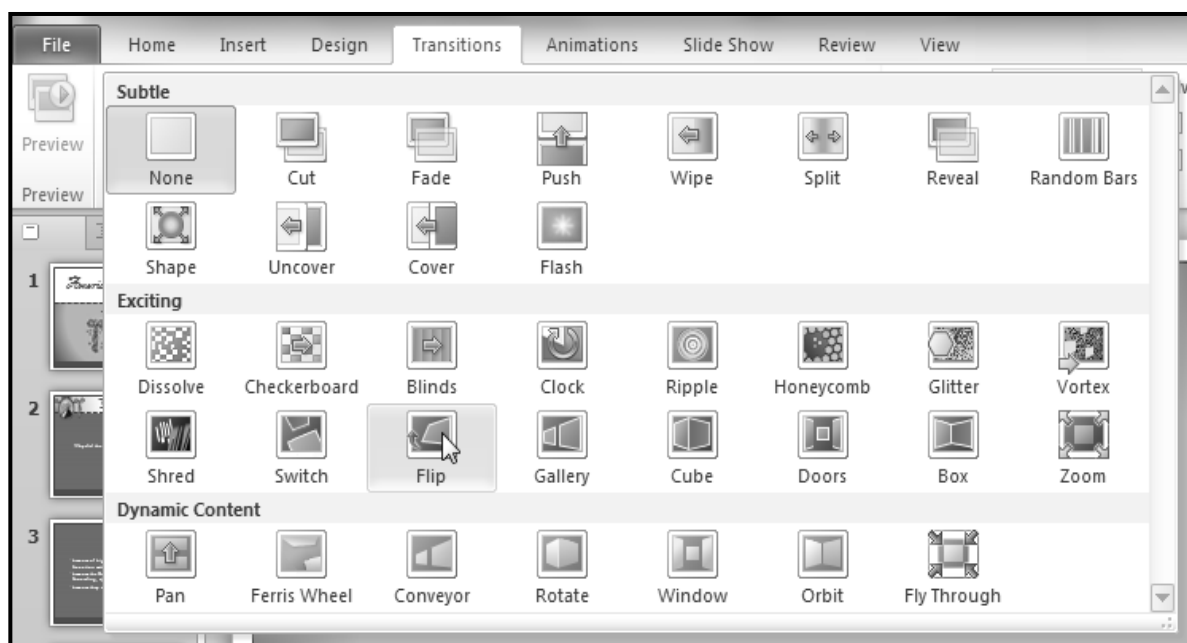
To Apply a Transition

Follow the instructions below on how to apply a transition.

1. Select the **slide** you wish to modify.
2. Click the **Transitions** tab.
3. Locate the **Transition to This Slide** group. By default, **None** is applied to each slide.



4. Click the **More** drop-down arrow to display all the transitions.
5. Click a **transition** to apply it to the selected slide. This will automatically preview the transition as well.



To Apply an Animation

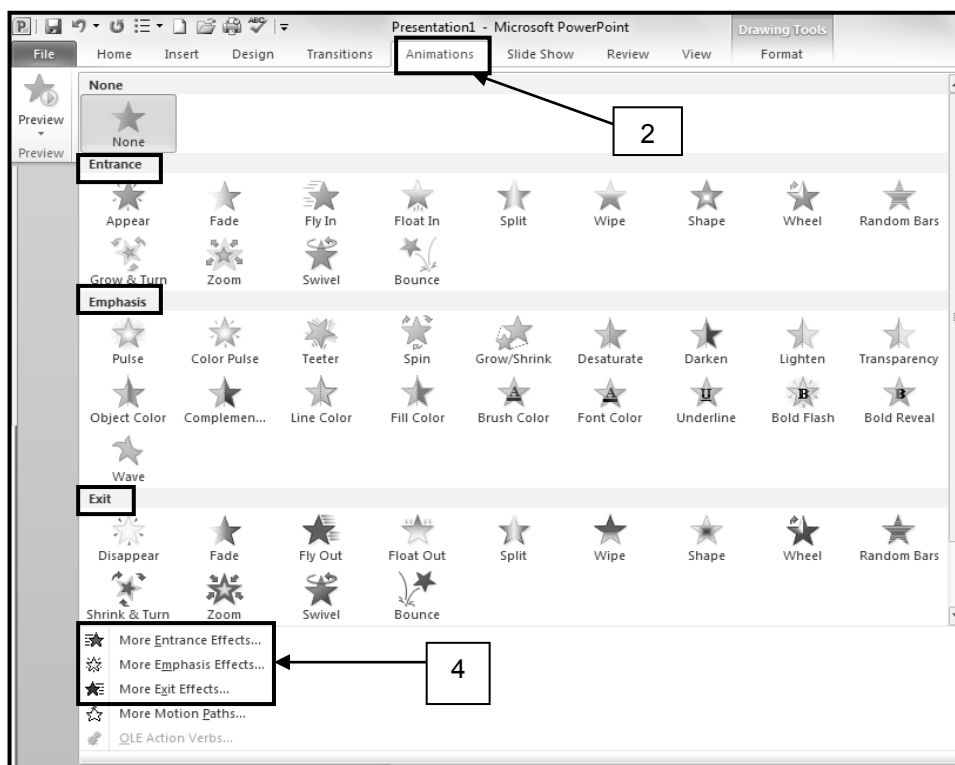
On a similar note, animations are added to make the inserted text, graphics and pictures more interactive as they will have the effect of moving about and around when viewed as a slide show. These animations must be properly chosen as like of adding transitions to slides, the main purpose here is to make your target audience understand and not be confused by these.

Animations have the following effects: for **Entrance**, for **Emphasis** and for **Exit**. You must appropriately choose the best animation to suit your purpose.

To Apply an Animation

Follow the steps below on how to add Animation to your Presentation.

1. Select the **slide** you wish to modify.
2. Click the **Animations** tab.
3. Locate the **Animation** you have chosen By default: **None** is applied to each text, picture or graphics.



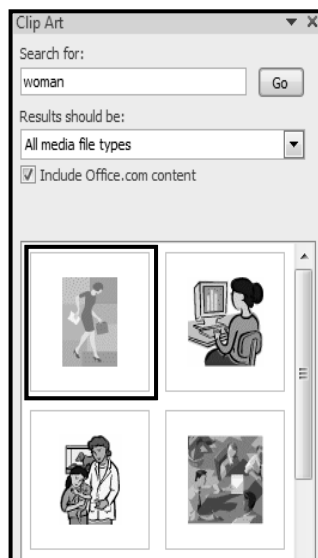
4. Click the **More** drop-down arrow to display all the animations.
5. Click an **animation** to apply it to the selected text, picture or graphics. This will automatically preview the animation as well.



Activity 1: Follow the given instructions below.

1. Open a New PowerPoint Presentation. Click on File tab and select New.
2. Select Blank Presentation.
3. Return to the File tab and choose Save As.
4. Name your Presentation as **Activity 1** so you can find it again.

5. Once it is saved then look on the top of the screen – you should see your Presentation with the name you gave it.
6. On the first slide put in KNOWING YOUR PRESENTATION where it says –Click to add title”. Apply Word Art to this title.
7. Click where it says –Click to add subtitle” and type –AGuide to Create Presentation”
8. You are on the Home tab, now find where you add a New Slide (Choose Two Content).
9. Your second slide will now allow you to add another title – click and write –Ds’ and Don’t’s in PowerPoint”.
10. Still in the second slide, on the right placeholder type this where you see Click to add text: –D’s in PowerPoint”
11. Still in the second slide, on the left placeholder insert a Clip Art. Type woman on the search box.



12. Go to File tab and Save your Presentation.

Thank you for completing this activity. Now, you may go to the end of this lesson to check your answer. Make sure you do the necessary corrections before moving on to the next part of this lesson.



Summary

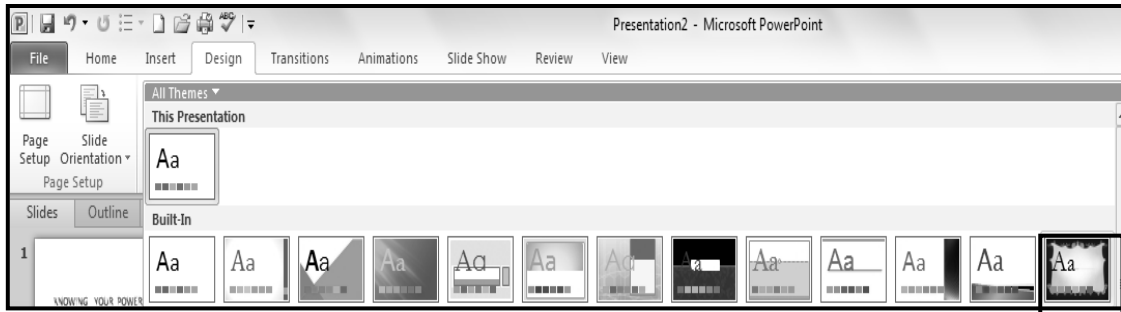
You have come to the end of Lesson 22. In this lesson, you learnt about a good review on using a design template, inserting graphics, clip arts, pictures, Word Art, sound and video file and adding custom animation and transition to the Presentation.

NOW DO PRACTICE EXERCISE 22 ON THE NEXT PAGE.

Practical Exercise 22

A. Using the PowerPoint file Activity 1, do the following .

1. Apply this slide Transition Couture to both slides.



2. Insert a new Slide with the lay out Two Contents.
3. Your third slide will now allow you to add another title – click and write —Ds’ and Don’ts in PowerPoint”.
4. Still in the third slide, on the right placeholder type this where you see Click to add text: —Dn’ts in PowerPoint”
5. Still in the second slide, on the left placeholder insert a Clip Art. Type man on the search box.

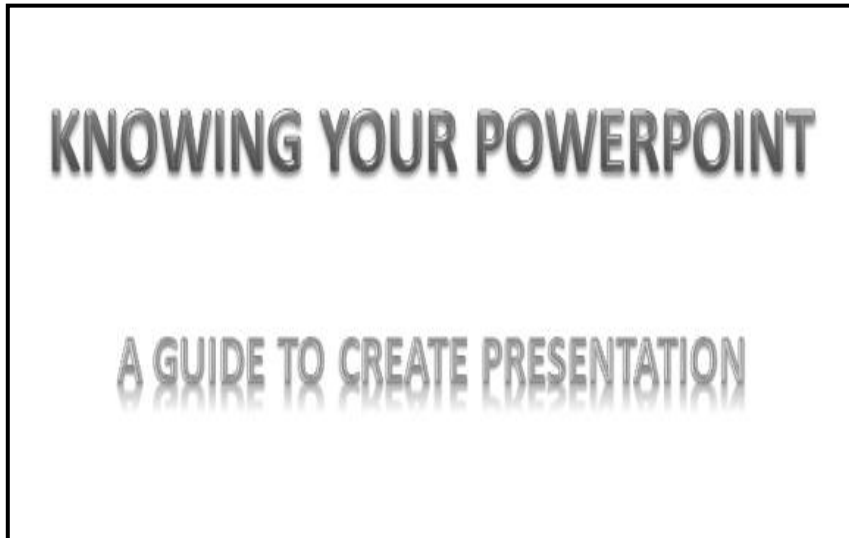


6. Go to File tab and Save your Presentation.

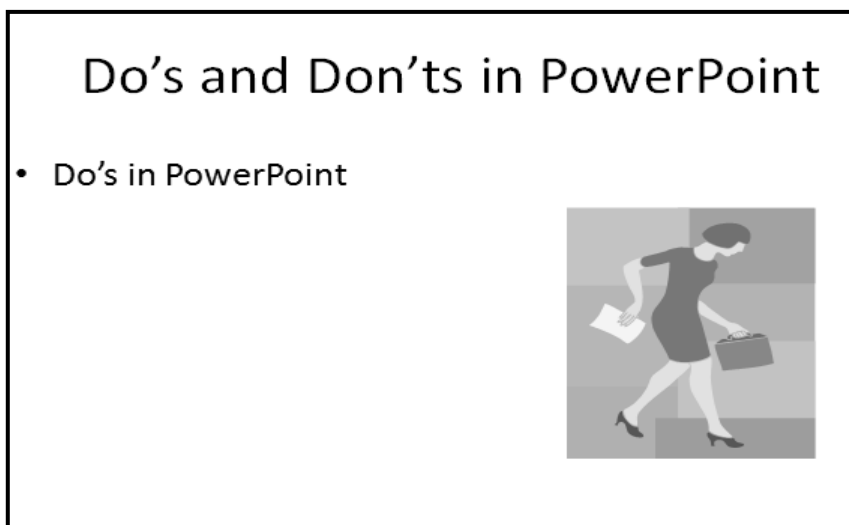
CHECK YOUR WORK. ANSWERS ARE AT THE END OF TOPIC 4.

Answers to Activity

Your answers should look like the following slides below.



Slide 1



Slide 2

Lesson 23: Review on Spreadsheet 1



Welcome to lesson 23 of Unit 1. In Lesson 22, you learnt about the use of a design template, how to insert graphics, clip arts, pictures, sound and video files to the Presentation and add custom animation and transition to the Presentation.

In this lesson you will define the Spreadsheet, identify the program for the Spreadsheet, learn how to open and save a Spreadsheet file, and learn the importance of its use.



Your Aims:

- define Spreadsheet
- identify the program for Spreadsheet
- identify the steps on how to open a Spreadsheet file
- identify the steps on how to save a Spreadsheet file
- identify the importance of using Spreadsheet

Spreadsheet

First, let us define Spreadsheet. A **Spreadsheet** is a way to set up relationships between numbers.

Now let us try to identify the program for our Spreadsheet. The very first Spreadsheet was the VisiCalc, and was created for the Apple II. Lotus on the other hand, was the first company to bring Spreadsheet for the IBM PC compatible with Lotus 1-2-3.

Microsoft Excel (MS Excel) 2010 is the newest version of Microsoft Office's worksheet (spreadsheet) program. It is a powerful spreadsheet program that allows you to organize and graph data, complete calculations, make decisions, develop reports, publish data on the Web, and access real time data from Web sites. Excel 2010 takes advantage of a new, results-oriented user interface to make powerful productivity tools easily accessible. If you are worried about capacity, Excel 2010 now accommodates 1 million rows and 16,000 columns.



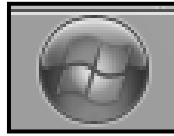
Excel icon

Spreadsheets are often used for business documents such as invoices where numbers and totals are important. A program such as Excel can automatically add up totals for a document such as the invoice shown below.

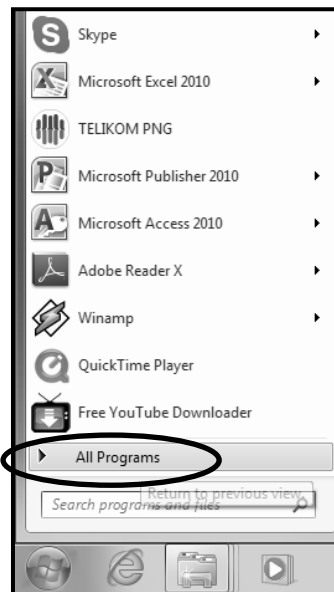
How to Open a Spreadsheet File

Follow the steps below on how to open a Spreadsheet file.

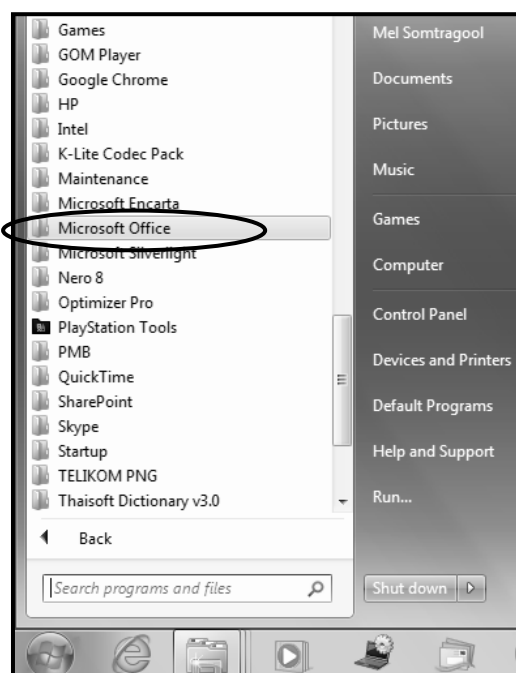
1. Click the **Start** button.



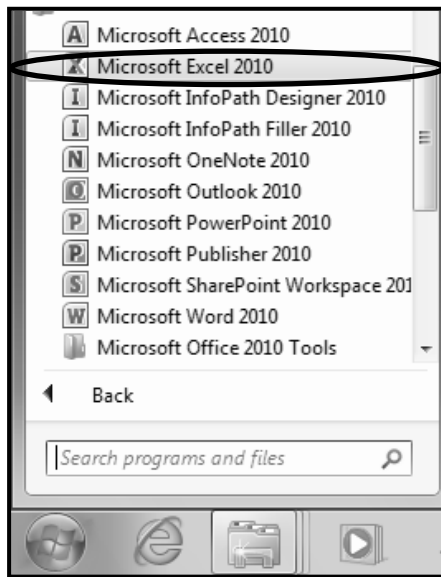
2. Click **All Programs**.



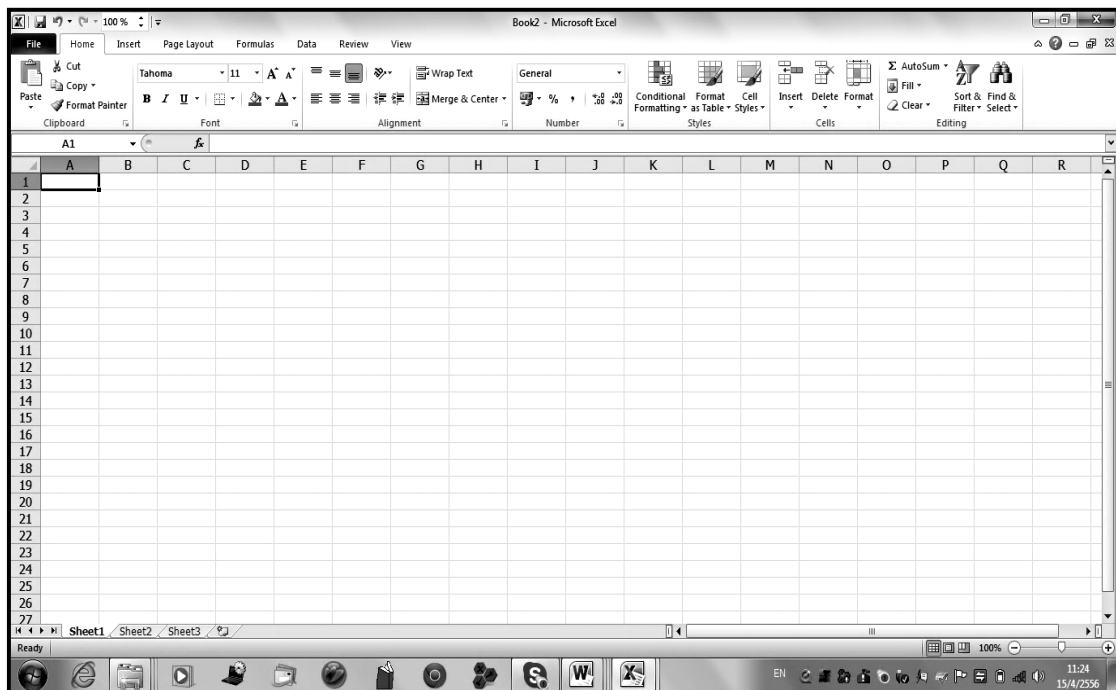
3. Click **MS Office** folder.



4. Click **Microsoft Excel 2010**.



5. After clicking the mouse or **Enter** key, the Microsoft Excel 2010 environment will appear.



The Microsoft Excel 2010 Environment

How to Save a Spreadsheet File

There are two ways to Save your file into your Spreadsheet. Follow the steps below on how to save a Spreadsheet file.

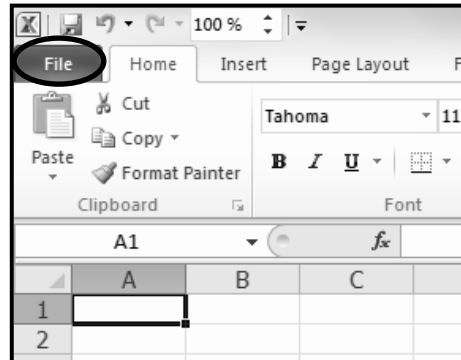
1. **Save As** – a command that is used when to save a new file for the first time or save an existing file with a different name.
2. **Save** – a command that is used to save a file that has had changes made to it. If you close the workbook without saving then any changes made will be lost.

How to Save a New Workbook

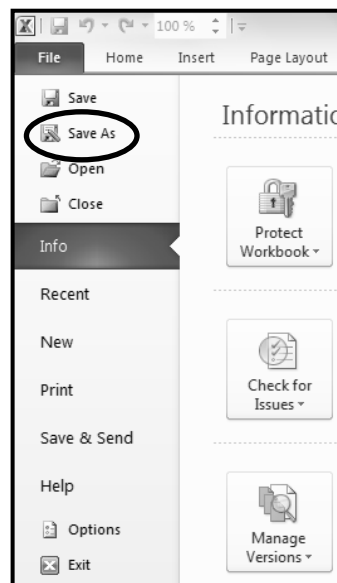
The following steps below will assist you in knowing how to save a new Excel Workbook.

The Save As Command

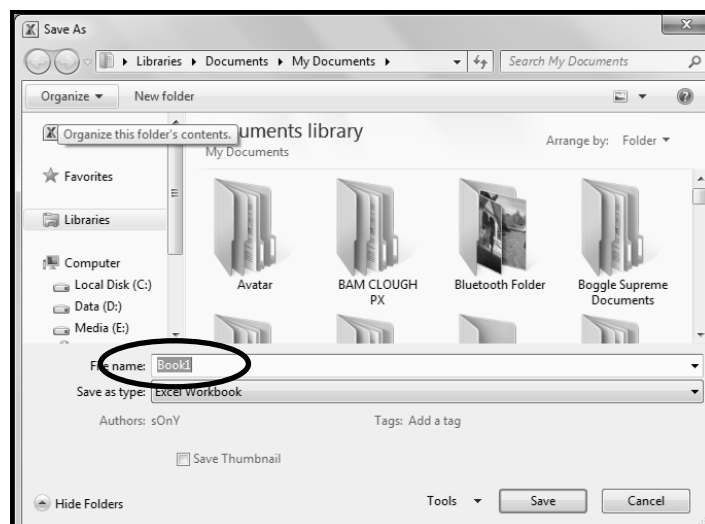
1. Choose **File** from the menu bar.



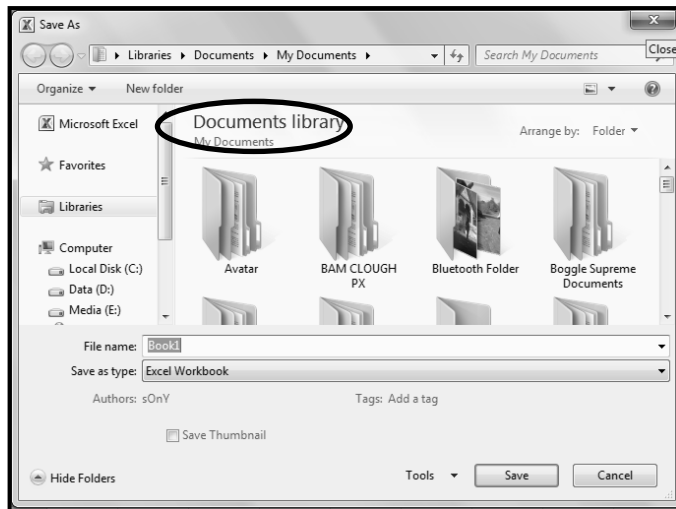
2. Click **Save As** with your mouse. Choose the **Save As** command when saving an Excel for the first time.



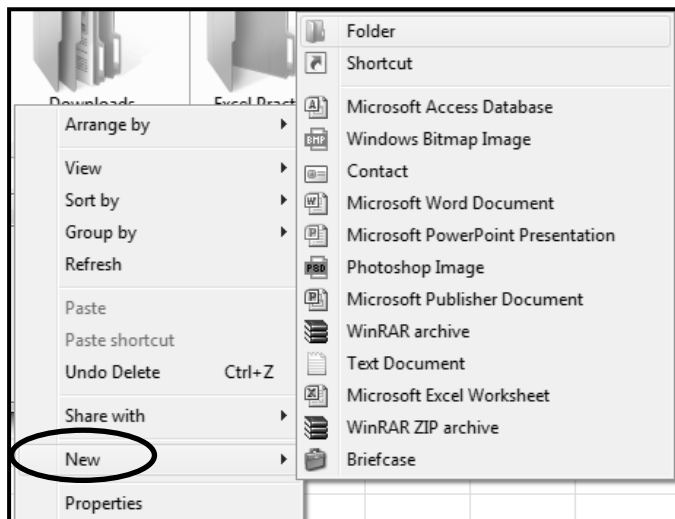
3. The **Save As** command will appear, and will ask for the new filename. Type a file name.



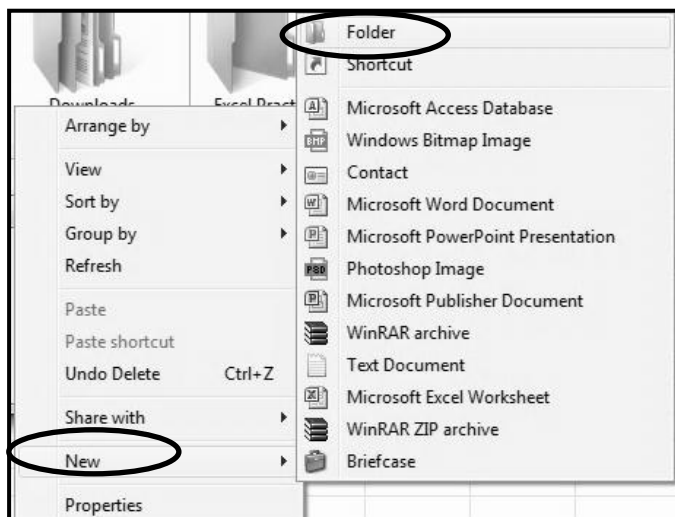
4. Decide where the file should be saved either in your flash drive or in **My Documents**.



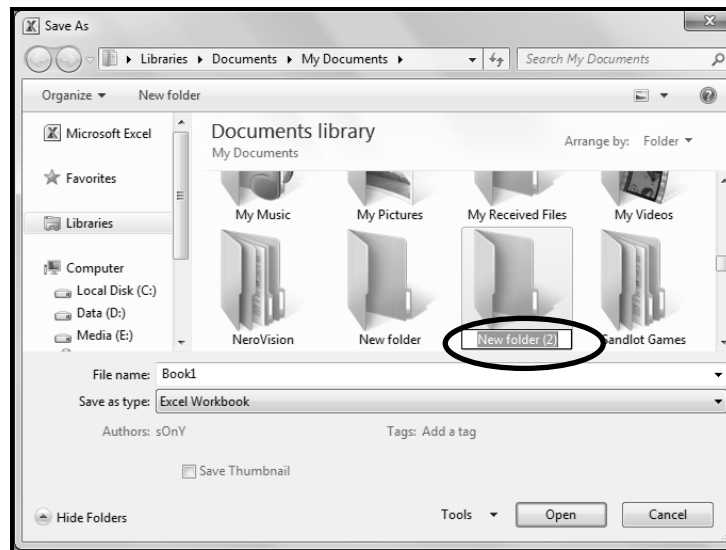
5. You can also create a new folder from your documents by clicking the right button of your mouse and choose **New**.



6. After clicking **New**, it will show you the next icons from the new command. Drag your mouse to the topmost which is the **Folder**.



7. Click the right button of your mouse after choosing a Folder.



8. Start typing the filename from the Save as command.

The Save Command

Follow the step below on how to use the Save command.

1. Click the **Save** command from the Ribbon.



The Importance of Spreadsheet

Spreadsheet has evolved to be very useful to man. Spreadsheet provides structure and organization for data and often makes calculations, it is commonly used in the business and scientific fields, in some industries Spreadsheet programs are used heavily in the financial sector to keep track of numerical data, Spreadsheet is the —optimal— solution to problems when it comes to numbers.



Activity 1: Follow the given instructions.

A. Answer each given question.

1. Define Spreadsheet.

2. State the importance of Spreadsheet.

3. Differentiate between Save As and Save command.

B. List down the Steps in saving a spreadsheet using the Save As command.

1.

2.

3.

4.

5.

6.

7.

8.

Thank you for completing this activity. Now, you may go to the end of this lesson to check your answer. Make sure you do the necessary corrections before moving on to the next part of this lesson.



Summary

You have come to the end of Lesson 23. In this lesson you defined, opened, saved and identified the importance of a Spreadsheet.

NOW DO PRACTICAL EXERCISE 23 ON THE NEXT PAGE.

Practical Exercise 23

A. Fill in the blanks with the correct answers.

1. Spreadsheet is a way to set up relationships between _____.
2. Spreadsheet referred to large sheets of lined paper, which were used by people in various businesses to record facts and figures in _____ and _____, and then make calculations based on the information.
3. The very first Spreadsheet was the _____, and was created for the _____.
4. _____ is the newest version of Microsoft Office's worksheet (spreadsheet) program.
5. Excel 2010 now accommodates _____ and _____.

1 million rows	Microsoft Excel 2010	columns
numbers	rows	VisiCalc
16,000 columns	Apple II	

B. Type the following given data and save it.

In Cell A2, type My Shopping Expenses

Cell B4, type ITEMS

Cell C4, type Quantity

Cell D4, type Price

Cell A6, type 1	Cell B6, Earrings	Cell C6, 2 pairs	Cell D6, 80
Cell A7, type 2	Cell B7, Shoes	Cell C7, 1 pair1	Cell D7, 200
Cell A8, type 3	Cell B8, T-shirts	Cell C8, 4 pieces	Cell D8, 250
Cell A9, type 4	Cell 96, Belts	Cell C9, 3 pieces	Cell D9, 300
Cell A10, type5	Cell B10, Blouse	Cell C10, 1 piece	Cell D10, 200
Cell A11, type6	Cell B11, Bag	Cell C11, 1 piece	Cell D11, 450

Do this exercise by following the Save As steps command, save this given data using the filename SHOPPING.

CHECK YOUR WORK. ANSWERS ARE AT THE END OF TOPIC 4.

Answers to Activity

A.

1. **Spreadsheet** is a way to set up relationships between numbers. Spreadsheet referred to large sheets of lined paper, which were used by people in various businesses to record facts and figures in rows and columns, and then make calculations based on the information.
2. Spreadsheet provides structure and organization for data and often makes calculations, it is commonly used in the business and scientific fields, in some industries Spreadsheet programs are used heavily in the financial sector to keep track of numerical data, Spreadsheet is the “optimal” solution to problems when it comes to numbers.
3. **Save As** a command that is used when to save a new file for the first time or save an existing file with a different name **Save** a command that is used to save a file that has had changes made to it. If you close the workbook without saving then any changes made will be lost.

B.

1. Choose **File** from the menu bar.
2. Click **Save As** with your mouse. Choose the **Save As** command when saving an Excel for the first time.
3. The **Save As** command will appear, and will ask for the new filename.
4. Try to decide where the file should be saved either in your flash drive or in **My Documents**.
5. You can also create a new folder from your documents by clicking the right button of your mouse and choose **New**.
6. After clicking **New**, it will show you the next icons from the new command. Drag your mouse to the topmost which is the **Folder**.
7. Click the right button of your mouse after choosing a Folder.
8. Start typing the filename from the Save as command.

Lesson 24: Review on Creating and Formatting Spreadsheet



Welcome to lesson 24 of Unit 1. In Lesson 22 you learnt the definition of Spreadsheet, identify the program for Spreadsheet, identify how to open and save a Spreadsheet file and identify the importance of using Spreadsheet.

In this lesson you will be able to set up rows and columns, enter and edit data, sort data, use simple calculations and format a worksheet



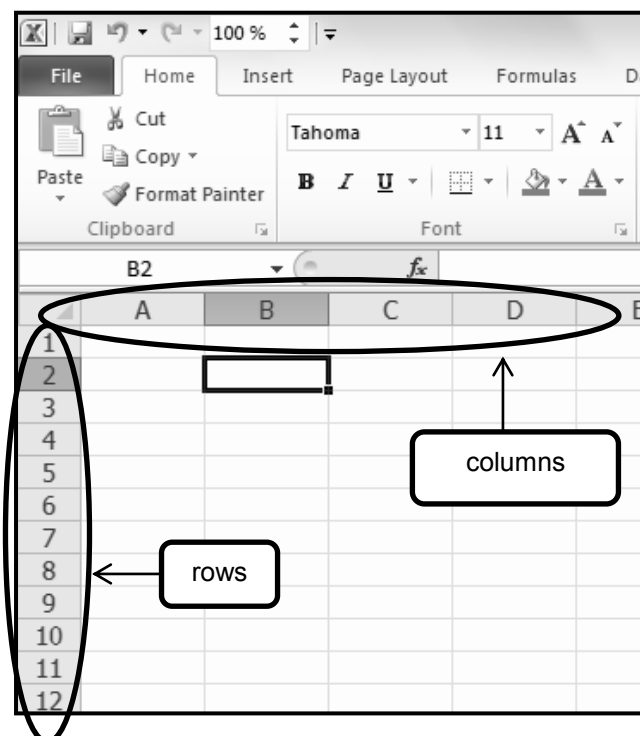
Your Aims:

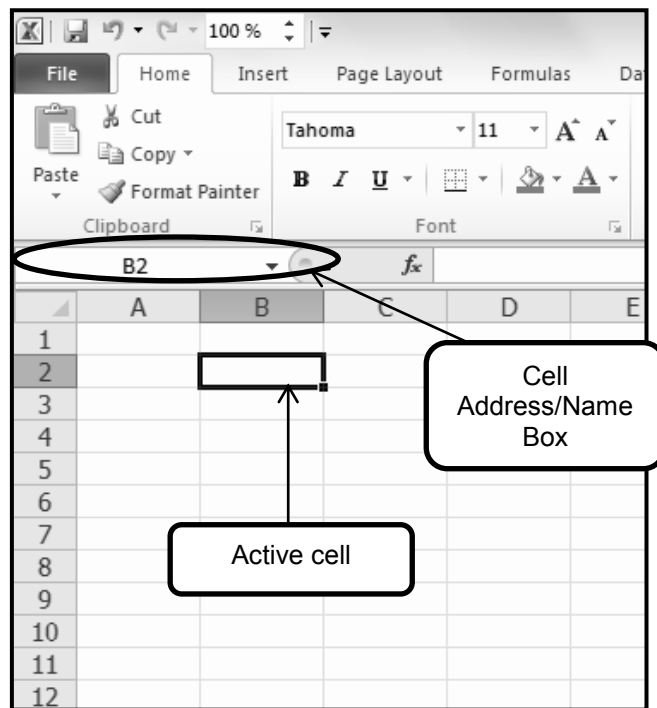
- set up rows and columns
- enter and edit data
- sort data
- use simple calculations
- format a worksheet

Columns and Rows

The horizontal lines of cells that run from side to side are called **rows** and the vertical lines of cells that run up and down are called **columns**.

Each row is numbered down the left hand side and to identify the columns there are letters running along the top. Each cell is referenced by intersection of a row and a column so cell A1 is the cell at the intersection of column A with row 1.



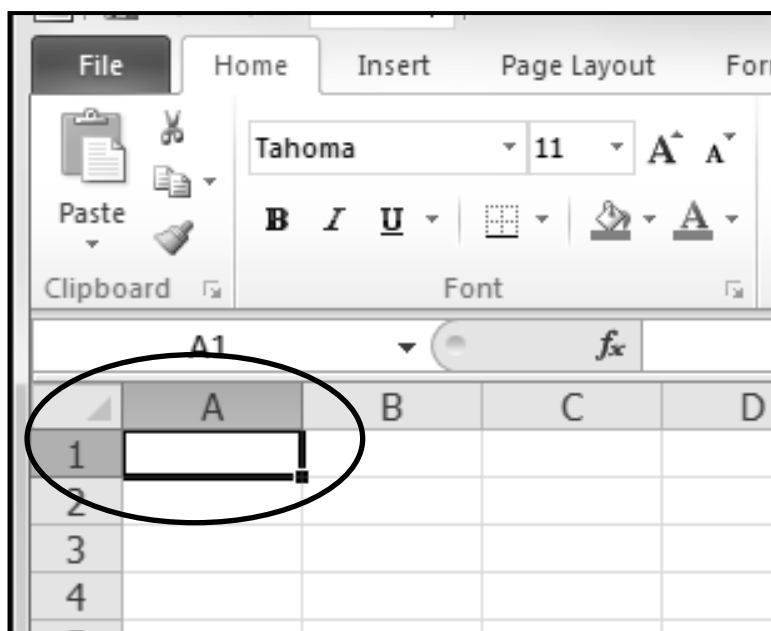


The **Name Box** displays the cell reference of the active cell. It will also show the name assigned to a cell or range of cells. The Name Box can also be used to assign names to cells or ranges of cells.

Selecting a Cell

Follow the steps below on how to select a cell.

1. **Click on a cell** to select. This box will appear in the selected cell. The **column heading** and the **row heading** of the cell are highlighted. The cell will stay selected until you click on another cell in the worksheet.

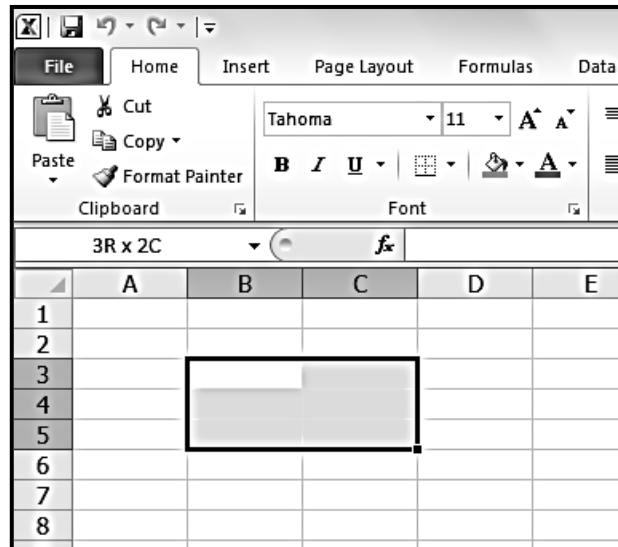


You can also navigate through your worksheet and select a cell by using the **arrow keys** on your keyboard.

Selecting Multiple Cells

Follow the step below on how to select multiple cells.

1. **Click and drag your mouse** until all of the adjoining cells you want are highlighted.



To Enter and Edit Data

Follow the step below on how to enter and edit data.

1. Open a new Excel worksheet.
2. Type the following data in each assigned cell.
 - Type in B2, Number of Students in Class
 - Type in A4, Boys
 - Type in A5, Girls
 - Type in B3, Class A
 - Type in C3, Class B
 - Type in D3, Class C
 - Type in B4, 15
 - Type in B5, 20
 - Type in C4, 18
 - Type in C5, 15
 - Type in D4, 19
 - Type in D5, 19

	A	B	C	D	E
1					
2		Number of Students in Class			
3		Class A	Class B	Class C	
4	Boys	15	18	19	
5	Girls	20	15	19	
6					
7					
8					
9					

This should be your output after typing the data.

Now, edit Class A, Class B, Class C and change it with Grade 9A, Grade 9B and Grade 9C.

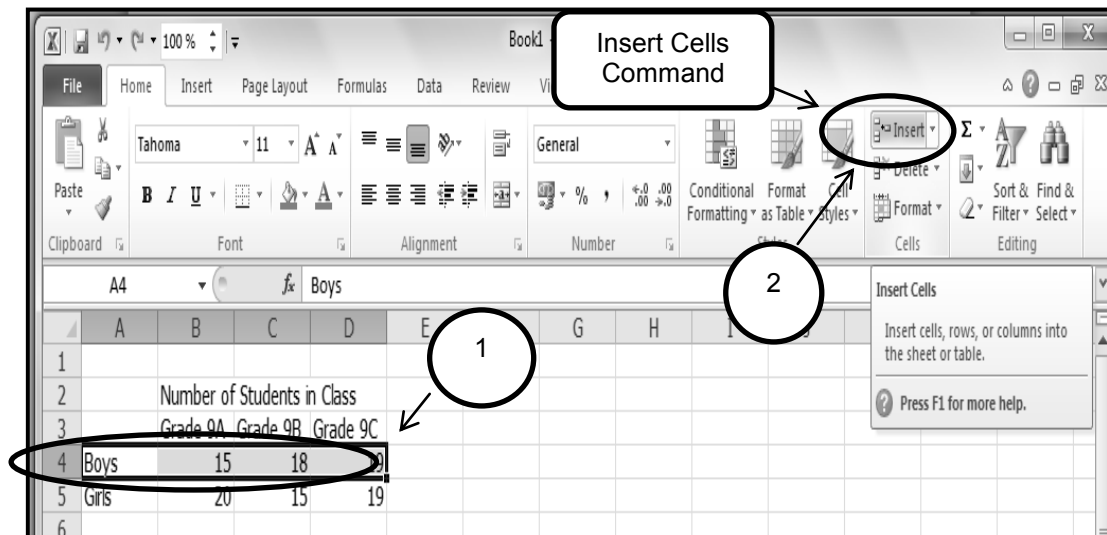
	A	B	C	D	E
1					
2		Number of Students in Class			
3		Grade 9A	Grade 9B	Grade 9C	
4	Boys	15	18	19	
5	Girls	20	15	19	
6					
7					

This should be the result after editing the data.

To Sort Data

Sorting data is an integral part of data analysis where one can put a list of names and numbers then arrange them from A to Z or Z to A and from smallest to largest or largest to smallest respectively. Follow the steps below on how to sort data.

1. Sort the given data above by inserting spaces in between the cell A3, A4 and cell A5.
2. Click and highlight A4, and move your cursor to Insert Cells command.

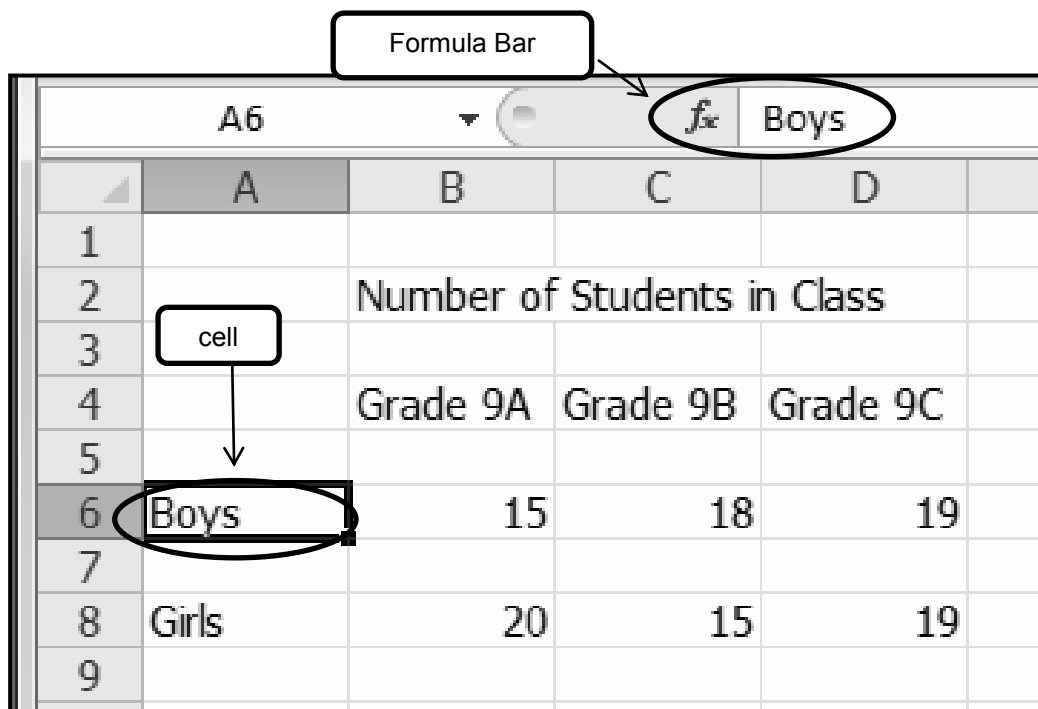


	A	B	C	D
1				
2		Number of Students in Class		
3				
4		Grade 9A	Grade 9B	Grade 9C
5				
6	Boys	15	18	19
7				
8	Girls	20	15	19
9				

This is how it looks after clicking the Insert Cells Command.

Using Simple Calculations

Enter content into the selected cell using your keyboard. The content appears in the **cell** and in the **formula bar**. You can also enter or edit cell content from the formula bar.



First, let us define **Formula**. It is an equation that performs a calculation, it can execute formulas that can add, subtract, multiply and divide.

Excel uses standard operators for equations, such as **plus sign** for addition (+), a **minus sign** for subtraction (-), an **asterisk** for multiplication (*), a **forward dash** for division (/), and a **caret** (^) for exponents.

The key thing to remember when writing formulas for Excel is that all formulas must begin with an **equal sign** (=). This is because the cell contains, or is equal to, the formula and its value.

Creating a Simple Formula

Follow the steps below on how to create a simple formula.

1. Select the cell where the answer will appear. For example: You want your answer to appear on F6 cell.

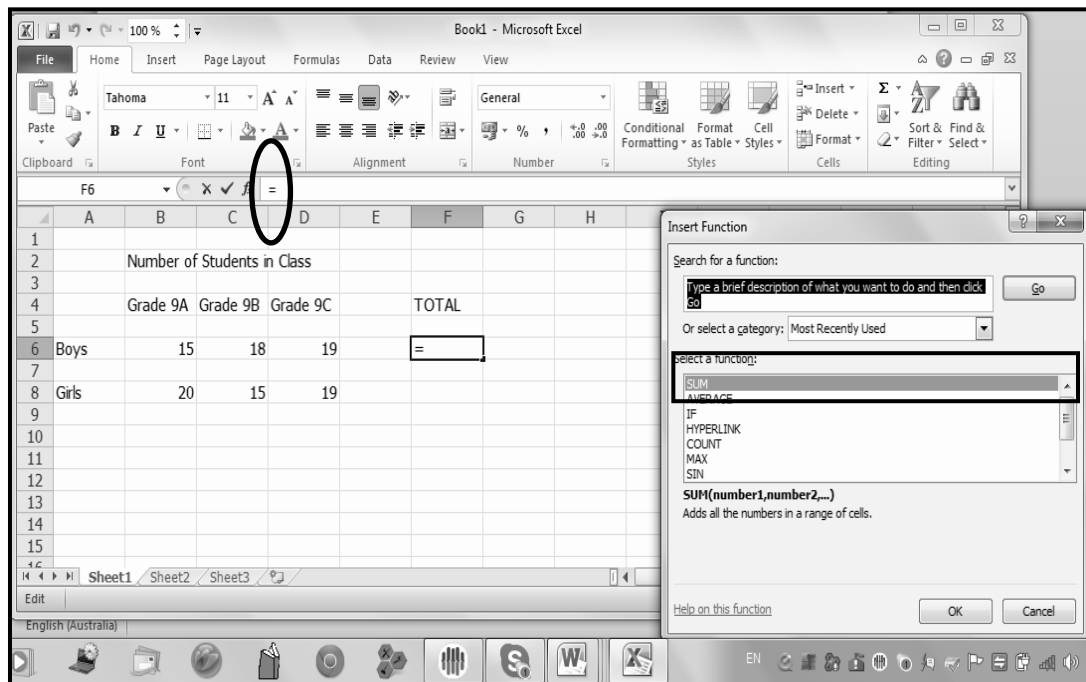
	A	B	C	D	E	F
1						
2		Number of Students in Class				
3						
4		Grade 9A	Grade 9B	Grade 9C		TOTAL
5						
6	Boys	15	18	19		
7						
8	Girls	20	15	19		

2. Type the formula by typing the equal sign (=), and the cell address that you want to add.

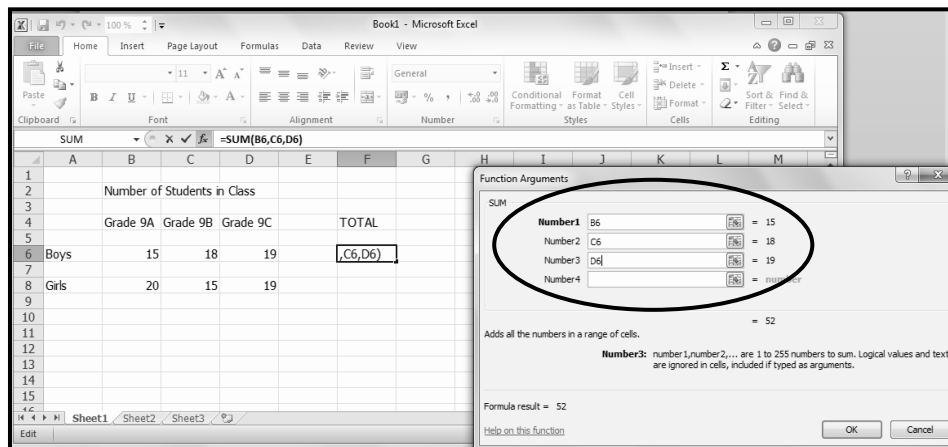
SUM		X ✓ fx		=B6+C6+D6		
	A	B	C	D	E	F
1						
2		Number of Students in Class				
3						
4		Grade 9A	Grade 9B	Grade 9C		TOTAL
5						
6	Boys	15	18	19		=C6+D6
7						
8	Girls	20	15	19		

Or there are still other ways to compute for the Total by just adding the 3 numbers since we are only adding small in numbers then you can even try to do this formula by typing (=15+18+19).

Or you can even use the Insert function formula for the SUM to add the three numbers.



3. Click **OK**, type the cell address that you want to add B6 and press Enter. Type again the next cell address to add until you reach the last number to be added to get the Total.



4. Do the same with Cell F6.

	F9					
	A	B	C	D	E	F
1						
2		Number of Students in Class				
3						
4		Grade 9A	Grade 9B	Grade 9C		TOTAL
5						
6	Boys	15	18	19		52
7						
8	Girls	20	15	19		54
9						
10						

F6 and F7 cells show the answers after adding the numbers.

Format a Worksheet

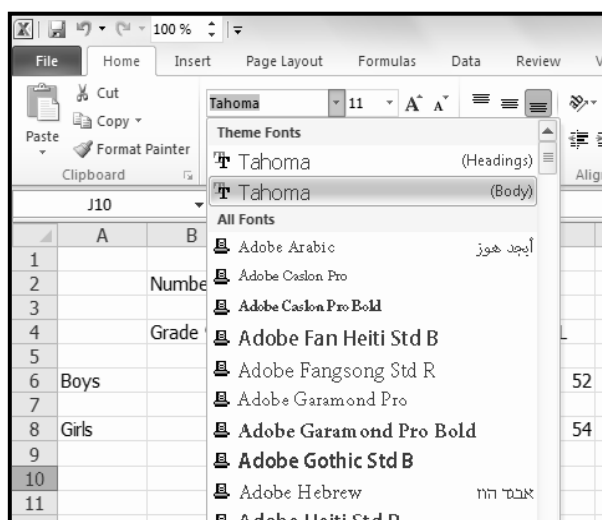
Font commands let you change the style, size, and colour of text. You can also use them to add borders and fill colours to cells.

Number commands let you change how selected cells display numbers and dates. Follow the steps below on how to format a worksheet.

- Let us try to change the font for the title of our workbook. Highlight cell address B2 to D2.

	A	B	C	D	E	F
1						
2		Number of Students in Class				
3						
4		Grade 9A	Grade 9B	Grade 9C		TOTAL
5						
6	Boys	15	18	19		52
7						
8	Girls	20	15	19		54
9						
10						

- Click the drop-down arrow next to the font command on the **Home** tab.



- Choose the **Font Style** and the **Font size** for our title (Algerian, 16).

	A	B	C	D	E	F
1						
2		NUMBER OF STUDENTS IN CLASS				
3						
4		Grade 9A	Grade 9B	Grade 9C		TOTAL
5						
6	Boys	15	18	19		52
7						
8	Girls	20	15	19		54
9						

Showing the result after changing the font style for the title

4. Continue changing the font styles for B6, C6, D6 to **Britannic Bold** and font size to **14**. For the **Total** change the font size to **18** and **Bold** it.

For A6 and A8, change the font style to **Brush Script Std**, font size **13**.

And for the given numbers from B6 to F8, change the font style to **Bodoni MT Black**.

	A	B	C	D	E	F
1						
2		NUMBER OF STUDENTS IN CLASS				
3						
4		Grade 9A	Grade 9B	Grade 9C		TOTAL
5						
6	<i>Boys</i>	15	18	19		52
7						
8	<i>Girls</i>	20	15	19		54

Showing the results after changing the font styles and the font sizes



Activity 1: Match the items found under Column A to the items under Column B. Write the letter of your choice answer in the space provided in Column A.

Column A	Column B
1. Plus	A. =C3+D3
2. Minus	B. ^
3. Multiply	C. +
4. Divide	D. *
5. Carat	E. –
6. Formula	F. 12
7. Name Box	G. A1
8. Font style	H. EXCEL
9. Bold	I. My Name
10. Font size	J. /

Thank you for completing this activity. Now, you may go to the end of this lesson to check your answer. Make sure you do the necessary corrections before moving on to the next part of this lesson.



Summary

You have come to the end of Lesson 24. In this lesson you learnt to set up rows and columns, enter and edit data, sort data, use simple calculations and format a worksheet.

NOW DO PRACTICAL EXERCISE 24 ON THE NEXT PAGE.

Practical Exercise 24

A. Follow the instructions below.

1. Open a new Excel worksheet. Type the given data in their specific cell locations.

B3	Number of Students Present in School 2013
A5	Grade 10A
A6	Grade 10B
A7	Grade 10C
B4	February
B5	45
B6	41
B7	50
C4	March
C5	48
C6	45
C7	44
D4	April
D5	40
D6	39
D7	48
E4	TOTAL

2. Compute for the Total for Grade 10A, Grade 10B, Grade 10C.
3. Change the font styles and the sizes of the data.

Cell Address	Font Styles	Sizes
B3	Bradley Hand ITC	Bold – 16
B4, C4, D4	Castellar	14
E4	Lucida Handwriting	Bold -18

A5, A6, A7	Old English Text Mt	12
B5 – E7	Cooper Black	13

4. Insert spaces in between the columns and rows.

CHECK YOUR WORK. ANSWERS ARE AT THE END OF TOPIC 4.
--

Answers to Activity

1. C
2. E
3. D
4. J
5. B
6. A
7. G
8. H
9. I
10. F

Answers to Practice Exercises in Topic 4

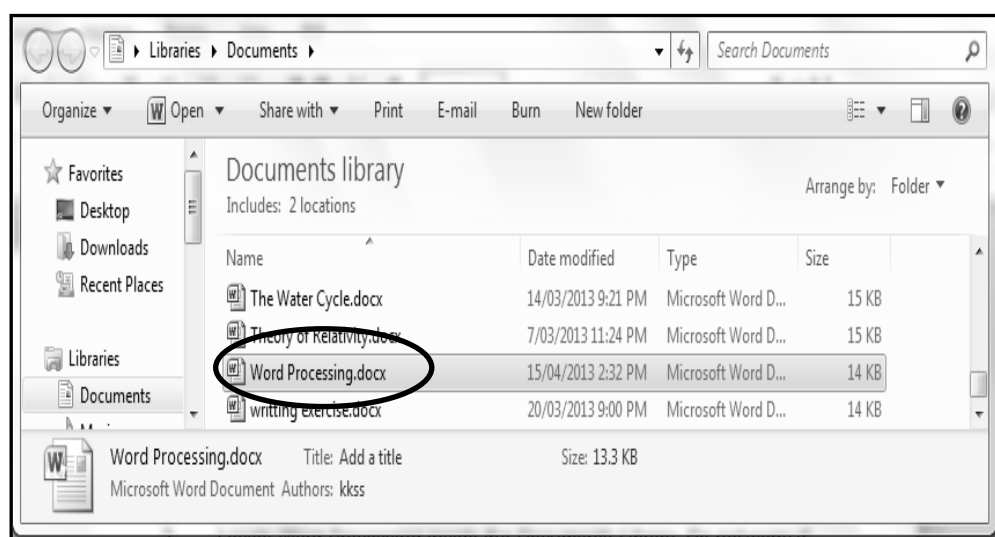
Practical Exercise 19

- A. In short sentence, write the steps you will perform to complete the following task.
1. Open MS Word Document
 - a. Click Start button → All Programs → Microsoft Office folder → Microsoft Word 2010
 - b. Click Start button → Microsoft Word 2010 menu
 - c. Double click MS word shortcut on the desktop.
 2. Save your document for the first time in the documents library.
Click File → Save As → Write the filename → Save button
 3. Save changes to your work
 - a. Click File → Save
 - b. Click Save icon in the Quick Access toolbar
 4. Save your document in another location
Click File → Save As → Write the filename → Select folder/flash drive → Save
 5. Create folder in the documents library before saving
 - a. Click File → Save As → New folder icon → Type name of folder
-

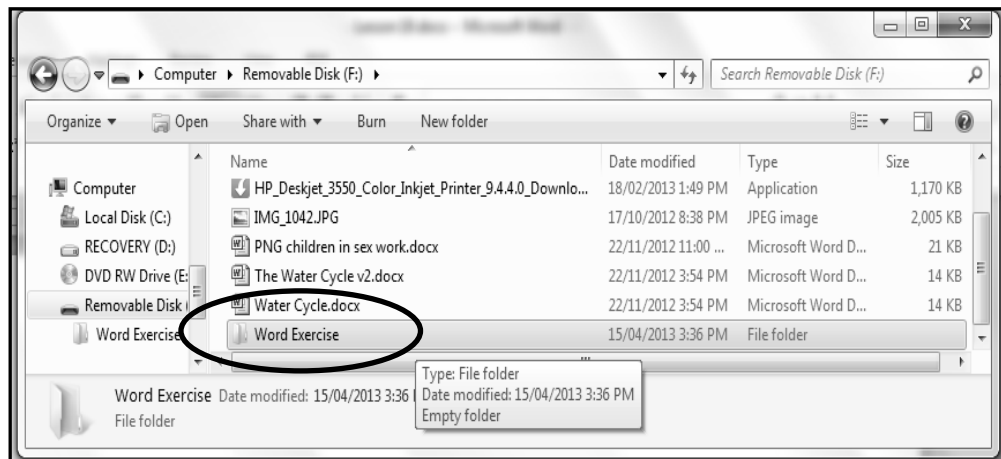
B.

Use the following as guide when checking your work.

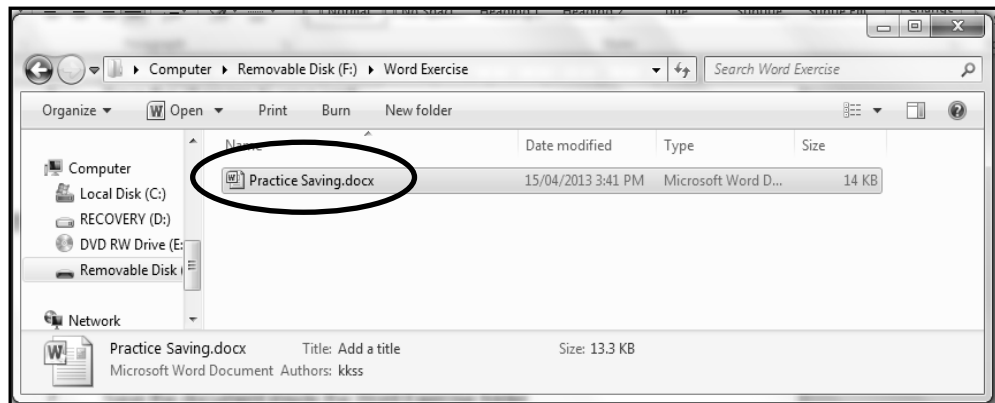
1. Click Start → Documents to display the content of your Documents Library
2. Locate Word Processing inside the Documents Library. Do not worry if content of your library looks different from the illustration below.



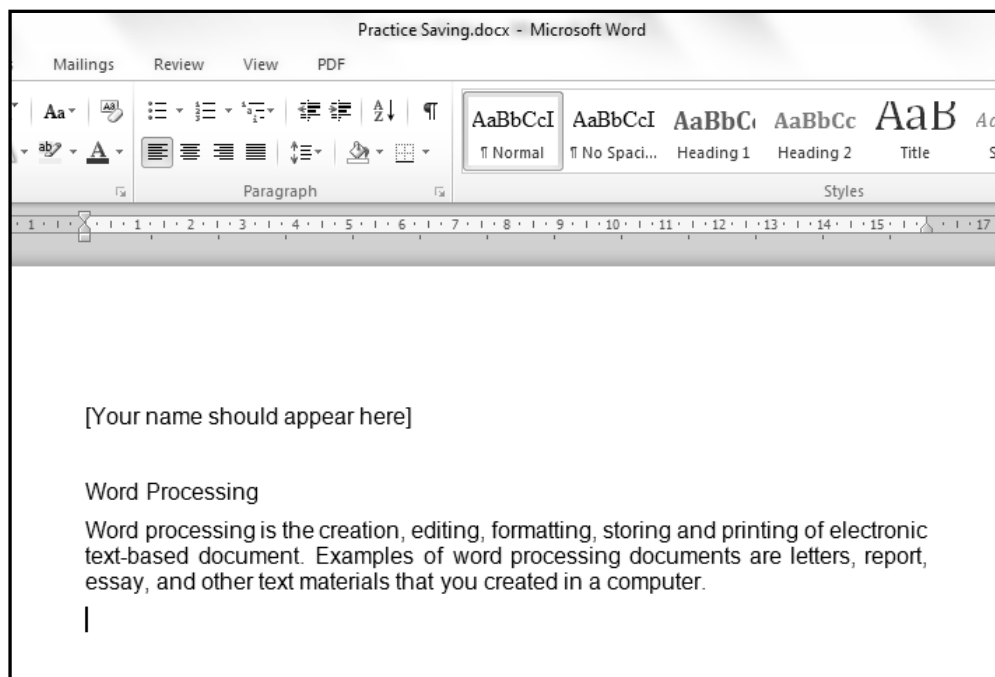
3. Locate your flash drive and double click to display its content



4. Double click Word Exercise folder to display its content.



5. Double-click your saved document. Your work should look like the example below.



Practical Exercise 20**A.**

1. Center Tab
2. Bold
3. Justify
4. Font size
5. Change Case
6. Font
7. Center alignment
8. Left Tab
9. Left Indent
10. First Line Indent

B.

1. There are many ways you could edit an existing document to a different format.
2. A sample New Universities v1 is given below. Some changes you can easily notice like: Font type, size, style and paragraph alignment.

Other formatting styles used were:

Margins	:	Left, Right, Top and Bottom (2.54 cm).
Orientation	:	Landscape
Indention	:	Removed
Special Indents	:	First line

NEW UNI FOR HIGHLANDS

The Office of the Higher Education will begin preparatory work for a new university in the Highlands region, according to Prime Minister Peter O'Neill.

He made the revelation at the University of Papua New Guinea graduation last Friday.]

O'Neill said the reason was a lack of space in existing institutions.

He said 17,000 students completed Grade 12 last year but only 4,000 could be fitted into the higher education system, which was a major concern.

"This is unacceptable. How can any responsible government live with this by denying our children the right to a decent life?" he said.

"We are committed to ensuring that the opportunity for decent and quality education is available."

"The government has increased spending in the crucial areas of health services, education and training, and law and order and infrastructure by 50% in just one year."

He said the seriousness of the government's commitment to the real needs of the nation's long term human resource, economic and social development was reflected prominently in the 2013 national budget.

He told the students that the universities and training colleges would be renovated so that they were restored as the country's highest learning institutions.

"Our oldest universities - University of Technology and University of Papua New Guinea - are our national icons, our national pride and identity," he said

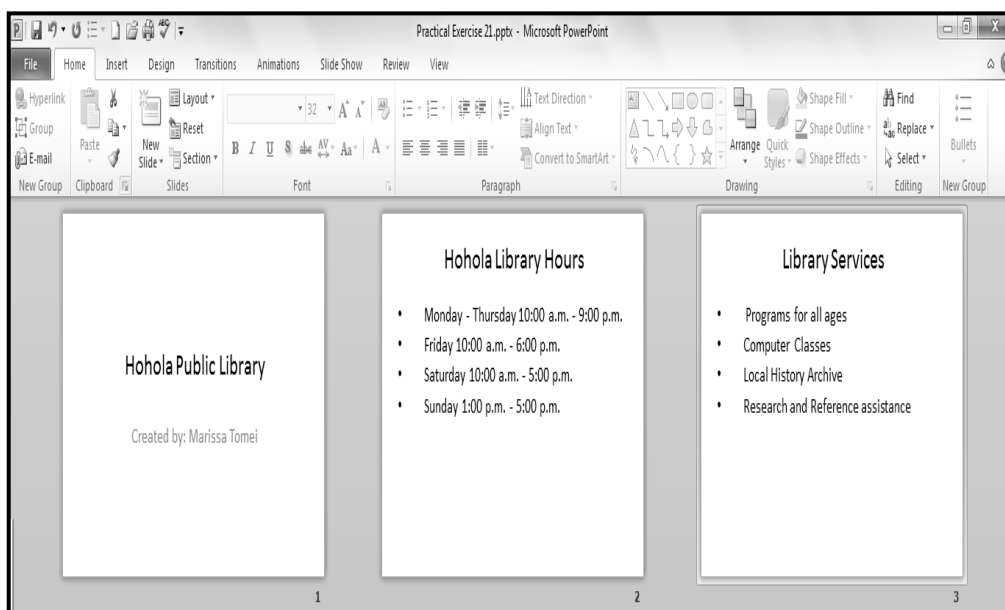
"Their prestige must be restored and that is what our government has undertaken to do."

He said the government would review the administration of these institutions and weed out a culture of inefficiency, nepotism and complacency.

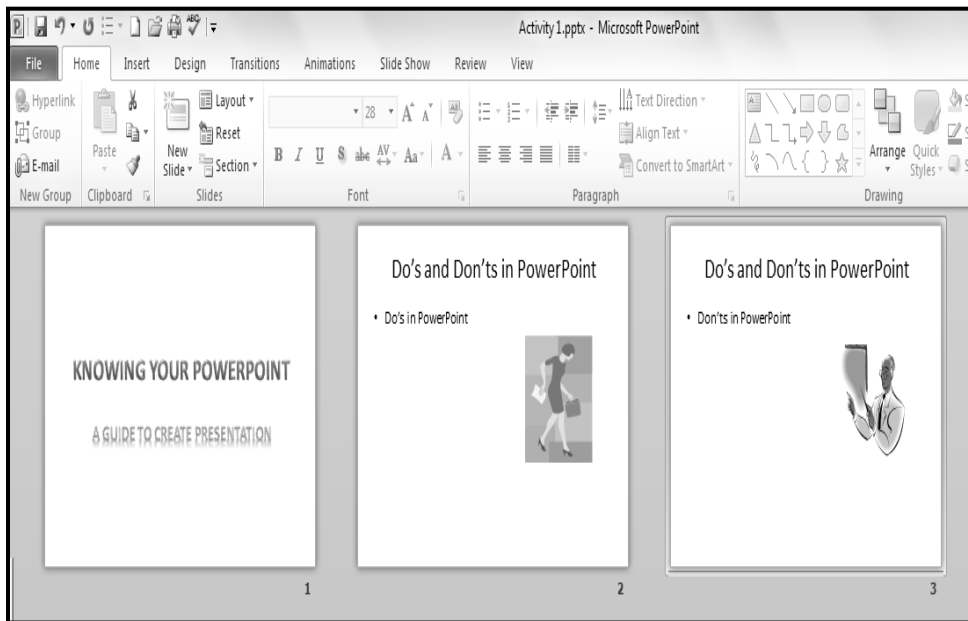
By: Miriam Malawa

3. You could create your own style. You may apply colors and text Effects to your document.
4. Save your second editing as New Universities v2

Practice Exercise 21



Practice Exercise 22



Practice Exercise 23

A.

1. numbers
2. rows, columns
3. VisiCalc, Apple II
4. Microsoft Excel 2010
5. 1 million rows, 16,000 columns

B.

	A	B	C	D
1				
2	My Shopping Expenses			
3				
4		ITEMS	Quantity	Price
5				
6		1 Earrings	2 pairs	80
7		2 Shoes	1 pair	200
8		3 T-shirts	4 pieces	250
9		4 Belts	3 pieces	300
10		5 Blouse	1 piece	200
11		6 Bag	1 piece	450
12				
13				

Practice Exercise 24

	A	B	C	D	E	F	G	H	I
1									
2									
3			Number of Students Present in School 2013						
4									
5			FEBRUARY		MARCH		APRIL		<i>Total</i>
6									
7	Grade 10A		45		48		40		133
8									
9	Grade 10B		41		45		39		125
10									
11	Grade 10C		50		44		48		142
12									

End of Topic 4

Now Do Exercise 4 in Assignment Book 4.
--

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GLOSSARY OF TERMS

Access (also see Random and Sequential Access)

To call up information out of **storage**.

Access time

The amount of time it takes for requested information to be delivered from **disks** and **memory**.

Active matrix display

A type of **monitor** typically used on **laptop** or portable **computers**; provides a brighter, more readable display than older **LCD** equipment.

Adapter

A **circuit board** that plugs into a **computer** and gives it additional capabilities. (See also *Circuit board*.)

AI

See *Artificial intelligence*.

Algorithm

A step-by-step procedure designed to solve a problem or achieve an objective.

Alpha testing

First-stage testing of **computer** products, typically done in house by the developer. (See also *Beta testing*; *Gamma testing*.)

Alphanumeric

Consisting of letters, numbers, and symbols.

Antivirus software

A **program** designed to look for and destroy **viruses** that may infect the **memory** of a **computer** or **files** stored on a **computer**.

Applet

A small **application**, that is, a **program** designed to perform a simple task. An applet is usually embedded within a larger program or **downloaded** from the **Internet** when needed.

Application (or app)

A **program** designed to perform **information processing** tasks for a specific purpose or activity (for example, **desktop publishing** and **database management**). (See also *Applet*; *Killer app*.)

Archive

A **file** compressed for more efficient use of storage space. The compression of files may be accomplished by means of such **programs** as Stuffit.

Artificial intelligence (AI)

Computer systems that attempt to imitate human processes for analysing and solving problems.

Ascending sort

Sorting records from A to Z or 0 to 9. (See also *Descending sort*.)

ASCII (pronounced as-kee)

An acronym derived from American Standard Code for Information Interchange.

ASCII is a standard 7-bit code that represents 128 **characters**. The use of this standard code permits **computers** made by different manufacturers to communicate with one another.

B, b.

B is the abbreviation of **byte**; *b* is the abbreviation of **bit**.

Background printing

The ability of a **computer** to print a **document** while other work is being done on the **keyboard** and the **display screen** at the same time.

Backup

Storage of duplicate **files** on **disks**, **diskettes**, or some other form of magnetic medium (such as tapes) as a safety measure in case the original medium is damaged or lost. (One word as a noun or an adjective: *backup* procedures; two words as a verb: *back up* your hard disk.)

Bacn

An **e-mail** message that might be considered **spam** except for the fact that the recipient has elected to receive it. Bacn (pronounced *bacon*) has been described as “e-mail you want but not right now.” Newsletters, alerts, and automated reminders are considered examples of bacn.

Bandwidth

The volume of information that a network can handle (usually expressed in bits per second). The greater the bandwidth, the more quickly **data** can be **downloaded** from the **Internet** or moved from a **network** to a user's **computer**. The term *bandwidth* is now also used to refer to a person's attention span (as in “Burt is a low-bandwidth kind of guy”) or a person's ability to handle an assignment (as in “Sally lacks the bandwidth to do this job”).

The question “How's your bandwidth?” means “Are you busy?”

Basic Input/Output System (BIOS)

A set of **programs** stored in read-only **memory** (ROM) on IBM or IBM-compatible **computers**. These programs control the **disk drives**, the **keyboard**, and the **display screen**, and they handle start-up operations.

BBS

See *Bulletin board system*.

Beta testing

Second-stage testing of **computer** products, typically done by potential customers and outside experts to identify problems that need to be fixed before the product can be released for sale. (See also *Alpha testing*; *Gamma Testing*.)

Binary code

The language used by **computers** in which **data** and instructions are represented by a series of 1s and 0s.

Binary numbering system

A numbering system in which all numbers are represented by various combinations of the digits 0 and 1.

BIOS

See *Basic Input/ Output System*.

Bit (b)

An acronym derived from binary digit. The smallest unit of information that can be recognized by a **computer**. Bits are combined to represent **characters**. (See also *Byte*.)

Bitmap

A method of storing a graphic image as a set of **bits** in a computer's **memory**. To display the image on the screen, the **computer** converts the bits into **pixels**.

Bits per second (bps)

A measurement that describes the speed of **data** transmission between two pieces of equipment. (See also *Transfer rate*.)

BlackBerry

A wireless **palmtop computer** that is especially helpful to business travellers. It permits users to send and receive e-mail and view other documents that they have on file. (See also *Wi-Fi*.)

Blawg

See *Blog*.

Bloatware

A **program** that uses an excessive amount of **disk** space and **memory**.

Block

A segment of **text** that is selected so that it can be moved to another location or processed in some other way. (See also *Block delete*; *Block move*; *Cut and paste*.)

Block delete

A **command** to delete (or erase) a segment of **text**.

Block move

A **command** to reproduce a segment of **text** in another place and at the same time erase it from its original position. (See also *Cut and paste*.)

Block protect

A **command** to prevent a **page break** from occurring within a block of **text** (for example, a table). (See also *Orphan protection*; *Widow protection*.)

Blog

A *blog* (short for Web log) is an online diary in which an individual records and publishes his or her thoughts on one or more subjects. A blog devoted to legal matters is known as a *blawg*.

Blogger

Someone who creates and maintains an online diary.

Blogosphere

The complete set of **blogs** on the Internet.

Blook

A *blook* is a **blog** that has been turned into a book or an online book that is published on a blog.

Bluetooth

A **protocol** that permits a wireless exchange of information between **computers**, cell phones, and other electronic devices within a radius of about 30 feet.

Board

See *Circuit board*.

Boilerplate

Standard wording (for example, sentences or paragraphs in form letters or clauses in legal documents) that is held in **storage**. When needed, it can be used as is, with minor modification, or in combination with new material to produce tailor-made **documents**.

Bookmark list

See *Favorites*.

Boot (short for *bootstrap*)

To start a **computer** and load the **operating system** to prepare the computer to **execute** an **application**.

Bozo filter

A **program** that screens out unwanted **e-mail** or other messages from individuals or organizations you no longer want to hear from.

Bps

See *Bits per second*.

Bricks-and-clicks

Refers to a traditional business with a Web site. (See also *Clicks-to-bricks*.)

Bricks-and-mortar

Refers to a traditional business that sells merchandise only in stores. (See also *Clicks-and-mortar*.)

Brochureware

A product that is being actively marketed, even though the product is not yet (and may never be) ready for sale. (See also *Vaporware*.)

Browser. See *Web browser*.

B2B

Business-to-business (online transactions).

B2C

Business-to-consumer (online transactions).

B2G

Business-to-government (online transactions).

Buffer

A holding area in **memory** that stores information temporarily. Also called *cache*.

Bug

A **software** defect that causes a **program** to malfunction or cease to operate. Some writers now use *bug* to refer to **hardware** problems as well. (See also *Debugging*; *Glitch*.)

Bulletin board system (BBS)

An **online** information system, usually set up by an individual (called a *system operator*, or **SYSOP**) on a non-profit basis for the enjoyment of other individuals with similar interests. (See also *Internet*.)

Bundled software

Software that is sold along with a **computer** system; several software **programs** that are packaged together (also called *software suites*).

Burn

To record information on a disc such as a **CD-R**, a **CD-RW**, a **DVD-R**, or a **DVD-RW**.

Bus

A pathway along which electronic signals travel between the components of a **computer** system.

Button bar

See *Toolbar*.

Byte (B)

An acronym for binary term. The sequence of **bits** that represents a **character**. Each byte has 8 bits.

Cache

See *Buffer*.

Cancelbot (from *cancel robot*)

A **program** that detects **spamming** in **newsgroups** and automatically issues a cancel **command**. (See also *Ham*.)

Card

See *Circuit board*; *Adapter*.

Carpal tunnel syndrome

A wrist or hand injury caused by using a **keyboard** for long periods of time. A type of repetitive strain injury (**RSI**). (See also *Mouse elbow*.)

Cathode-ray tube (CRT)

See *Display screen*.

CD-R

Compact disc-recordable.

CD-ROM (pronounced *cee-dee-rom*)

An acronym derived from compact disc-read-only memory. A form of optical **storage**. One compact **disc** can hold up to 250,000 text pages; it can also be used to store **graphics**, sound, and video. (See also *DVD-ROM*.)

CD-RW

Compact disc-rewritable.

Cell

A box or rectangle within a table or **spreadsheet** where a **column** and a **row** intersect; an area in which information can be entered in the form of **text** or figures.

Central processing unit (CPU)

The brains of an **information processing** system; the processing component that controls the interpretation and execution of instructions. (See also *Motherboard*.)

Character

A single letter, figure, punctuation mark, or symbol produced by a **keystroke** on a **computer**. Each character is represented by a **byte**.

Character set

The complete set of **characters**—alphabetic, numeric, and symbolic—displayable on a **computer**. (see also *ASCII*.)

Character string

A specified sequence of typed **characters**, usually representing a word or phrase. A character string is often used to locate a particular word or phrase wherever it appears in a **document** so that it can be automatically replaced with another word or phrase. If a person's name has been consistently misspelled or a date appears incorrectly in several places, the error can be easily corrected. (See also *Search and replace*.)

Characters per inch (cpi)

The number of **characters** in a **fixed-pitch font** that will fit within 1 inch. **Characters per second (cps)**. The number of **characters** printed in 1second; a measurement frequently used to describe the speed of a **printer**.

Chat

A method of communication in which people type text messages to each other, thereby holding a conversation over a **network** such as the **Internet**. (See also *Newsgroup*.)

Check box

A small box that appears onscreen alongside each option displayed in a **dialog box**. When an option is selected, an **X** or a check mark appears inside the box.

Chip

An **integrated circuit** used in **computers**.

Chip jewelry

An obsolete **computer**.

Circuit board

A board or card that carries the necessary electronic components for a particular **computer** function (for example, **memory**). The circuit boards that come with the original equipment perform the standard functions identified with that type of equipment. Additional circuit boards expand the kinds of functions that the equipment can perform. Also called a *board*, a *card*, or an *expansion board*.

Clear

A **command** to erase information.

Click

To quickly press and release a **mouse** button *once* while the **cursor** (mouse pointer) is positioned over a specific item on the screen. (See also *Double-click*.)

Clicks-and-mortar

Refers to a business that sells merchandise online as well as in stores. (See also *Bricks-and-mortar*.)

Clicks-to-bricks

Refers to an **Internet** company that opens stores. (See also *Bricks-and-clicks*.)

Client/server computing

A **network** of **computers** that consists of a file server (a computer that runs a **database management system**) and individual clients (computers that request and process **data** obtained from the file server).

Clipboard

A holding area in **memory** where information that has been copied or **cut** (**text**, **graphics**, sound, or video) can be stored until the information is inserted elsewhere. (See also *Copy*; *Cut*; *Cut and paste*.)

Column

A vertical block of **cells** in a table or **spreadsheet**. (See also *Row*.)

Command

An instruction that causes a **program** or **computer** to perform a function. A command may be given by means of a special **keystroke** (or series of keystrokes), or the command may be chosen from a **menu**.

Commercial online service

See *Internet service provider*.

Compatibility

The ability of one type of **computer**, device, data file, or **program** to share information or to communicate with another. (See also *ASCII*.)

Computer

An electronic device that is capable of (1) accepting, storing, and logically manipulating **data** or **text** that is **input** and (2) processing and producing **output** (results or decisions) on the basis of stored programs of instructions. Some computers are also capable of processing **graphics**, video, and voice input. Most computers include a **keyboard** for **text entry**, a **central processing unit**, one or more **disk drives**, a **display screen**, and a **printer**—components referred to as **hardware**.

Control menu

An onscreen Windows element that appears in a box in the upper left corner of a **window**. The control menu allows the user the option of adjusting the size of the window, closing or reopening the window, or switching to another window.

Cookie

A small text **file** that a Web **server** stores on a user's hard drive when the user visits certain **Web sites**. A cookie contains all the information that a user has to submit on a first visit to a particular Web site in order to gain access. When a user revisits that Web site, the cookie makes it unnecessary for the user to enter the same information all over again. The positive aspect of cookies is that they make it possible for users to take advantage of the convenient "shopping cart" feature of many Web sites. Unfortunately, cookies also make it possible for marketing organizations to monitor users' browsing patterns; users then find themselves the targets of custom-tailored marketing campaigns.

Copy

To reproduce information elsewhere. The original information remains in place. (See also *Cut*.)

cpi

See *Characters per inch*.

cps

See *Characters per second*.

CPU

See *Central processing unit*.

Cracker

The preferred term (rather than **hacker**) used to refer to a **computer** criminal who penetrates a computer to steal information or damage the program in some way.

Crash

A malfunction in **hardware** or **software** that keeps a **computer** from functioning. (See also *Bug*; *Glitch*.)

CRT

Cathode-ray tube. (See also *Display screen*.)

Cursor

A special **character** (usually a blinking underline, dot, or vertical line) that indicates where the next typed character will appear on the **display screen**. Also known as the **mouse pointer** (arrow) or **I-beam pointer**. Microsoft Word refers to the cursor as the *insertion point*. (See also *Prompt*.)

Cursor positioning

The movement of the **cursor** on the **display screen**. Most **computers** have four keys to control up, down, left, and right movement. Many computers also permit the use of a **mouse** to position the cursor.

Cut

To remove **text** from its original location and place it on a **clipboard**. (See also *Copy*; *Paste*.)

Cut and paste

To move a **block** of **text** from one place to another.

Cyberspace

A realistic simulation of a three-dimensional world created by a **computer** system; also referred to as *virtual reality*. Now commonly used to refer to the world of the **Internet** as a whole.

Cybersquatting

Registering a potentially valuable Internet address in the hope of selling it at a profit later on to an organization for which this address would be ideal.

Cybrarian

The electronic equivalent of a librarian. A person who makes a career of **online** research and **data** retrieval.

Data

Information consisting of letters, numbers, symbols, sound, or images—in a form that can be processed by a **computer**.

Data compression

A procedure for reducing the volume of **data** so as to shorten the time needed to transfer the data or to reduce the amount of space needed to store the data.

Database

A stored collection of information.

Database Management System (DBMS)

The **software** needed to establish and maintain a **database** and manage the-stored information.

DDE

See *Dynamic data exchange*.

De1ad-tree edition

The paper version of a publication available online.

Debugging

Locating and eliminating defects in a program. (See also *Bug*.)

Decimal tab

A type of tab that aligns columns of figures on the decimal point.

Default settings

The pre-established settings (for margins, font, type size, tab stops, and so on) that a program will follow unless the user changes them.

Delete

A command to erase information in storage.

Denial of Service (DoS) attack

A malicious act intended to shut down a Web site or a network by flooding it with too much information. Users who attempt to visit the site will be denied access.

Descending sort

Sorting records from Z to A or 9 to 0. (See also *Ascending sort*.)

Desktop

The electronic work area on a display screen.

Desktop computer

A microcomputer that is bigger than a laptop.

Desktop Publishing (DTP)

A system that processes the text and graphics and, by means of page layout software and a laser printer, produces high-quality pages suitable for printing or in-house reproduction.

Dialog box.

A message box on the screen that supplies information to - or requests information from - the user.

Dictionary

A **program** used to check the spelling of each word entered in the **computer**.

Digerati

A term referring to the elite group of intellectuals in the computer world (in the same way that *literati* refers to the elite group of intellectuals in the literary world).

Directory

A list of the **files** stored on a **disk**.

Disc

A nonmagnetic **storage** medium that is used in conjunction with optical technology. (See also *CD-ROM*.)

Disk

A random-**access**, magnetically coated **storage** medium used to **store** and **retrieve** information. (See also *Diskette*; *Hard disk*.)

Disk drive

The component of a **computer** into which a **disk** is inserted so that it can be read or written on.

Disk operating system

See *DOS*.

Diskette. A small, nonrigid **disk** with limited **storage** capacity. Also known as a *floppy disk*.

Display screen

A device similar to a television screen and used on a **computer** to display **text** and **graphics**. Also called a *video display terminal (VDT)* or a *monitor*.

Distributed processing system

A form of a **local area network** in which each user has a fully functional **computer** but all users can share **data** and **application software**. The data and software are distributed among the linked computers and not stored in one central computer.

DNS

Domain name system.

Document

Any printed business communication-for example, a letter, memo, report, table, or form. (See also *File*.)

Documentation

The manuals or guides distributed with hardware or software.

Domain

Typically, a three-letter element in a Web address or an **e-mail** address. The domain—commonly referred to as the *zone*—indicates the type of organization that owns the **computer** being identified in the address. For example, *.com* signifies a commercial organization; *.edu* signifies an educational institution.

DOS (pronounced *dahs* or *doss*)

An acronym derived from disk operating system. The term refers to a **program** that allows the **computer** to manage the **storage** of information on **disks** and controls other aspects of a computer's operation.

DoS (pronounced *dee-oh-ess*)

See *Denial of service attack*. (Note the differences in spelling and pronunciation between DOS and DoS.)

Dot. The period symbol used in **e-mail** and Web addresses. Always referred to as a *dot* (never as a period).

Thus the **domain name** *aol.com* would be pronounced *ay-oh-ell-dot-com*. **Internet** surfers who spend a lot of time in the *.com* domain are sometimes referred to as *dot communists*.

Dot-com

An organization that sells its products or services on a **Web site** (with a URL ending in *.com*). A dot-com that fails to stay in business is referred to as a *dot-bomb*.

Dot matrix printer

A **printer** that uses pins to produce **characters** made up of small dots. This kind of printer is generally used by organizations that want to produce form letters or mailing labels economically.

Double-click

To quickly press and release a **mouse** button *twice* while the **cursor** (mouse pointer) is positioned over a specific item on the **screen**. (See also *Click*.) The expression “Double-click on that” means “That’s really quite good.”

Download

To transfer information to the user's **computer** from another computer.

Drag-and-drop editing

A **software** feature that allows the user to (1) highlight **text** to be moved and (2) use a **mouse** to drag the text to a new location.

DRAM

Dynamic Random Access Memory.

Drop-down menu

See *Menu*.

DSL

Digital Subscriber Line. DSL is a high-**bandwidth** method of connecting to the **Internet** by means of telephone lines.

DSL

Digital subscriber line. DSL is a high-**bandwidth** method of connecting to the **Internet** by means of telephone lines.

DTP

See *Desktop publishing*.

Duplexing

A procedure that permits two **computers** to transmit **data** to each other simultaneously.

DVD

Digital video **disc** or digital versatile disc.

DVD-E

Digital video **disc**-erasable.

DVD-R

Digital video **disc**-recordable.

DVD-RAM

Digital video **disc**-random-access **memory**.

DVD-ROM

Digital video **disc**-read-only **memory**.

DVD-RW

Digital video **disc**-read/write.

Dynamic data exchange (DDE)

A technology that permits the user to transfer or **paste data** from one **application** (for example, a **spreadsheet**) to another (for example, a report). Because of the dynamic link created by this technology, any change in the data in the original application will be automatically reflected in the data copied in the second application. (See also *Object linking and embedding*.)

Easter egg

An unexpected image or message that pops up on the **display screen** when the user innocently enters a secret combination of **keystrokes**. Programmers playfully code Easter eggs into **software** and **operating systems** as a way of surprising and amusing users engaged in more serious tasks.

E-book

A small reading device that displays **downloaded** digital text.

Editing

The process of changing information by inserting, deleting, replacing, rearranging, and reformatting. Also known as *changing* or *customizing*.

Ellipsis marks

Three spaced dots (. . .) that appear as part of a **menu** option. Ellipsis marks indicate that a **dialog box** will appear if that option is selected.

E-mail (short for *electronic mail*)

The term *e-mail* refers to the transfer of messages or **documents** between users connected by an electronic **network**. The term is also used to refer to the message that is being transmitted in this way. The original form—*E-mail*—is rarely seen except at the beginning of a sentence, and industry professionals now commonly write the word without a hyphen—*email*. One wit has suggested replacing the term *e-mail* with *e-pistle*.

Emoticon

See *Smiley*.

Encryption

Coding confidential **data** so that only a user with the right **password** can read the data.

Enter

To **input data** into **memory**. (See also *Type*.) Also the name of a key on a **computer keyboard**. **Enter**. To **input data** into **memory**. (See also *Type*.)

Also the name of a key on a **computer keyboard**.

Enumerate

List down

Escape key

A key that permits the user to leave one segment of a **program** and move to another.

Ethernet

A type of **computer network**.

Ethernet card

A **circuit board** that allows a **computer** to be connected to a **network** by cable.

Execute

To perform an action specified by the user or the **program**.

Expansion board

See *Circuit board*.

Expert system

See *Artificial intelligence*.

Export

To save information from one **computer** or **program** to another.

External storage. A magnetic medium such as a **disk**, **diskette**, or tape used to store information; can be removed from the **computer**.

Extranet

A technology that permits users of one organization's **intranet** to enter portions of another organization's intranet in order to conduct business transactions or collaborate on joint projects.

E-zine

A magazine published in an electronic format. Also called *Webzine*.

Face time

Time spent dealing with someone face to face (as opposed to time spent communicating electronically). Sometimes referred to as *facemail*. (See also *f2f*.)

FAQ

Frequently asked question. Pronounced as a word (to rhyme with *pack*) or as separate letters.

Favorites

A customized list of a user's favorite **Web sites** that permits the user to access a particular

Fax (n.)

A shortened form of the word *facsimile*. A copy of a **document** transmitted electronically from one machine to another.

Fax (v.)

To transmit a copy of a **document** electronically.

Fax modem

A device built into or attached to a **computer** that serves as a facsimile machine and a **modem**.

Field

A group of related **characters** treated as a unit (such as a name); also, the area reserved for the entry of a specified piece of information.

File

A collection of information stored electronically and treated as a unit by a **computer**. Every file must have its own distinctive name. (See also *File name*.)

File name

The name assigned to a **file** stored on a **disk**.

File transfer protocol (FTP)

A set of guidelines or standards that establish the **format** in which **files** can be transmitted from one **computer** to another.

Firewall

A security system usually consisting of **hardware** and **software** that prevents unauthorized persons from accessing certain parts of a **program**, **database**, or **network**.

Fixed-pitch font

A **typeface** such as Courier in which each **character** has exactly the same **width** (like this). Also referred to as a *monospace font*.

Flame (n.)

An inflammatory **e-mail** message; one deliberately designed to insult and provoke the recipient. (See also *Rave*.)

Flame (v.)

To send an inflammatory message.

Flat-panel display

A type of **desktop computer** monitor that consists of an **LCD** in a thin case. A flat panel display has a much smaller **footprint** than the traditional **CRT**.

Floppy disk. See *Diskette*.

Folder

A **storage** area on a **disk** used to organize **files**.

Font

A typeface of a certain size and style. Includes all letters of the alphabet, figures, symbols, and punctuation marks. (See also *Monospace font*)

Footer

Repetitive information that appears at the bottom (the foot) of every page of a **document**. A page number is a common footer. (See also *Header*.)

Footnote feature

The ability of a **program** to automatically position footnotes on the same page as the **text** they refer to. If the text is moved to another page, any related footnotes will also be transferred to that page.

Footprint

The amount of space a **computer** occupies on a flat surface.

Forelash

Negative reactions to a technology not yet in existence but excessively promoted in advance.

Format

The physical specifications that affect the appearance and arrangement of a **document**—for example, margins, spacing, and **font**.

Forms mode

The ability of a **program** to store the **format** of a blank **document** or form so that it can later be viewed on the **display screen** and completed by the user. Once a fill-in

has been entered, the **cursor** automatically advances to the beginning of the next area to be filled in. (See also *Style sheet*; *Template*.)

Forum

See *Newsgroup*.

Freenet

A local **network** that offers free (or low-cost) **access** to **host computers** located in libraries and to other public-interest groups in the community. A freenet may also offer limited access to the **Internet**.

Freeware

Copyrighted **software** that is available for use without charge. (See also *Shareware*.)

f2f

Communicating face to face.

FTP

See *File transfer protocol*.

Function keys

Keys on a **keyboard** (for example, F1) that give special **commands** to the **computer**— for example, to set margins or tabs.

G or GB

See *Gigabyte*.

Gamma testing

Third-stage testing of **computer** products, typically done just before the products are released for sale. (See also *Alpha testing*; *Beta testing*.)

Gateway

A machine that links two **networks** using different **protocols**.

Gigabyte

A measurement of the **storage** capacity of a device. One gigabyte represents 1024 **megabytes**. This term may be abbreviated as *G* or *GB*; however, *GB* is the clearer abbreviation since *G* also stands for the metric prefix *giga* (meaning 1 billion). A gigabyte is often referred to as a -gig."

Gigahertz (GHz)

A measurement used to identify the speed of the **central processing unit**. One gigahertz is equal to 1 billion cycles per second.

GIGO

Garbage in, garbage out. In other words, your **computer output** is only as good as your computer **input**.

Glitch

A **hardware** problem that causes a **computer** to malfunction or **crash**. (See *Bug*.)

Global

Describing any function that can be performed on an entire **document** without requiring individual **commands** for each use. For example, a global **search-and-replace** command will instruct the **computer** to locate a particular word or phrase and replace it with a different word or phrase wherever the original form occurs in the document.

Gopher

A **protocol** used for locating and transferring information on the **Internet**. The use of Gopher diminished as diminished as the Web's **hypertext transfer protocol (HTTP)** has become the dominant protocol.

Graphical user interface (GUI)

A visual computer environment that permits the user to **click** on **icons** or select options from a **menu**.

Graphics

Pictures or images presented or stored using a **computer**.

Grok

To research and comprehend something in great detail and great depth.

Groupware

Software that lets **network** users collaborate on a variety of **documents**.

GUI (pronounced goo-ee). See *Graphical user interface*

Hack

To work on an electronic project.

Hacker

A dedicated **computer** programmer. The term *hacker* is sometimes used erroneously to refer to a computer criminal who penetrates and tampers with computer **programs** or systems. The preferred term for a computer criminal is **cracker**.

Ham

A legitimate **e-mail** message that is blocked because it contains one or more **keywords** associated with **spam** messages.

Handheld computer

A portable computer smaller than a **notebook computer**. Also called a **palmtop computer**.

Hard copy

Text or **graphics** printed on paper; also called a **printout**. (See also *Soft copy*.)

Hard disk

A rigid type of magnetic medium that can store large amounts of information.

Hard drive

Another name for the hard disc that stores information in a computer.

Hard hyphen

A hyphen that is a permanent **character** in a word. A word that contains a hard hyphen will not be divided at this point if the word comes at the end of a line. (See also *Soft hyphen*.)

Hard page break. A page-ending code or **command** inserted by the user that cannot be changed by the **program**. A hard page break is often used (1) to prevent a table from being divided between two pages and (2) to signify that a particular section of a **document** has ended and the following **text** should start on a new page.

Hard return

A **command** used to end a paragraph, end a short line of **text**, or insert a blank line in the text. (See also *Soft return*.)

Hard space

A space inserted between words in a phrase that should remain together (for example, the word *page* and the number, month and day, number and unit of measure). The hard space ensures that the phrase will not be broken at the end of a line.

Hardware

The physical components of a **computer**: the **central processing unit**, the **display screen**, the **keyboard**, the **disk drive**, the **modem**, the **mouse**, and the **printer**. (See also *Software*.)

Hardwired

Describes something physically built into a system using hardware, instead of being accomplished by programming.

Header

Repetitive information that appears at the top (the head) of every page of a **document**. A page number is a common header. (See also *Footer*.)

Hit

A single request for information made by a client **computer** from a Web **server**. The popularity of a given **Web site** is often measured by the number of hits it receives. However, this number can be extremely misleading, since a particular Web page may contain a number of elements, each one of which will be counted as a hit when a visitor opens that page. Thus the number of hits recorded for a particular Web page can be significantly greater than the actual number of visitors to that page.

Home

The upper left corner of the **display screen**; the starting position of a page or **document**.

Home page

The main page for a **Web site** established by an organization or an individual; it usually serves as the entrance for a series of related pages.

Host computer

A **computer** that provides information or a service to other computers on the **Internet**. Every host computer has its own unique host name.

Hot key

A **keyboard** shortcut that allows quick access to a **command** or **menu** option.

Hot list

See *Favorites*.

HTML

See *Hypertext markup language*.

HTTP

See *Hypertext transfer protocol*.

Hyperlink

An element in a **hypertext document** that is highlighted by means of underlining or the use of a different color. When a user clicks the highlighted element, the user is connected with another element in the same document or another document.

Hypermedia

An extension of **hypertext** that integrates audio, video, and **graphics** with **text**.

Hypertext

A technology that links **text** in one part of a **document** with related text in another part of the document or in other documents. A user can quickly find the related text by clicking on the appropriate **keyword**, key phrase, **icon**, or button.

Hypertext markup language (HTML)

The formatting language used to establish the appearance of a Web page.

Hypertext transfer protocol (HTTP)

The **protocol** used on the **World Wide Web** that permits Web clients (**Web browsers**) to communicate with Web **servers**. This protocol allows programmers to embed **hyperlinks** in Web documents, using **hypertext markup language**.

Hyphenation

The ability of a **program** to automatically hyphenate and divide words that do not fit at the end of a line. If the **text** is later revised so that the divided word no longer begins at the right margin, the hyphen is automatically removed and the word prints solid. (See also *Soft hyphen*.)

I-beam pointer

A **mouse**- or **keyboard**- controlled **cursor** that looks like a capital I.

Icon

A symbol (such as a picture of a trash can or a file folder) that represents a certain function. When the user **clicks** on the icon, the appropriate function is **executed**. (See also *Graphical user interface*.)

ICQ (from *I seek you*)

An instant messaging service.

IM

See *Instant messaging*.

Import

To **retrieve** any **text** or other information created by one **program** (for example, images created by a **graphics** program) and transfer it to another program (for example, a **spreadsheet** program).

Indexing

The ability of a **program** to accumulate a list of words or phrases that appear in a **document** (along with their corresponding page numbers) and to print or display the list in alphabetic order.

Information processing

The coordination of people, equipment, and procedures to handle information, including the **storage**, **retrieval**, distribution, and communication of information. The term *information processing* embraces the entire field of processing words, figures, **graphics**, video, and voice **input** by electronic means.

Information Superhighway (or I-way)

The **Internet**. Also referred to as the *Infobahn* (based on the German term for its network of highways, the *Autobahn*). **Ink-jet printer**. A nonimpact **printer** that forms **characters** by spraying tiny, electrically charged ink droplets on paper.

Input (n.)

Information entered into the **computer** for processing.

Input (v.)

To **enter** information into the **computer**. (See also *Type*; *Key*.)

Input device

A **hardware** component (such as a **mouse**, a **keyboard**, or a microphone) that lets the user **input** information.

Insert

To add information to a **file**.

Insertion point

See *Cursor*.

Instant Messaging (IM)

A **chat** program that lets people communicate over the **Internet** in real time.

Integrated circuit

Multiple electronic components combined on a tiny silicon **chip**. (See also *Microprocessor*.)

Integrated software

Software that combines in one **program** a number of functions normally performed by separate programs.

Interface

The electrical connection that links two pieces of equipment so that they can communicate with each other. Also, the **software** that controls the interaction between the **hardware** and the user.

Internal storage. An integral component of a **computer**; cannot be removed.

Internesia

Forgetting where one obtained a piece of information on the **Internet**.

Internet (or Net)

A system that links existing **computer networks** into a worldwide network. The Internet may be accessed by means of commercial online services (such as America Online) and **Internet service providers**.

Internet community

A group of individuals with common interests who frequently exchange ideas on the **Internet**.

Internet protocol (IP) address

A unique set of numbers that identifies a **computer** over a **network**.

Internet Service Provider (ISP)

An organization that provides access to the **Internet** for a fee. Companies like America Online are more properly referred to as *commercial online services* because they offer many other services in addition to Internet access—for example, news, travel services, and financial and shopping information.

Internet telephony

Another name for **Voice over Internet Protocol (VoIP)**.

Intranet

A private **network** established by an organization for the exclusive use of its employees.

Firewalls

Prevent outsiders from gaining access to an organization's intranet. (See also *Extranet*.)

I/O

An abbreviation for *input/output*.

IP address

See *Internet Protocol address*.

ISP

See *Internet service provider*.

Java

A programming **language** designed for **programs** or **applets** used over the **Internet**.

JPEG

Joint Photographic Experts Group. A format for storing complex **graphics** in compressed form. The file extension, *jpeg* or *.jpg* indicates that a particular file uses this format.

Justification

Aligning lines of **text** at the left margin, the right margin, both margins, or the center. Text aligned at both margins is considered *fully justified*. Text aligned only at the left margin is said to have a *ragged right margin*.

K or KB

See *Kilobyte*.

Kern

To make fine adjustments in the space between any two **characters**.

Key

To **enter characters** into the **memory** of a **computer**. (Key is being replaced by the word *type*. See also *Type*.)

Keyboard

The device used to **enter** information into a **computer**.

Keystroke

The depression of one key on a **keyboard**.

Keyword

A word or phrase that briefly identifies a **document**. Keywords serve as the basis for a variety of computer operations—for example, conducting an **online** search.

Killer app (short for *application*)

Software that is considered –so great it will blow you away.”

Kilobyte

A measurement of the **storage** capacity of a device. One kilobyte represents 1024 **bytes**. *Kilobyte* may be abbreviated *K* or *KB*; however, *KB* is the clearer abbreviation since *K* also stands for the metric prefix *kilo* (meaning 1000).

Kluge (pronounced *klooj*)

An expedient (but often inelegant) way to solve a problem when time is of the essence.

LAN

See *Network, local area*.

Landscape orientation

The positioning of a page so that information is printed across the long dimension of the paper. (See also *Portrait orientation*.)

Language

The **characters** and procedures used to write **programs** that a **computer** is designed to understand.

Laptop computer

A portable **computer**. Also known as a *notebook computer*.

Laser printer

A nonimpact **printer** that produces sharper **text** and **graphics** than any other type of printer. (See also *Dot matrix printer*; *Ink-jet printer*.)

LCD

See *Liquid crystal display*.

L33t

The term *l33t* (pronounced *leet*) is an **alphanumeric** expression derived from –elite.” This term is used to describe a person’s prowess in accessing restricted **Web sites**. (See also *W00t*.)

Line or paragraph numbering

The ability of a **program** to automatically number each line or paragraph sequentially in a **document**. The line or paragraph numbers can be deleted before the preparation of the final **printout**.

Line spacing

The ability of a **program** to automatically change vertical line spacing (for example, from double to single to double again).

Linux

A type of **open source software**. When combined with other components, Linux serves as an increasingly popular **operating system** that competes with Microsoft Windows.

Liquid Crystal Display (LCD)

A type of **monitor** typically used on **laptop computers** or portable **computers**. (See also *Active matrix display*; *Flat-panel display*.)

Listserv

Any **software** that manages a **mailing list**. The most widely used programs are LISTSERV (as distinct from the generic terms *listserv* and *listserve*), Listproc, and Majordomo.

Load

To transfer information or **program** instructions into a **computer's memory**.

Local Area Network (LAN)

See *Network, local area*.

Log off or log out (v.)

To exit or leave a **computer** system.

Logoff or logout (n.)

The process of exiting a **computer** system.

Log on or log in (v.)

To **access** a **computer** system. *Log onto* and *log into* are not correct.

Logon or login (n.)

The process of accessing a **computer** system.

M or MB

See *Megabyte*.

Macro

A time-saving feature (like telephone speed dialling) that allows the user to store in **memory** a set of **keystrokes** or **commands** that will accomplish a certain task.

Macro virus

A type of **virus** that attaches itself to **documents** or **word processing templates**.

Mail merge

The *mode*.)

Mailbomb

A deluge of process of taking information from a **database** and inserting it into a form letter or other **document** in order to customize the document for an individual recipient. For example, mail merge can be used to create the inside address and the salutation for a form letter. (See also *Forms e-mail* messages from one or more sources, deliberately intended to overload the recipient's **computer** and make it **crash**. A mailbomb is typically sent to punish someone guilty of **spamming** or some other serious breach of **netiquette**.

Mailing list

An **e-mail** discussion group devoted to one or more specific topics.

Mainframe

A large **computer** system.

Malware

Software that disrupts normal **computer** functions or sends a user's personal **data** without the user's authorization.

Maximize

A **command** used in a **graphical user interface (GUI)** that enlarges a **window** so that it fills a desktop.

Megabyte

A measurement of the **storage** capacity of a device. One megabyte represents more than 1 million **bytes**. *Megabyte* may be abbreviated *M* or *MB*; however, *MB* is clearer since *M* also stands for the metric prefix *mega* (meaning 1 million). A megabyte is often referred to as a "meg."

Megahertz (MHz)

A measurement used to identify the speed of the **central processing unit**. One megahertz is equal to 1 million cycles per second.

Memory

The part of a **computer** that stores information. (See also *Storage*.)

Random-Access Memory (RAM)

The temporary memory that allows information to be stored randomly and accessed quickly and directly (without the need to go through intervening **data**).

Read-Only Memory (ROM). The permanent memory of a **computer**; a set of instructions that has been built into the computer by the manufacturer and cannot be accessed or changed by the user.

Menu

A list of choices shown on the **display screen**. For example, a **format** menu would include such options as the type style and the type size to be selected. A menu is often referred to as a *pull-down menu*, a *drop-down menu*, or a *pop-up menu* because it appears **onscreen** after the user **clicks** the **menu bar** or some other item on the screen.

Menu bar

The bar across the top of the **screen** or **window** that displays the names of available **menus**.

Merge

A **command** to create one **file** by combining information that is stored in two different locations. For example, a **computer** can merge the **text** in a form letter with a mailing list to produce a batch of letters with a different name, address, and salutation on each letter. (See also *Mail merge*.)

Microcomputer

A small and relatively inexpensive **computer**, commonly consisting of a **display screen**, a **keyboard**, a **central processing unit**, one or more **disk drives**, and a **printer**, with limited **storage** based upon a **microprocessor**. (See also *Desktop computer*; *Laptop computer*.)

Microprocessor

An **integrated circuit** on a silicon **chip** that serves as the **central processing unit** of a **computer**.

Middleware

A type of **software** that connects different **applications** that were not originally designed to work together.

Minimize

A **command** used in a **graphical user interface (GUI)** that reduces a **window** to an **icon** or a label, usually at the bottom of a **desktop**.

MIPS

An acronym derived from millions of instructions per second. Used to measure the speed of a processor.

Modem

An acronym derived from modulator/demodulator. A device that (1) converts digital signals into tones for transmission over telephone lines and (2) converts the tones back into digital signals at the receiving end.

Monitor

The **display screen** of a **computer**.

Monospace font

See *Fixed-pitch font*.

Morph (from *metamorphosis*)

To change one image into another by means of digital technology.

Motherboard

The **computer's** main **circuit board**, which contains the **central processing unit**, the **memory**, and expansion slots for additional circuit boards called *adapters* or *cards*. (See also *Adapter*.)

Mouse

A hand-operated electronic device used to move a **cursor** or pointer on the **display screen**. Mostly used with **microcomputers**. Referred to in Spanish as *el maus*. (See also *Word of mouse*.)

Mouse arrest

To be placed under mouse arrest is to be denied further access to an **Internet service provider** or a **commercial online service** as a result of violating the terms of service.

Mouse elbow

A repetitive strain injury (similar to tennis elbow) that is caused by repeatedly using a **mouse**. (See also *Carpal tunnel syndrome*.)

Mouse potato

A person who sits glued to a **computer screen** (in the same way that a couch potato sits glued to a TV screen).

Mousetrapping

Blocking someone's exit from a **Web site**.

MS-DOS (pronounced *em-ess-dahs* or *-doss*)

Derived from Microsoft disk operating system. An operating system used on the first IBM and IBM-compatible **microcomputers**.

MP3

Compact audio and video file format. The small size of the files makes them easy to download and e-mail. Format used in portable playback devices.

Multimedia

The use of several types of media (such as **text**, **graphics**, animation, sound, and video) in a **document** or an **application**.

Multitasking

The ability of a **computer** to **execute** more than one **program** at a time. The derivative term "multitasking" means playing games at the computer instead of working.

MS-DOS

An early operating system developed by Microsoft Corporation (Microsoft Disc Operating System).

Net

See *Internet*.

Netiquette

A set of guidelines for formatting and composing **e-mail** messages.

Netizen

A "citizen" of the Net; an active participant in the **Internet community**. Netizens in general are sometimes referred to as *netkind*.

Network

A system of interconnected **computers**. (See also *Notwork*; *Sneakernet*.)

Local Area Networks (LANs)

Use cable to connect a number of computers within the same location or in close proximity.

Wide Area Networks (WANs)

Use telephone lines or other **telecommunications** devices to link computers in widely separated locations.

Internet

Is a system that links existing networks into a worldwide network.

Newbie

A newcomer to a **bulletin board system** or some other **network** facility.

Newsgroup

An electronic discussion group maintained over the **Internet** or tied into a **bulletin board system**. Each newsgroup is typically organized around a specific interest or matter of concern. Also called a *forum*.

Newsreader

A **program** that permits users to read and respond to messages posted on **Usenet**.

Notebook computer

A portable **computer**. Also known as a *laptop computer*.

Notwork

A **network** that does not live up to its advance billing. Also called a *nyetwork*.

Number crunching

Processing large amounts of numerical **data**.

Object Linking and Embedding (OLE)

A process that permits the user to take material (referred to as an *object*) from one source and **insert** (*embed*) it in another **document**. If the user subsequently makes changes in the original material, those changes will be automatically transferred to the second document as a result of the OLE linking process.

OCR

See *Optical Character Reader*.

Offline

Refers to the state in which a **computer** is temporarily or permanently unable to communicate with another computer (even though it is turned on and capable of performing other functions). The term *offline* is also used humorously to refer to “real life.” The expression “Let’s take that offline” means “Let’s discuss that in private.”

Offscreen

Refers to any **computer** function that does not produce a display on the **screen**.

OLE (pronounced oh-lay)

See *Object linking and embedding*.

Online

Refers to the state in which a **computer** is turned on and ready to communicate with other computers.

Onscreen

Refers to anything displayed on the **screen** of a **computer**.

Open

To transfer a file from a **disk** into the **memory** of a **computer**.

Open source software

Software that makes the underlying source code available to all users at no charge. Users may make changes and improvements as long as they do not try to sell the software commercially. **Linux** is the best example of open source software currently available.

Operating System (OS)

Software that manages the internal functions and controls the operations of a **computer**.

Optical Character Reader (OCR)

A device that can scan **text** from **hard copy** and **enter** it automatically into a **computer** for **storage** or **editing**. Also called an *optical scanner*.

Option button

An **onscreen** element that allows a user to select one option from a group of items. An empty circle precedes each option not selected. A dot appears in a circle to signify that the user has selected that option. Also referred to as a *radio button*.

Orphan protection

The ability of a **program** to prevent the first line of a paragraph from printing as the last line on a page. When the first line of a paragraph does appear as the last line on a page, it is referred to as an *orphan*. (See also *Widow protection*.) **OS**. See *Operating system*.

Outlining

The ability of a **program** to automatically number and letter items typed in an indented **format**.

Output

The results of a **computer** operation.

Output device

A **hardware** component (such as a **monitor**, a **printer**, or a sound speaker) that delivers the results of **computer** operations to the user.

Overwriting

Recording and storing information in a specific location on a **storage** medium that destroys whatever had been stored there previously.

Page break

A **command** that tells the **printer** where to end one page and begin the next. (See also *Hard page break*; *Soft page break*.)

Page numbering

The ability of a **program** to automatically print page numbers on the pages that make up an entire **document**. If the document is revised and the total number of pages changes, the page numbering is automatically adjusted.

Pagination

The ability of a **program** to take information and automatically divide it into pages with a specified number of lines per page. If the information is changed because of the addition, deletion, or rearrangement of copy, the material will be automatically repaged to maintain the proper page length. (See also *Soft page break*.)

Palmtop computer

A portable computer smaller than a **notebook** (or **laptop**) **computer** that fits on the palm of your hand. Also called a **handheld computer**.

Papernet

Ordinary mail service. (See also *Voicenet*.)

Password

A user's secret identification code, required to **access** stored material. A procedure intended to prevent information from being accessed by unauthorized persons.

Paste

A **command** that transfers information from a **clipboard** and inserts it in another location. (See also *Cut and paste*.)

Patch

A small **program** that improves an existing piece of **software** or corrects an error in it.

PC

See *Personal Computer*.

PDA.

See *Personal Digital Assistant*.

PDF. See *Portable Document Format*.

Peripheral. A device that extends the capabilities of a **computer** (for example, a **printer**).

Personal Computer (PC)

A **microcomputer** for personal and office use.

Personal Digital Assistant (PDA)

A palm-sized, handheld **computer**.

Personal Information Manager (PIM)

A **database management system** that permits a user to **store** and **retrieve** a wide range of personal information (for example, names, addresses, phone numbers, appointments, and lists of people to call and things to do).

Phishing

A type of computer fraud that tries to trick users into their passwords and other confidential information.

Pica

A measurement used for a **font**; equal to 1/6 inch or 12 **points**.

PIM See *Personal Information Manager*.

Piracy.

The illegal copying of **software** or other creative works.

Pitch

The number of monospace **characters** (each with exactly the same width) that will fit in a 1-inch line of **text**. (See also *Fixed-pitch font*.)

Pixel

An acronym derived from picture element. The smallest element (a dot) on a **display screen**. Pixels are used to construct images on the screen.

Platform

A term used to define the type of **microprocessor** and **operating system** on which a **computer** is based.

Plug-and-play

The ability to plug in a **peripheral** and have it work without difficulty. The term *plug-and-play* is now sometimes used to refer to a new employee who can immediately do the job without any preliminary training. Because of the problems some users have experienced with items so labelled, they refer instead to *plug-and-pray*.

POD

Publishing On Demand. A process that allows for the printing of individual copies as orders come in (as distinguished from the traditional method of printing a number of copies on the basis of estimated sales for the foreseeable future).

Podcasting

Posting audio **files** online so that they can be **downloaded** to a portable audio player such as an MP3 player.

Point

A measurement that indicates the size of a **font**; 72 points equals 1 inch and 12 points equals 1 **pica**.

Pointer

An **onscreen** device that indicates the current position of the **mouse**.

Pop-up menu. See *Menu*.

Port. A socket on a **computer** into which an external device (such as a **printer** cable) can be plugged.

Portable Document Format (PDF)

A **format** that makes it possible—with the help of Adobe Acrobat—to view documents that employ different **fonts**, various types of **graphics**, and complex layouts.

Portrait orientation

Positioning paper so that information is printed across the short dimension of the paper. (See also *Landscape orientation*.)

Posting

A message entered into a **network** (such as a **newsgroup**) or on a **Web site**.

Print preview

A **software** feature that reduces the pages of a **document** so that a full page (or two facing pages) can be seen on the screen before being printed. This feature permits the user to spot and correct problems in **format** and **page breaks**.

Printers

Output devices of various types that produce copy on paper. (See also *Dot matrix printer*; *Inkjet printer*; *Laser printer*.)

Printout

The paper copy of information produced on a **printer**.

Program

An established sequence of instructions that tells a **computer** what to do. The term *program* means the same as **software**.

Programming language

The rules, conventions, and specific **commands** used to write a **computer program**. Most programs must be converted into machine **language** or **binary code** so that the instructions can be performed on a specific **computer platform**.

Prompt

An onscreen symbol (for example, a **cursor**) that indicates where to **type** a **command**; a message that indicates what action is to be taken.

Proportional font

A **typeface** in which the width of each **character** varies (as in this sentence), so that the letter l takes much less space than the letter M. (See also *Font*.)

Protocol

A set of standards that permits **computers** to exchange information and communicate with each other.

P2P

Peer-to-peer (network).

Publishing on demand

See *POD*.

Pull-down menu

See *Menu*.

Push technology

A process that allows a user to obtain automatic delivery of specified information from the **Internet** to the user's **computer**—for example, stock market quotes, weather forecasts, and sports scores.

Radio button

See *Option button*.

RAM

See *Memory, random-access*.

Random access A technique that permits information to be directly retrieved, regardless of its location on the storage medium.

Rave

To annoy someone by persistently talking about something. The act of raving is different from **flaming** in that flaming is deliberately provocative and even insulting, whereas raving is simply annoying because it goes on so long.

Read

To transfer information from an external **storage** medium into internal storage. (See also *Storage, external* and *internal*.)

Record (n.)

A collection of all the information pertaining to a particular subject.

Redlining

A **word processing** feature that allows writers and editors to display (by means of a shaded panel or some other method) the additions and deletions they have made in a **document**. Redlining in drafts of reports, contracts, and manuscripts makes it

easy for others to see the changes that have been made. All redlining is removed from the final version of the document.

Response time

The time a **computer** takes to **execute** a **command**.

Retrieve

To call up information from **memory** or **storage** so that it can be processed in some way.

Right-click

Using the right mouse button to open context-sensitive drop-down menus.

ROM

See *Memory, read-only*.

Row

A horizontal block of **cells** in a table or **spreadsheet**. (See also *Column*.)

RSI

Repetitive strain injury; sometimes referred to as *chiplash*. (See also *Carpal tunnel syndrome*; *Mouse elbow*.)

Ruler

A bar (displayed on the **screen**) that shows the width of the page, the margin settings, the paragraph indentions, and the tab stops.

Save. To store a **program** or **data** on a **storage** device such as a **disk**.

Scanner

An **input** device that can copy a printed page into a **computer's memory**, thus doing away with the need to **type** the copy. A scanner can also convert artwork and photographs into a digital format and store these in memory.

Screen

See *Display screen*.

Screen dump

A **printout** of what is displayed on the **screen**.

Screen saver

A **program** that changes the **screen** display while the user is away from the **computer**. Originally intended to prevent images from becoming etched on a **monitor's** screen when that was still a problem. Now used primarily for aesthetic purposes.

Scroll

To move information horizontally or vertically on a **display screen** so that one can see parts of a **document** that is too wide or too deep to fit entirely on one screen.

Scroll bar

An **onscreen** element that allows a user to **scroll** by using a **mouse**.

SCSI (pronounced *scuz-zy*)

See *Small computer system interface*.

Search and replace

A **command** that directs the **program** to locate a **character string** or information (**text**, numbers, or symbols) wherever it occurs in a **document** and replace this material with new information. (See also *Global*.)

Search engine

A free **program** that helps Web users locate **data** by means of a **keyword** or concept. Among the most popular search engines are Google, Yahoo!, Excite, WebCrawler, and AltaVista.

Sequential access

A technique for retrieving stored information that requires a sequential search through one item after another on the storage medium.

Server

A **computer** that delivers **data** to other computers (**clients**) linked on the same **network**.

Shareware

Software that usually may be **downloaded** and used initially without charge; the author may subsequently ask for some payment. (Compare with *Freeware*.)

Shouting

The use of all caps in **e-mail**. This practice is considered a violation of **netiquette** and is actively discouraged.

Shovelware

Mediocre material used to fill up space on a **CD-ROM** or a **Web site**.

Sig block

The signature block that automatically appears at the end of every outgoing **e-mail** message. Also referred to as a *.sig file*.

Small computer system interface (SCSI)

A type of **hardware** and **software interface** for connecting **peripherals** such as a **disk drive** or a **CD-ROM**.

Smiley

In **e-mail** messages, a facial expression constructed sideways (for the “lateral-minded”) with standard **characters**. Also referred to as an *emoticon* (emotional icon). For example:

:-) I’m smiling. >:-(I’m angry. :-J I’m being tongue-in-cheek.

:-D I’m laughing. :-@ I’m screaming. :-+ I’m exhausted—my tongue :-(I’m sad. :-& I’m tongue-tied. is hanging out.

:-< I’m very sad. :-x My lips are sealed. %-) I’ve been staring at the :’-(I’m crying. #-) I’m feeling no pain. screen too long.

;-) I’m winking. :-O I’m shocked. 8-| What next?

Japanese smileys do not require you to turn your head sideways. For example:

^L^ I’m happy. (>_<) I’m angry. (^_^)/ I’m waving hello.

^o^ I’m laughing out loud. (@_@) I’m stunned. (;_;/ I’m waving good-bye. \(^_^)/ I’m joyful. (!_!) I’m shocked. (= _=) I’m sleepy.

Although smileys tend to be quite amusing, many people find them excessively cute. In any case, do not insert smileys in business correspondence except in informal messages, when you are sure the recipient will welcome them.

Snail mail

A term employed by **e-mail** users to refer to regular mail service.

Sneakernet

The procedure for transferring **files** from one **computer** to another when the computers are not connected by an electronic **network**. (Users remove **diskettes** or other **storage** devices from one computer and carry them on foot to another.)

Soft copy

Information shown on the **display screen**. (See also *Hard copy*.)

Soft hyphen

A hyphen that divides a word at the end of a line; considered soft (non-permanent) because the hyphen will automatically be deleted if the word moves to another position as a result of a change in the **text**. (See also *Hard hyphen*; *Hyphenation*.)

Soft page break

A line inserted by the **program** to show where a page will end. If copy is added or deleted, the original **page break** will be replaced with a new soft page break at the appropriate place. (By contrast, a **hard page break** will remain fixed, no matter what changes are made in the copy.) (See also *Pagination*.)

Soft return

A **software** feature that automatically breaks **text** between words at the right margin. The line ending is considered soft (non-permanent) because the line ending will change if the user adds or deletes **text**. (See also *Hard return*; *Word wrap*.)

Software

The instructions that a **computer** needs to perform various functions. The term *software* means the same as **program**. (See also *Hardware*.)

Sort

To arrange **fields**, **records**, or **files** in a predetermined sequence.

Spam (n.)

The electronic equivalent of junk mail; also called *unsolicited commercial e-mail* (UCE). (See also *Ham*.)

Spam (v.)

To send an **e-mail** message to a great number of recipients without regard for their need to know. A user who spams sometimes receives a **mailbomb** in return as a form of retaliation.

Spider

An automated **program** that searches the **Internet** for new **Web sites** and indexes their **URLs** and content descriptions in a **database** for examination by a **search engine** for matches.

Spim

Spam that is delivered by **instant messaging** (IM Spim).

Spit

Spam that is delivered by **Internet Telephony** (IT).

Split screen

The ability of some **programs** to display information in two or more different areas on the screen at the same time.

Spreadsheet

A **program** that provides a worksheet with **rows** and **columns** to be used for calculations and the preparation of reports.

Spyware

Software that enables a user to track someone's **computer** activities without that person's consent.

Storage

The **memory** of a **computer**.

Store

To place information in **memory** for later use.

Streaming. The process of sending and temporarily storing large amounts of audio or video information in small pieces and playing them back on the **computer** so that there is a continuous flow.

Style sheet

A collection of the user's formatting decisions regarding **font**, type size, margins, **justification**, paragraph indentions, and the like.

Surfing the Net

Browsing through various **Web sites** on the **Internet** in search of interesting things.

Surge protector

A device that protects **computer hardware** from being damaged by sudden increases in voltage.

SYSOP (pronounced *sis-op*)

An acronym derived from system operator. A person who operates a **bulletin board system**.

Tab grid

A series of preset indentions (usually a half inch apart). If the tabs are reset by the user, the grid will change to show the new location of the tabs.

Tablet

A computer that accepts handwritten notes entered on the **display screen** by means of an electronic pen. The notes are then converted into text.

TCP/IP

See *Transmission Control Protocol/Internet Protocol*.

Telecommunications

The process of sending and receiving information by means of telephones, satellites, and other devices.

Telecommuter

An employee who works away from the office (usually at home) and uses a **computer** (1) to **access** needed information on the organization's **intranet** and the **Internet** and (2) to communicate with other employees, suppliers, and customers or clients.

Teleconferencing

Conducting a conference by using **computers**, video, and **telecommunications** to share sound and images with others at remote sites.

Telnet

A **protocol** that allows a **computer** to connect with a **host computer** on the **Internet**. The use of Telnet has diminished as the Web's **Hypertext Transfer Protocol (HTTP)** has become the dominant protocol.

Template

A pre-established **format** for a **document**, stored in a **computer**. The template determines the margins, the type style and size to be used for the **text**, placement instructions for various elements (such as the date line), and design specifications for certain items (such as a letterhead). The user can modify the original template or create a new template to satisfy personal preferences.

Terminal

Any device that can transmit or receive electronic information.

Terabytes (TB)

A thousand gigabytes.

Text

Broadly speaking, the material displayed on a **screen** or printed on paper. Within a given **document**, the term refers to the body of the document as distinct from **headers**, **footers**, and other elements.

Text entry

The initial act of typing that places **text** in **storage**. (See also *Type*.)

Thread

A series of posted messages that represents an ongoing discussion of a specific topic in a **bulletin board system**, a **newsgroup**, or a **Web site**.

Toolbar

An onscreen element that offers instant **access** to commonly used **commands**. The commands are represented by **icons** on a row of buttons at the top of the **screen**. Also called a *button bar*.

Touchpad

The device on a **laptop computer** that takes the place of a **mouse**.

Touchscreen technology

The technology that permits a user to perform a function simply by touching the **screen** in an appropriate spot.

Trackball

An input device in which the user rolls a ball (usually with a thumb) to move the **pointer**.

Transfer rate

The rate at which **data** is transmitted between two **computers** or other electronic equipment.

Transmission Control Protocol/Internet Protocol (TCP/IP)

A collection of over 100 **protocols** that are used to connect **computers** and **networks**.

Treeware

Anything printed on paper.

Trojan horse

A type of **computer virus** that is hidden within an innocent-looking program.

Type

To enter **characters** into the **memory** of a **computer**. For a number of years the verb *type* began to be replaced by the verb *key* as a way of emphasizing the difference between a **computer** and a typewriter. However, the simpler verb *type* has made a comeback in computer terminology and is now

the word commonly seen in users' manuals and on **display screens**.

Typeface

See *Font*.

Typeover

See *Overwriting*.

Uniform Resource Locator (URL)

The specific **Internet** address for a resource such as an individual or an organization. (See also *World Wide Web*.)

Uninterruptible Power Supply (UPS)

A battery-powered backup system that provides enough electricity to a **computer** during a power outage (or, in most cases, a brownout or power surge) so that the user can save **files** before shutting down the computer.

UNIX

A very powerful operating system used as the basis of many high-end computer applications.

Universal Serial Bus (USB)

A common standard for connecting multiple **peripherals** to a **computer** as needed.

Upload

To transfer information from a **client computer** to a **host** computer.

UPS

See *Uninterruptible power supply*.

URL (pronounced *you-are-el* or *erl*)

See *Uniform resource locator*.

USB

See *Universal Serial Bus*.

Usenet (from Users"Network)

A **bulletin board system** or **Internet** site that hosts thousands of **newsgroups**.

User-friendly

Describes **hardware** or **software** that is easy to use. A related phrase, *user-obsequious*, describes hardware or software that is so simplistic in design that it is virtually unusable.

Usrid (pronounced *user-eye-dee*)

The name a person must use, along with a **password**, to gain **access** to restricted areas on a **network**.

Vaporware

Software that is being widely advertised, even though it is still in the developmental stage and has serious problems that may doom its eventual release. The premature marketing of software is designed to deter prospective customers from buying competitive products already available for sale. (See also *Brochureware*.)

Video teleconferencing

A remote "face-to-face chat," when two or more people using a webcam and an Internet telephone connection chat online. The webcam enables both live voice and video.

Video display terminal (VDT)

See *Display screen*.

Virtual reality

See *Cyberspace*.

Virus

A piece of **computer** code designed as a prank or malicious act to spread from one computer to another by attaching itself to other **programs**. Some viruses simply cause a humorous message to appear on the screen. Some cause minor **glitches**, but others cause serious damage to a computer's **memory** or **disks**. Some viruses flood an organization's Web site, interrupting or entirely preventing access to the organization's customers. (See also *Antivirus software*; *Denial of service attack*.)

Voice over Internet Protocol (VoIP)

The transmission of voice communications by means of the **Internet Protocol**. VoIP is an inexpensive alternative to long-distance telephone calls.

Voicenet

Ordinary telephone service.

VoIP

See *Voice over Internet Protocol*.

WAIS (pronounced ways)

See *Wide-Area Information Server*.

WAN

See *Network, wide area*.

Web

See *World Wide Web*.

Web browser

Software that permits a user—with a click of a **mouse**—to locate, display, and download **text**, video, audio, and **graphics** stored in a **host computer** on the Web. The most common Web browsers now in use are Internet Explorer and Mozilla Firefox.

Web site

One or more related pages created by an individual or an organization and posted on the **World Wide Web**. (See also *Home page*.)

Webcam

A video camera that sends live images over the **Internet** to a **Web site**.

Webcaster

An **application** that can be custom-tailored to satisfy an individual user's need for constantly updated information in specific areas. A Webcaster, when appropriately programmed, will automatically deliver the needed information to the user's **computer**. (See also *Push technology*.)

Webmaster

The person who maintains a specific **Web site** and is responsible for what appears there.

Webzine

See *E-zine*.

Wide-Area Information Server (WAIS)

An **Internet** search system that will locate **documents** that contain **keywords** specified by the user.

Wide area network (WAN)

See *Network, wide area*.

Widow protection

The ability of a **program** to avoid printing the last line of a paragraph as the first line on a page. When the last line of a paragraph does appear as the first line on a page, it is referred to as a *widow*. (See also *Orphan protection*.)

Wi-Fi

Wireless fidelity. A process that permits high-speed wireless transmission of **data**.

Wiki

A procedure that permits a **Web site** to be continually edited or added to by those who visit the site.

Window

A frame that permits users to view messages they have received or **documents** they are working on.

Windowing

The ability of a **program** to split its **display screen** into two or more segments so that the user can view several different **documents** or perform several different functions simultaneously. (See also *Split screen*.)

Windows

A Microsoft **operating system** used on the vast majority of **PCs**.

Wizard

An interactive feature within an **application** that helps a user through each step of a task, such as creating a customized **document** or adding **hardware**. The term *wizard* is also used to refer to the person in an organization who can quickly find and fix everyone else's **computer** problems.

Woot

The term *w00t* is an **alphanumeric** acronym that stands for "we owned the other team." This term is typically employed by Internet users to express happiness or joy.

Word of mouse

Gossip spread by **e-mail**.

Word processing

The electronic process of creating, formatting, **editing**, proofreading, and printing **documents**. (See also *Information processing*.)

Word wrap

A **software** feature that detects when a word will extend beyond the right margin and automatically transfers it to the beginning of the next line.

Workstation

A **desktop computer** that runs **applications** and serves as an access point in a local area **network**. (See also *Network*.)

World Wide Web

The component of the **Internet** that combines audio, video, and **graphics** with **text**. Also called the *Web* or *WWW*. (*WWW* is sometimes pronounced *triple-dub*, to avoid pronouncing each *W* separately.)

Worm

A type of **computer virus** that runs a **program** to destroy **data** on a user's **hard drive**. Worms spread by sending copies of themselves to everyone on the user's list of e-mail addresses.

WWW

See *World Wide Web*.

WYSIWYG (pronounced wiz-zy-wig)

An acronym derived from what you see is what you get. A **computer** design standard that lets the user see on the screen how a page will look when it is printed.

Zombie

A **computer** that has been hijacked by a **cracker** without the owner's knowledge and used to perform malicious tasks on Internet.

Zone

See *Domain*.