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INFORMATION TECHNOLOGY

STUDENT TEXTBOOK GRADE 7

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FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA
MINISTRY OF EDUCATION

INFORMATION TECHNOLOGY

STUDENT TEXTBOOK

GRADE 7

WRITERS
Birhanu Hailu (PhD)
Belete Biazen (Assistant Professor)

LANGUAGE EDITOR
Lemma Kassaye (PhD)

CONTENT EDITOR
Mamo Fideno (MSc.)

BOOK DESIGNER
Semeon Tiruneh (MSc.)

INSTRUCTIONAL DESIGN
Mehdi Abdo (MA, MPhil, Assistant Professor)

ILLUSTRATOR
Umer Nuri (MSc.)

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Preface

The way humans communicate and work has evolved as a result of Information-Technology (IT). Information technology is defined as the use of systems, primarily computers and telecommunications, for the storage, retrieval, and transmission of data. We live in the information age, and IT is used in almost every industry. It is now part of our daily lives and has had a significant impact on society. We use information technology for education, communication, health, business, and so forth. Through online applications and smart gadgets, family and friends may stay in touch. Thus, IT is important for every one of us.

This textbook is for grade 7 students of the Federal Democratic Republic of Ethiopia (FDRE) to teach the basic knowledge and skills of IT since it is essential for their future education and lives.

The books covers selected fundamental knowledge and skills of IT. It is organized into six units as shown below:

- Unit One introduces the fundamental concepts of Introduction to Information and Communication Technology (ICT), Information Technology (IT) and Computer.
- Unit Two presents and describes the basic Computer Hardware and their functionalities.
- Unit Three discusses the basic concepts and skills of using computer software.
- Unit Four covers the basic terminology of internet, and knowledge and skills necessary to use the internet.
- Unit Five shows how to apply Security and Safety issues while using computers.
- Unit Six offers the students the basic programming concepts of LOGO programming.

This textbook is designed in a simple and student centered approach which invites students to use different learning methods. It also includes brainstorming activities to help students to link their previous knowledge with the topics. Activities which help students to develop their skills and knowledge are incorporated. In addition, the textbook contains the basic and current knowledge of IT.

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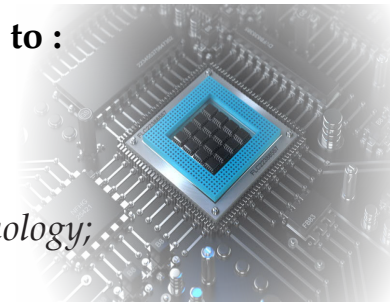
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UNIT

1 Introduction to Information & Communication Technology

Unit Outcomes



At the end of this unit, students will be able to :

- *define ICT;*
- *define computer;*
- *differentiate between IT and ICT;*
- *explain the concepts of information technology;*
- *discuss the basic elements of ICT system.*

Overview

This unit draws students' attention to the important role that Information and Communication Technology (ICT) plays in our daily lives. Nowadays, ICT is used in communication, education, entertainment and e-commerce. The unit also describes the basic terminologies such as information communication technology, and information technology. The basic elements of ICT including data, information, user, communication and technology are described in detail in the unit. In addition, the unit gives background knowledge about computers and their basic characteristics.

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1.1. Information and Communication Technology

Brainstorming activity



Have you ever thought what ICT is? How it works?

The term Information Communication Technology (ICT) refers to all communication technologies, including the internet, mobile phones, television, computers, tablets, and cameras. It also refers to integrating telephone and audio-visual networks with computer networks to enable the users to access, retrieve, store, transmit, and manipulate information in a digital or electronic form.

Information Technology (IT) refers to an entire industry that uses computers, networking, software and other equipment to manage information. It is the process of creating, maintaining, and using computer software, hardware, and networks.Although IT and ICT are related concepts, they are not the same. IT is a broader concept and a technology that is related to computing data whereas ICT is related technologies in communication.

Activity 1.1

- Discuss the term ICT in groups and share your experiences of using ICT with your friends.
- Write the difference between IT and ICT using your own words and present it to the class.

1.2. Basic Elements of ICT System

Brainstorming activity



Can anyone tell us the difference between data and information?

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ICT system consists of five basic elements such as data, information, communication, user, and technology.

Data: It is one of the basic elements of ICT system. It can be defined as any type of representation of an object or an event. Numbers, text symbols, speech, image, and so on are all examples of representation. Data has to be processed, or provided with a context before it is given meaning for example Abebe, 15, Kebede, 17, Sara, 12, Mohammed, 16, Alemu, 20, Dawit, and 18. Figure 1.1 shows a list of raw and processed data.

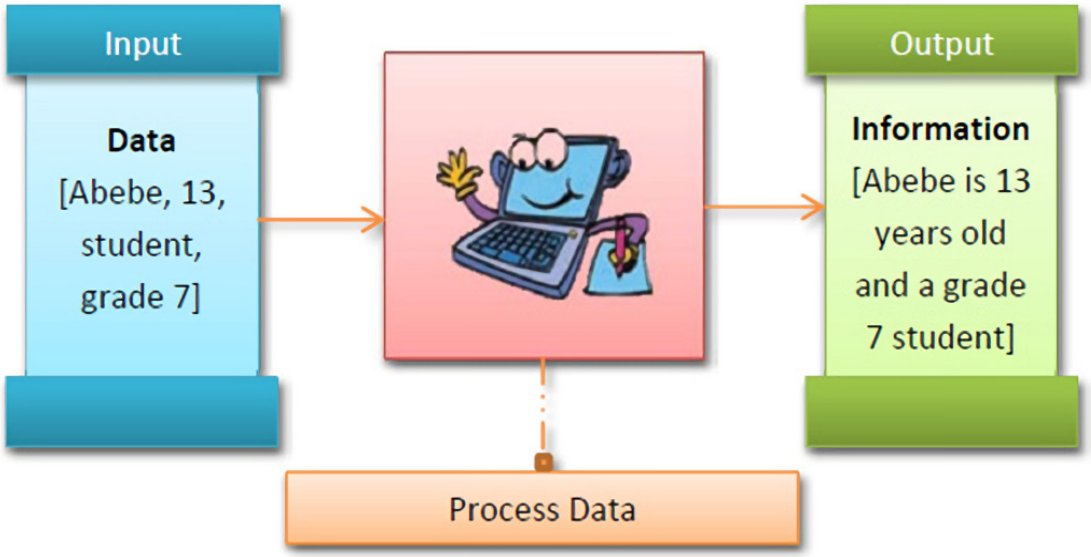


Figure 1.1: The differences between data and information

Information: is the result of processed data. Data processing occurs when data is collected and translated into usable information. This result allows the processed data to be put into context and give meaning.

Data only takes meaning and becomes information when it is interpreted. Data interpretation is the process of reviewing data through some predefined processes which will help assign some meaning to the data and arrive at a relevant conclusion. Figure 1.1 shows how to process data to create meaningful information. A list of data and meaningful information is provided below in Example 1.

Example 1

Look at the examples of data given below:

- **Abebe, Kebede, Sara, Melat, Alemu, Dawit**
- **15,17, 18, 15, 14,2, 0**

Only when we assign a context or meaning to it, the data becomes information.

- **Abebe, Kebede, Sara, Melat, Alemu, and Dawit are names of grade 7 students.**
- **15,17,18,15.14,20 are the ages of grade 7 students.**
- **The age of grade 7 students ranges from 14 to 20.**

User: is a person who has access to ICT and utilizes it. It is humans who develop and operate the software, feed data, create and maintain the hardware, define the procedures, and finally determine if an ICT succeeds or fails. Figure 1.2 shows a person using a computer to perform daily activity.



Figure 1.2: A person accessing a computer

Communication: is the process of passing information from one place to another. Providing information to computers, reading information from any system, or the transfer of message between two people are some of the examples of communication.

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To have communication among computers and other ICT systems, communication devices are mandatory. Communication devices are basically devices that allow computers and other ICT systems to communicate with one another. Figure 1.3 shows an example of ICT communication service.



Figure 1.3: Example of communication service

Technology: refers to a set of tools and machines created by humans to solve problems. It allows humans to study and evolve the physical elements that are present in their lives. Technology can be found in our homes, in personal places, in industries, in business, and in the medical profession. For example, we can use mobile phones technology which enables us to communicate with other people who are far away from us. Television is also another example of technology we use to watch movies and news.



Figure 1.4. Cell Phone Technology

Activity 1.2

- Identify the basic elements of ICT system and discuss each of them in groups with examples
- Turn the given data below into information by giving any meaningful and appropriate title to them.

  - 0,2,4,6,8,10

  -Biology, Physics, Chemistry, Mathematics

1.3. ICT in our daily life

Brainstorming activity



Have you ever used IT before? For what purpose have you used it?

ICT is a broad subject and an evolving concept. It has a great impact on our daily lives. We encounter many new technologies in our everyday lives. We use ICT at home, at school, in the workplace, in the streets, in places we visit during holidays, on business, and in public spaces Figure 1.5 shows application of ICT in our daily lives.



Figure 1.5: ICT in daily life

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1.3.1. ICT in communication

We all know that ICT plays an important role in our lives. In the past, our parents used to write letters. However, with the help of ICT, it is now easy to communicate with our loved ones.

For example, humble online communication for experience sharing and peacekeeping, short message service (SMS), email and social media are the most common services of ICT that we use in our daily life to communicate with our loved ones. Radio and television are also a kind of ICT for communication. Figure 1.6 is a typical example for the applications of ICT in communication.



Figure 1.6: ICT in communication

1.3.2. Information Communication Technology in Education

ICT contributes greatly to education because it improves the way of education and provides a better educational environment. For example, we can think of radio and television education programs prepared by the Ethiopian Ministry of Education for primary schools, and plasma educational channels for secondary schools. The use of computers, tablets, displays, interactive electronic boards, and ICT technologies help to expand access to education.

Through ICT, learning can occur anytime and anywhere. For example, students can access textbooks and other educational resources from the internet. These resources can be obtained through video clips, audio sounds, and visual presentations. ICT enables an inclusive right for information access. For example, if someone has a sight problem, he/she can access information by listening to audio sounds.

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Figure 1.7 shows an interactive electronic board which widely used for educational purposes.



Figure 1.7: Application of ICT in education

1.3.3. Information Communication Technology in Entertainment

ICT provides a variety of entertainment and leisure activities that can be easily accessed from our home. Directly from television, we can watch movies and music. As illustrated in Figure 1.8, we can also play games on the internet in our free time.



Figure 1.8: ICT in entertainment

1.3.4. Information Communication Technology in Electronic commerce

Electronic commerce (E-commerce) is the buying and selling of goods and services, or the transfer of funds and data through the internet. A typical example of ICT in e-commerce is shown in Figure 1.9 below.

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Figure 1.9: ICT in e-commerce

Generally, ICT is all around us. It is becoming increasingly important in people's lives, and its importance is predicted to continue in the future.

Activity 1.3

- Give some examples (examples that are not mentioned in this textbook) of the uses of ICT in daily lives.
- Please make a small group and discuss the role of ICT in the following cross-cutting issues. Then present it to the class:
  - Child trafficking
  - COVID-19
  - HIV/ADIS
  - Climate change and agriculture

1.4. What is computer?

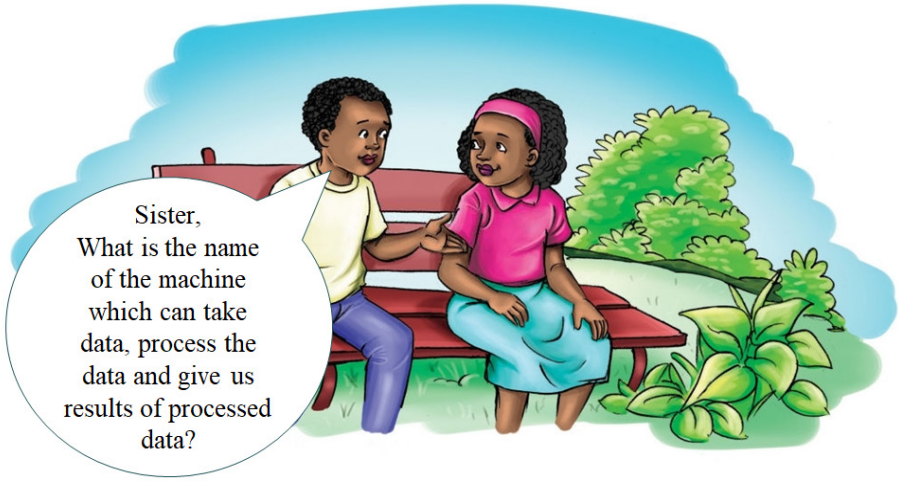


Figure 1.10: Definition of computer and its application

A computer is any calculating device or machine. But these days, computers process not only numbers but also texts and pictures. Therefore, the meanings of computers, nowadays, are broader than computing concepts.

Functions of a computer

The basic functions of a computer depicted in Figure 1.11 are entering, processing and producing processed data (information).

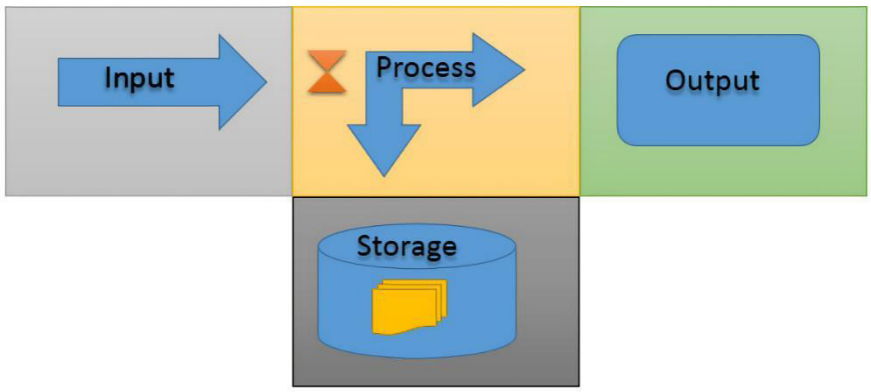
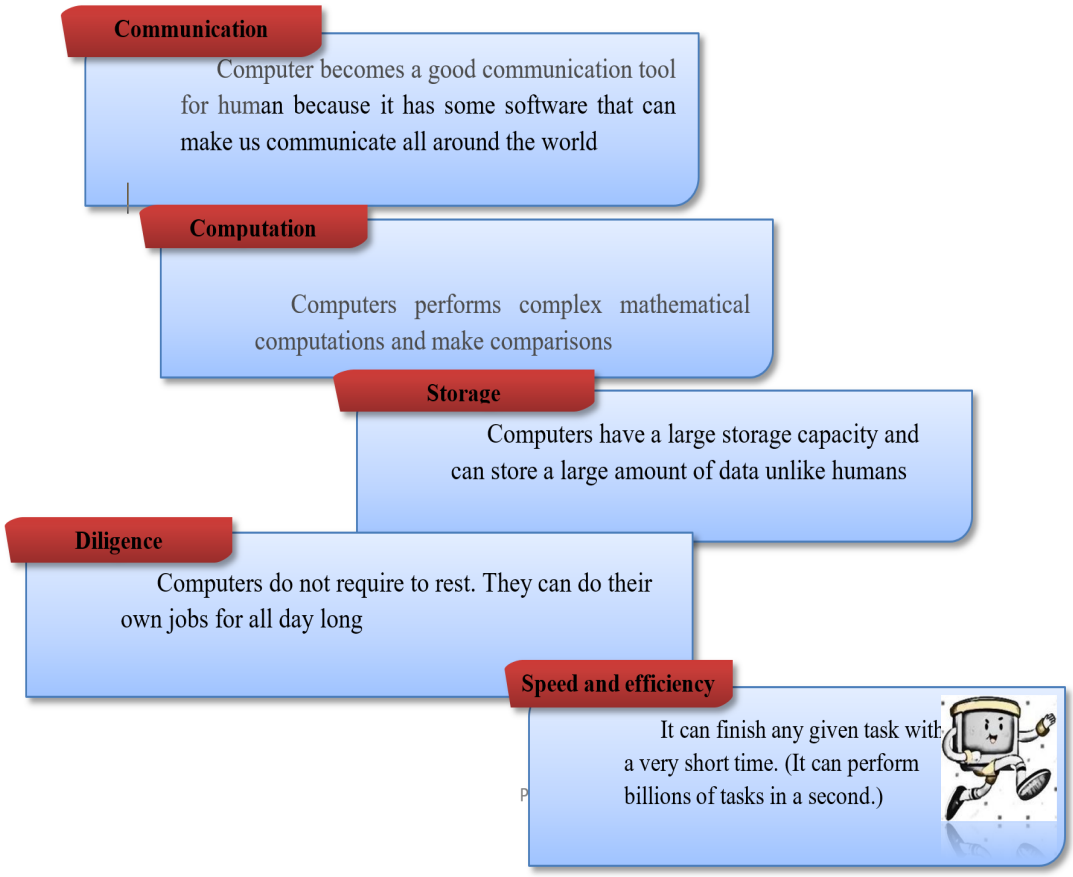


Figure 1.11. Four basic functions of computer

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Characteristics of computer

We use computers for a variety of purposes as shown below.



Though computers allow us to do many things, there are a number of physical and emotional risks that will result in the overuse and incorrect use of computers. For example, if children play computer games too much, they may experience particular physical problems such as muscle and joint pain, overuse injuries of arms, wrist or hand and eyestrain.

Components of the computer system

A computer system, like a human being, can be viewed as a combination of body and mind. The computer system has two parts: hardware and software. In unit 2 and unit 3, you will learn more about hardware and software components of a computer system, respectively.

Summary

- Information Technology is the use of computers, storage, networking and other physical devices to create, process, store, secure, retrieve data and information.
- Information and communication technology (ICT) refers to all communication technologies, including the internet, wireless networks, cell phones, computers, software, video-conferencing, social networking , and other media applications and services enabling users to access, retrieve, store, transmit, and manipulate information in a digital form.
- There are five basic elements of ICT. These are data, information, user, communication, and technology
- Technology is a set of tools and machines created by humans
- ICT has a great impact on our daily lives. For example, it greatly contributes to education, communication, and entertainment.
- Computer is an electronic device that takes an input, processes it under a set of instructions called programs and produces an output.

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Review Questions

Part I. Write TRUE if the statement is correct and FALSE if it incorrect.

1. Computer is only a calculating device or machine.
2. ICT tools cannot be used for entertainment.
3. ICT improves the teaching and learning system.
4. People use computers to make their job easier and faster.
5. Data by itself has a meaning.
6. Data is any type of representation of an object or an event.
7. Communication devices simply allow computers and various ICT systems to be connected to one another

Part II. Choose the best answer among the given alternatives.

1. An elements of ICT that has no meaning by itself is:

A. Information
C. Data
B. User
D. Technology

2. Which one of the following sectors can be supported by ICT?

A. Education
C. Health
B. Agriculture
D. All

3. The characteristics of a computer that refers to how fast a computer can perform a given task is:

A. Storage
B. Speed
C. Diligence
D. Communication

4. A processed data is called _____.

A. Information
C. Input
B. Data
D. Process

5. Which one of the following is the risk that we may face due to overuse of computers?

A. Eyestrain
C. Overuse injuries of arms,
B. Joint pain,
D. All

Part III. Write the correct answer in each of the spaces.

1. _____ refers to the development, maintenance, and use of computer software, hardware and networks.
2. Data representation could be in the form of _____, _____, _____, _____, _____.
3. _____stores data for later use in appropriate storage devices, and retrieve it whenever it is necessary.
4. _____ are people who design and operate the software, input the data, build the hardware and keep it running.
5. ICT stands for_____.
6. _____is an individual who has access to ICT and utilizes it.
7. _____ is the processed outcome of data.
8. _____is a set of tools and machines created by humans

Part IV. Discussion questions

1. Define the term computer.
2. What is the difference between data and information?
3. Write a short note on basic elements of ICT systems.
4. Explain the term technology and information technology.
5. Define information and communication technology (ICT)

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UNIT

2

Computer Hardware

Unit Outcomes

At the end of this unit, students will be able to :

- *identify the hardware components of computer;*
- *identify functions of each hardware components;*
- *explain computer hardware.*



Overview

In this unit, students will learn about the major hardware components and categorize them in to input, processing, output and storage devices. Thus, students will explore the internal and external computer hardware components. Input devices are parts of computer hardware that are used to insert data into a computer system. The CPU is the brain of the computer which performs all arithmetic, logical and control operations. An output device is computer hardware that allows a computer to communicate the results of data processing to the outside world. A storage device is used to store data in a computer system.

2.1. Introduction to Computer Hardware

Brainstorming activity



Dear students, do you know what computer hardware is? Can you give us an example of computer hardware?

Computer hardware is the physical part of the computer that you can see and touch.

Computer hardware can be categorized based on the nature of their functions:

- Input devices
- Processing (Central processing unit)
- Output devices
- Storage devices

2.2. Input Devices

Input devices are parts of computer hardware that are used to insert data into computer system. Common input devices are:

- Keyboard
- Mouse
- Scanner
- Touch screen
- Light Pen
- Barcode reader
- Microphone
- Camera

Keyboard

is the most commonand widely used input device for entering data into a computer



Figure 2.1: Keyboard

Mouse

is another important tool for communicating with computers. Commonly known as a pointing device, allows you to point to things on the screen, click on them, and move them around.



Figure 2.2: Computer Mouse

Scanner

is used to convert a hardcopy document such as photographs to softcopy.



Figure 2.3: Scanner

Touch Screen

a touch sensitive screen is a pointing device that allows the user to interact with the computer by touching it.



Figure 2.4: Touch screen

Light pen

is a pointing device in the shape of a pen. It can be used to select a menu item or to draw on the monitor screen.



Figure 2.5: Light Pen

Camera

is used to capture photographs and save them in its memory.



Figure 2.6: Digital Camera

Barcode reader

A barcode is a pattern made up of different thickness lines. This technology allows for quick and error-free data entry into the computer. Barcode reader is used to read a barcode.



Figure 2.7: Barcode reader

Microphone

it is a device used to input spoken word as input data or commands.



Figure 2.8: Microphone

Activity 2.1

- List at least three types of input devices and discuss their functions in group.
- Please make a small group and match input devices to the tasks below.
    1. To capture a photo of your family
    2. To record and input your voice to the

2.3. Central Processing Unit (CPU)

Brainstorming activity



Dear students, do you know what CPU is?

CPU is the brain of the computer which performs all arithmetic, logical and control operations. It is responsible for all functions and processes. As illustrated in Figure 2.9, the CPU consists of three components: arithmetic-logic unit, control unit, and register.

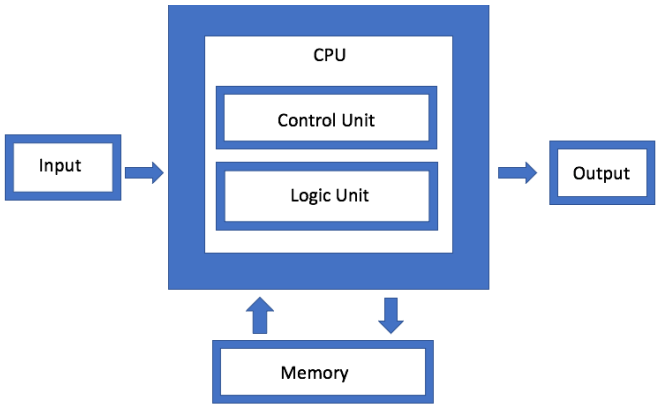


Figure 2.9: Components of CPU

Arithmetic-Logic Unit (ALU)

ALU is responsible for performing arithmetic and logical operations, and comparing data. Arithmetic calculation is used to perform addition, subtraction, multiplication and division whereas logical operation is used to compare numbers, letters, or special characters.

Control Unit

The control unit controls and directs the operation of the whole computer system.

Registers

Register is a special and a small high speed memory of CPU which is used to store temporary results and control information.

2.4. Output devices

An output device is computer hardware that allows a computer to communicate the results of data processing to the outside world. A computer's output device allows data to be easily understood by a human.

The following are some of the important output devices used in a computer.

- Monitor
- Printer
- Plotters
- Speaker

Monitor

is a device that displays information in pictorial or text form. The visual and graphics information generated by the computer is shown on the monitor via the video card.



Figure 2.10: CRT, LCD and LED Monitor

Printer

is a type of output device that prints data on paper. A hard copy is created when you print something.



Figure 2.11: Printer

Plotter

is an output device like a printer used to produce highly graphical pictures or posters.



Figure 2.12: Plotter

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Speaker

Speaker is a hardware device that outputs sounds generated by the computer. It can be used to play music.



Figure 2.13: Speaker

2.5. Storage devices

A storage device is used to store data in a computer system. It can store data either temporarily or permanently. There are two types of storage devices: **primary storage device**, and **secondary storage device**.

Primary storage devices

Primary storage, also known as main memory, is the part of the computer that stores current data, programs, and instructions that can be accessed by the processor as needed. There are two common types of primary storage: Random Access Memory (RAM) and Read Only Memory (ROM)

RAM

RAM: is responsible for storing the instructions and data that the computer is using at that present moment in time. It is usually described as temporary (volatile) memory because its contents can be lost when the computer is turned off.

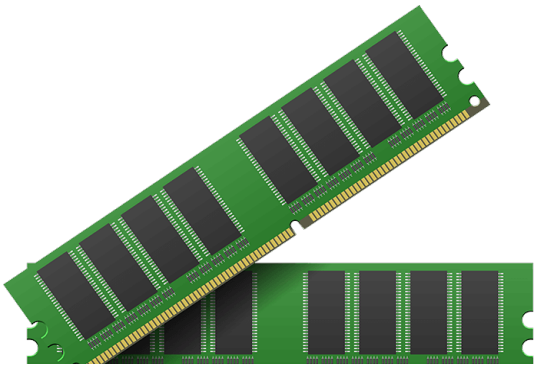


Figure 2.14: Random Access Memory (RAM)

ROM refers to computer memory containing permanent data. ROM stays active regardless of whether a computer is turned on or off.

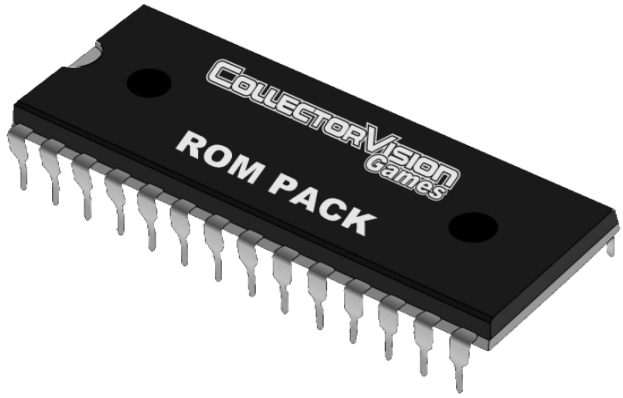


Figure 2.15: Read Only Memory (ROM)

Table 1: Differences between RAM and ROM

#	RAM	ROM
1	Data stored in RAM can be read and written.	Data stored in ROM can only be read.
2	Stores data temporarily.	Stores data permanently.
3	Has high-speed memory	Is much slower than the RAM

Secondary storage

Secondary storage stores data and information permanently. Any non-volatile storage device, whether internal or external to the computer, is referred to as a secondary storage device. Secondary storage devices can be used as input and output devices.

- Hard Disk
- Optical Disk
- USB flash disk
- Secure digital (SD) card

Hard disk

is the most common and usually largest data storage device in a computer system



Figure 2.16: Hard disk images

Optical Disk

is any computer disk that uses optical and laser technologies to read and write data. Some examples of optical disk include compact disc (CD) and digital video disc (DVD). CDs can store up to 700 megabytes (MB) of data and DVDs can store up to 8.4 GB of data.



Figure 2.18: sample Optical Disk images

USB flash disk

is used for storage, data back-up and transferring of computer files.



Figure 2.19: USB flash drive

Secure digital (SD) card is a type of removable memory card used to read and write data in a wide variety of mobile electronics and cameras.



Figure 2.20: Secure digital (SD) card

Activity 2.2

- Identify and explain the basic parts of computer hardware with examples.
- Discuss storage devices in group and present the different examples of primary and secondary storage devices to the class.

Units of data storage measurements: are used to express the size of the data that is going to be stored in our storage device. The smallest unit used for measuring data is a bit while a byte is used as the fundamental unit of measurement for data. Kilobyte (KB), megabyte (MB) and gigabyte (GB) are the commonly used data measurement units. Bit is a Single Binary Digit (1 or 0).

- One byte = 8 bits
- One kilobyte (KB) = 1,024 Bytes
- One megabyte (MB) = 1,024 Kilobytes
- One gigabyte (GB) = 1,024 Megabytes
- One terabyte (TB) = 1,024 Gigabytes

Summary

- Computer system can be divided into two parts: hardware and software
- Computer hardware is the physical part of the computer that you can see and touch
- Hardware can be classified as: input devices, central processing unit, output devices, and storage devices
- Input device is used to provide data to the computer system
- Common input devices are: keyboard, mouse, scanner, touch sensitive screen, light pen etc…
- The central processing unit (CPU) is the brain of the computer which performs all arithmetic, logical and control operations.
- Output devices are used to communicate and display the results of processed data to the user.
- The common output devices are: monitor, printer, plotter and speaker
- A storage device is used to store data in a computer system

Review Questions

Part I. Write TRUE if the statement is correct and FALSE if it is incorrect.

1. Secondary storage devices store data and information permanently.
2. Random Access Memory (RAM) is a permanent form of storage.
3. Microphone is commonly known as a pointing device, used to control the position of the cursor on the screen.
4. Control unit monitors the operation of the entire computer system.
5. Light pen is used to select a displayed menu item or draw pictures on the monitor screen.
6. The arithmetic logical unit (ALU) is used to store temporary results.

Part II. Choose the best answer among the given alternatives.

1. An output device used to listen sound from a computer is:
   A. Printer C. Speaker
   B. Plotter D. Microphone
2. A secondary storage device that uses optical and laser technologies to read and write data is:
   A. Flash disk D. All
   B. CD C. Hard disk
3. Which one of the following is an example of input device?
   A. Scanner C. Projector
   B. Printer D. Speaker
4. Parts of the CPU that helps to perform addition is:
   A. Arithmetic logic unit C. Control unit
   B. Register D. All
5. Primary storage used to store data permanently is:
   A. ROM C. Hard disk
   B. RAM D. CD

Part III. Write the correct answer in the space provided.

1. _____ is an output device, which is used to print highly graphical information on paper.
2. _____is a part of the CPU used to store temporary results.
3. The storage devices are classified as _____ and _____.
4. Computer systems can be divided into_____ and _____.
5. _____allows the user to enter data into the computer.
6. _____ is the brain of the computer.

Part IV. Discuss the following points.

1. Write the difference between input and output devices.
2. List at least three examples of output devices and explain them.
3. What is the central processing unit (CPU)?
4. Discuss different parts of the CPU.

UNIT 3

Computer Software

Unit Outcomes

At the end of this unit, students will be able to :

- *differentiate between hardware and software;*
- *explain computer software;*
- *explain application software and system software;*
- *discuss system software with example;*



Overview

In this unit, you will learn about system software and application software. This unit provides detailed description about system software and application software. Computers process data under the control of sets of instructions called computer programs. System software is a set of generalized programs that manage the resources of the computer such as the central processing unit, communication links, and peripheral devices. Application software also known as end-user program is designed to satisfy a particular need of a particular environment. A word processor is an application program that allows users to create, edit, and format documents.

In unit two, you have learned about computer hardware and its components. In this unit, you learn about computer software and its types.

3.1. Introduction to Computer Software

Brainstorming activity



- Do you know what computer is?
- Can you give any exmple of computer software?

Computer software is a collection of computer instructions or programs that tell the computer what to do and how to perform tasks. Computer hardware cannot perform any tasks without software. For example, without an operating system, we cannot start a computer.
The hardware is designed to accomplish a variety of tasks, and the software instructs the hardware on how to complete each task. Both computer hardware and software are interdependent, and neither can be used on their own.
There are two types of software:

- System software
- Application software

3.1.1. System software

System software is responsible for controlling, integrating, and managing the individual hardware components of a computer system. It also helps the user, hardware, and application software to interact and function together. System software does not perform specific tasks such as document creation.
System software includes operating systems, utility software, and language translators.
Operating System: is the most important program that runs a computer. Every computer system runs under the control of an operating system. Operating systems are responsible for providing various essential services such as initial loading of programs,

supervision of the input/output devices, and file management. Microsoft Windows is the most commonly used operating system in Ethiopia. Figure 3.1 illustrates what a Microsoft Windows operating system looks likes.



Figure 3.1: Microsoft Windows operating system

Utility programs: The purpose of utility software is to manage matters associated with the analysis, configuration, performance improvement, and maintenance of a computer system. In other words, this software is usually used to support computer infrastructure and manage system resources. Some examples of utility software programs include backup software, data recovery, and virus protection.

Language translator: is software that translates from one computer language to another. It is a generic term consisting of various programs that serve as compilers and translators to develop a program in a number of different computer programming languages.

3.1.2. Application software

Application software, also known as end-user program, is designed to satisfy a particular need of a particular environment. The common application programs are word processor, spreadsheet, database management, graphics design, and presentation software. Figure 3.2 shows some of the common examples of application software.

- **Word processing:** is used to create, edit, format, and save text documents, for example, Microsoft Word, WordPer fect, and WordPad. You can also use it to write letters, textbooks, exams, worksheets and other documents.



Figure 3.2: MS-WORD, WordPerfect, WordStar, and WordPad icon images

- **Spreadsheet:** is used to calculate and analyze data in a tabular form. FoxPro and Microsoft excel are examples of spreadsheet. You can use them to prepare a payroll and a roster.

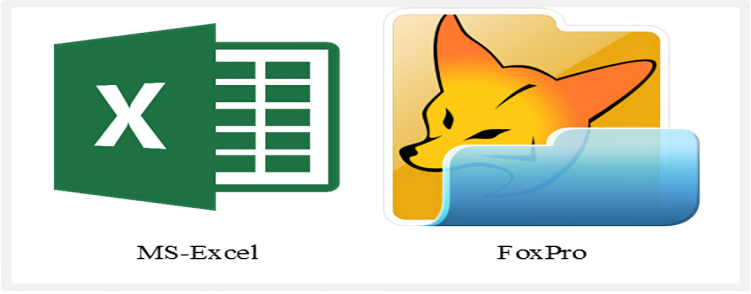


Figure 3.3: MS excel and Fox pro Spreadsheet icons

- **Database management:** serves to create a computerized data table, to insert records, make queries, analyze data, and append data into it. Microsoft office access is a basic example of database management software.



Figure 3.4: MS Access Database management Software

- **Graphics software:** provides the user to create, edit, and format graphical images. AutoCAD is one example of graphical software. You can use AutoCAD to design buildings, bridges, houses and others.



Figure 3.5: AutoCAD graphics software

- **Presentation software:** provides the user to create, edit, and format presentations. Microsoft PowerPoint is an example of presentation software.



Figure 3.6: presentation application software

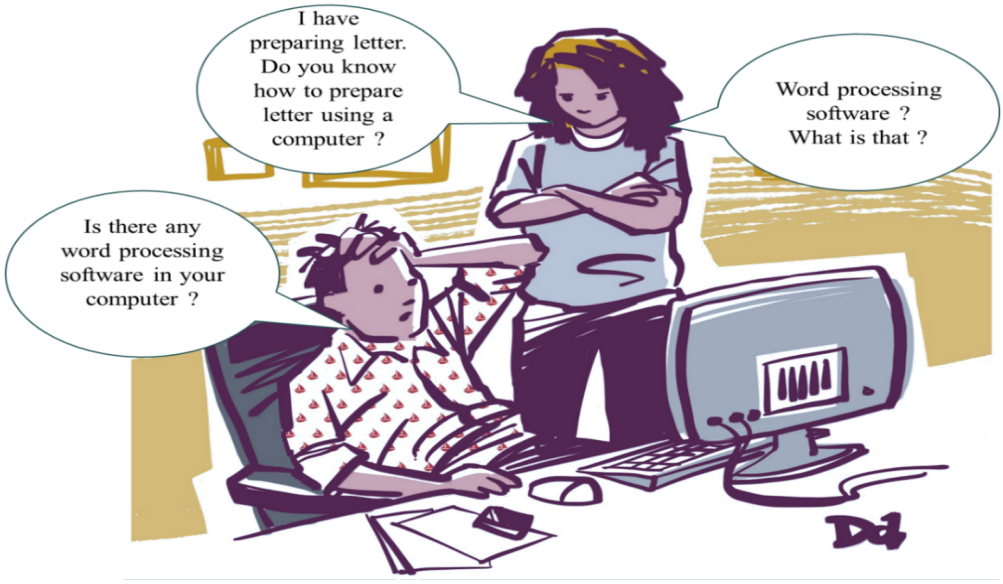
Table 2: The differences between system software and application software

System Software	Application Software
It is designed for general purpose.	It is designed for a specific purpose.
It starts running when the system is powered on and stops when it is powered off.	It starts when the user begins using it and ends when the user stops it.
Users do not interact with system software as it is running in the background.	Users always interact with application software while doing different activities.
Examples include Microsoft Windows	Examples include Microsoft Word

Activity 3.1

- Discuss the different examples of system software and application software in groups and present it to your class.

3.2. Overview of Word Processing



A word processor is application software that allows users to create, edit, and format documents. It also allows you to type, edit, and save a text. In addition, you may use this tool to add images, tables, and charts to your documents.

Compared to the traditional pen or pencil-based writing on-screen text creation, word processer is more readable and clear. It reduces the amount and type of errors and editions.

3.2.1. Opening word processor

As discussed in section 3.1.2, there are different word processors. Microsoft Word is one of the most commonly used word processors

provided by Microsoft Company.

To start Microsoft Word 2016, use one of the given options:

1. On the **Start** menu, click **All Programs** and from the Microsoft Office folder,select **Microsoft Word 2016;**

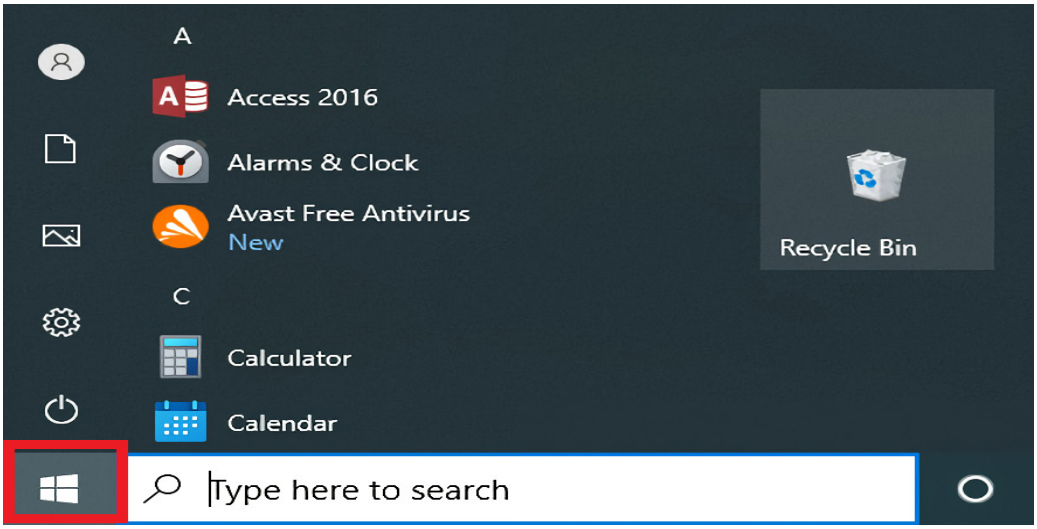


Figure3.7: Start MS Word Processor

2. Use the **Search** command and enter the term **word** in the search field and select
Microsoft Word 2016 from the given search results;

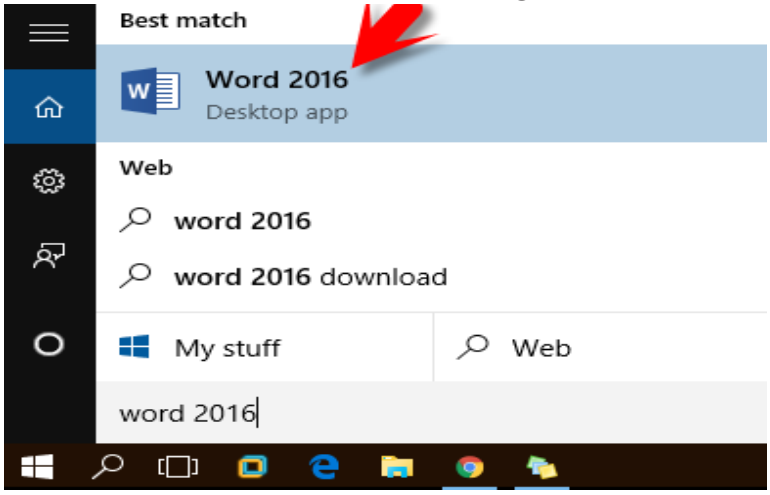


Figure3.8: Start Microsoft Word Processor using Search

3. Double-click the **Microsoft Word 2016 application shortcut** usually found onthe computer's desktop.



Figure 3.9: Start Microsoft Word Processor using shortcut

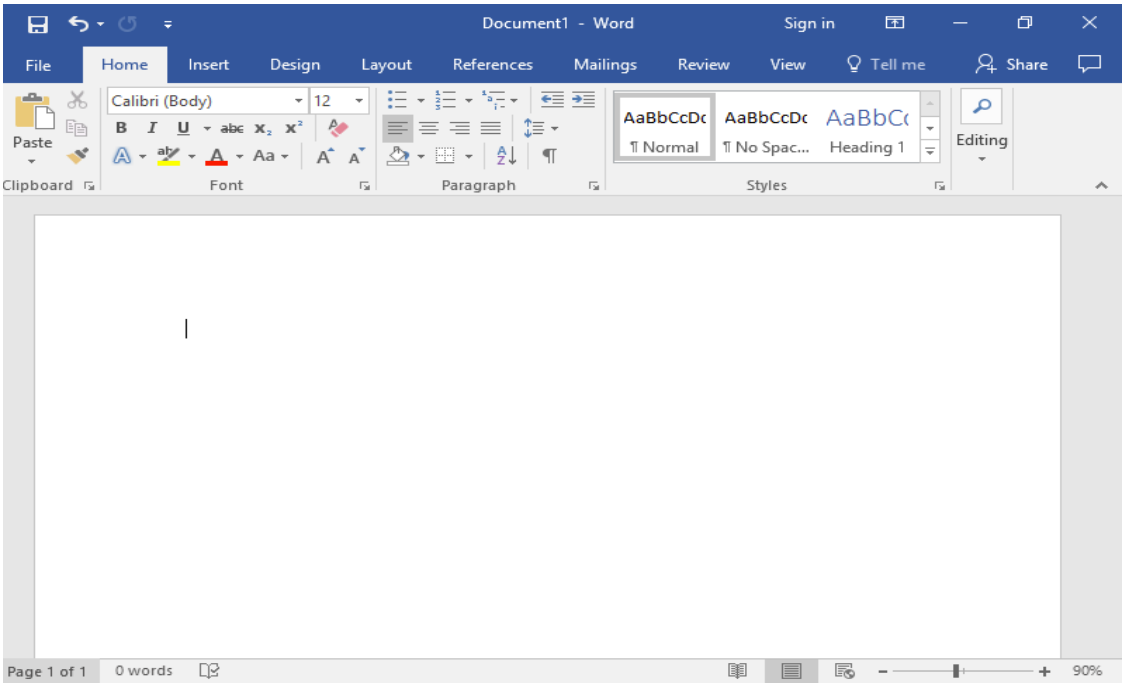


Fig. 3.10 Microsoft word blank window

I. Microsoft Office Word Environment

These given options will open and display a blank document which is ready for text to be entered.

Figure 3.11 shows the screen elements which should appear when you start Microsoft Word.

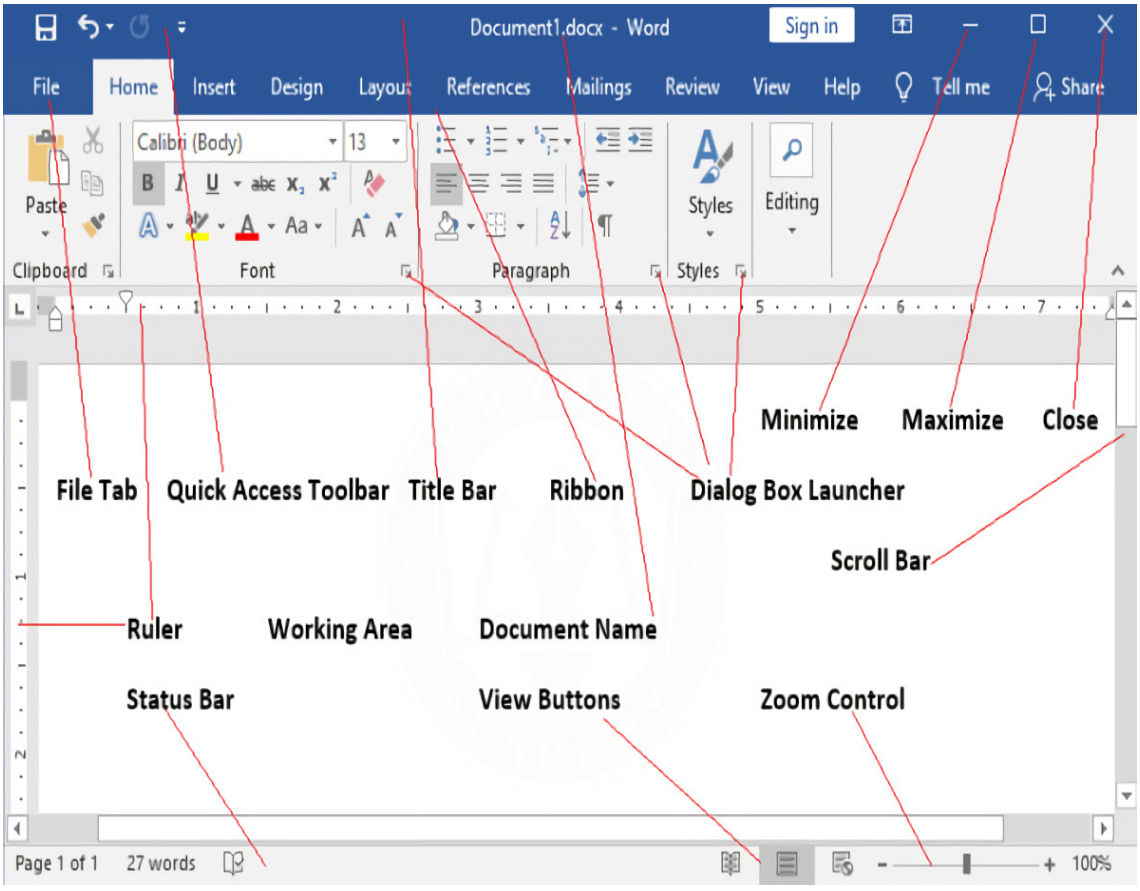


Figure 3.11: The Microsoft Word 2016 screen elements

- **Title bar:** This lies in the middle and at the top of the window. Title bar shows the program and document titles.
- **Menu bar:** consists of the major menu items such as Home, Insert, Page Layout and others, which can be used to insert table, bullets, and page numbers.
- **Quick access toolbar:** is a customizable toolbar that displays common commands. By default the Save, Undo and Repeat icons appear on the toolbar.

- **Ribbon:** shows the most commonly used button associated with a certain task. It stretches across the top of the application and is divided into tabs for specific activities.
- **View buttons:** are used to switch between different view-modes of documents: Print Layout, Full Screen Reading, Web Layout, Outline and Draft.
- **Rulers:** show the positions of margins, tabs, indents and table columns on the page.
- **Help:** can be used to get word related help anytime we like.
- **Zoom control:** allows you to zoom in and out of a document to view it at a selected zoom level.
- **Status bar:** displays the document information as well as the location of insertion point.
- **Document area:** is the area where we can type texts and insert pictures.
- **File tab:** contains essential document settings such as Save, Save As, Open, Close, Info, Recent, New, and Print.

When you move the mouse around the screen, the mouse symbol could look like any of the following:

1. A mouse pointer: means you can click on the item such as folder, and icon.
2. A timer: it displays when the computer is busy. At this time, you need to wait until the computer finishes the current task and comes back to normal pointer.
3. Finishing insertion point: when you click the mouse, the insertion point will flash if the text is entered or deleted.
4. I-beam: shows where your mouse is and when it hovers over the text.

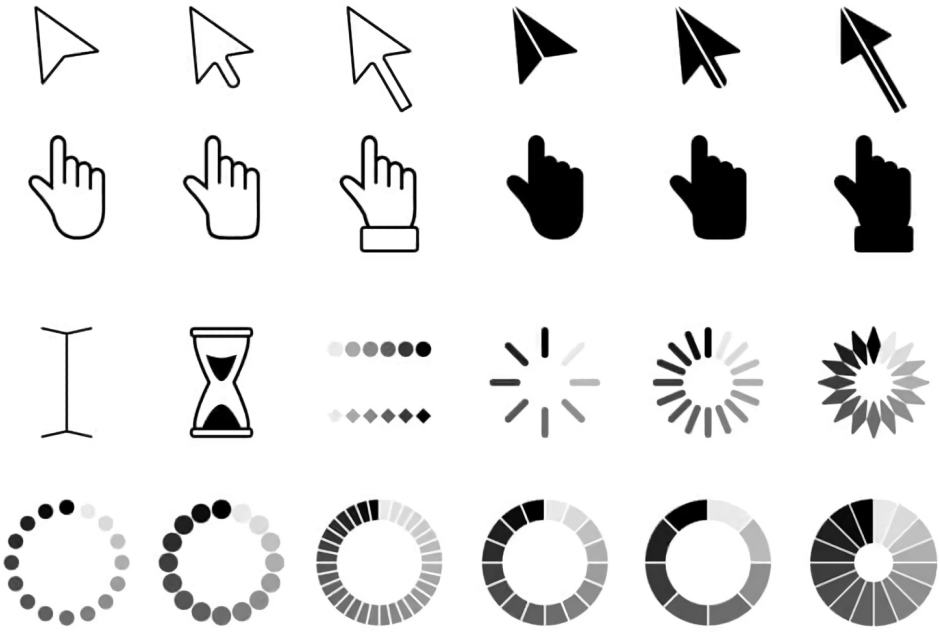


Figure 3.12.The mouse symbol

3.2.2. Saving word document

After creating and inserting texts in a word document, we need to save it to use it later. If you want to save a document for the first time, you can follow the steps below:

1. Go to File > Save As
2. Select the location of your drive, so you can get to your document from anywhere.
3. You can also save to another location in the list like This PC > Documents. Or select Browse to pick any location including the Desktop.

Follow the procedures on how to save a document as depicted in Figure 3.13

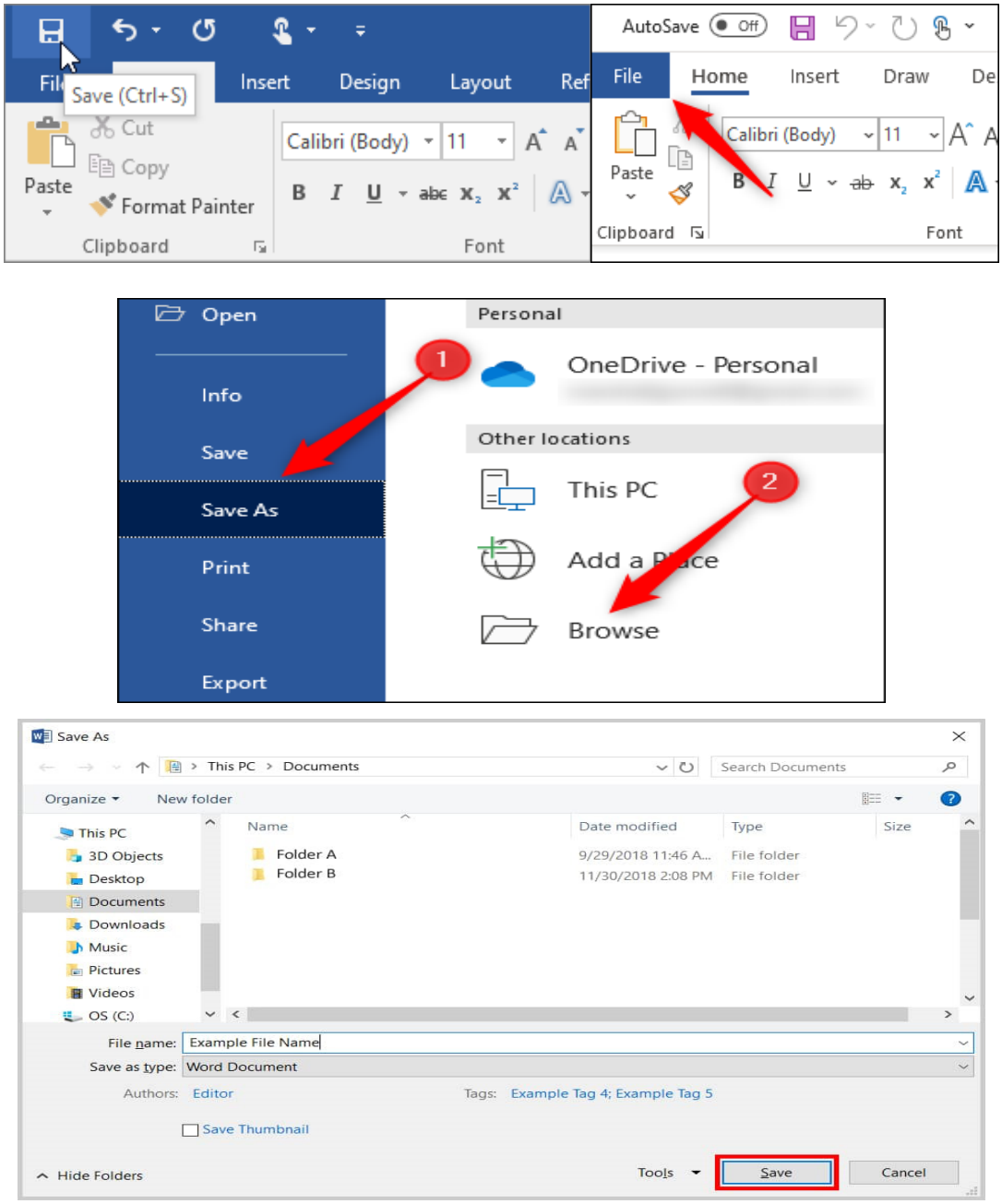


Figure 3.13: Steps to save the Microsoft word document

Microsoft Word automatically adds the .docx suffix to the document name once we saved it.

3.2.3. Closing word processor

Once you have saved your word document and completed your task, you need to close the application. You can use either of the following

options to close Microsoft Word application as shown in Figure 3.14.

- **Click** the Close button placed on the top right corner of window's title bar
- **Open** the File menu and then choose the Exit command

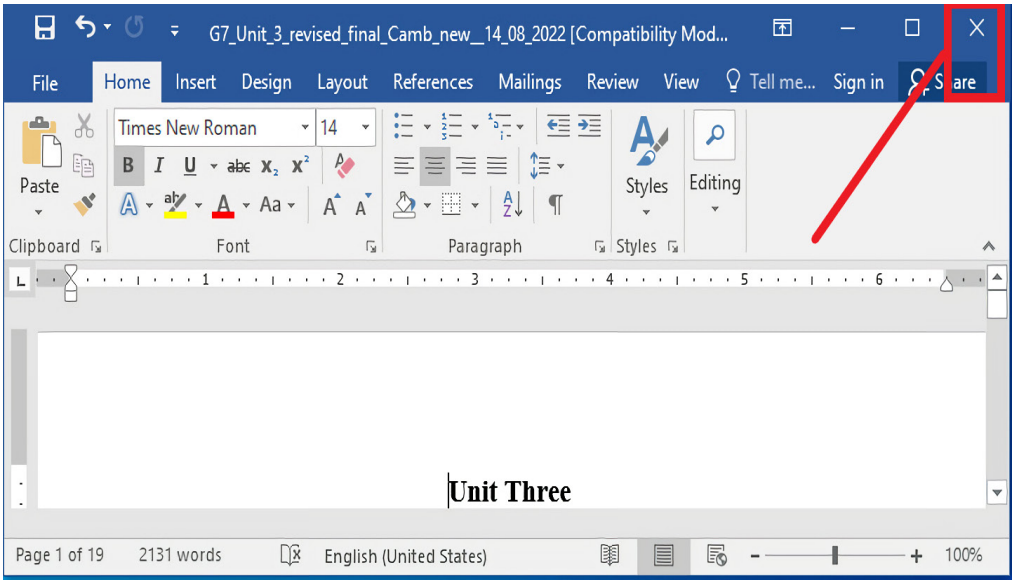


Figure 3.14: Steps to close the Microsoft word document

Activity 3.2

- Open a Microsoft Word from your computer and write your Full name. Then save the document and finally close the application.
- Using Word processer, write a text about yourself. Write your full name, grade and section at the top of the document and also include the text "what is your favorite food?"
- Save the document created in question 2 on your desktop using your first name.
- Close the Word Help dialogue box by clicking on close at the top-right of the Help dialogue box.
- Discuss the differences between writing using pen and pencil and writing using word processing

Summary

- Computer software is a collection of computer instructions or programs that tell the computer what to do and how to do tasks.
- Computer hardware and software works together and neither can be used on its own
- There are two types of computer software: system software and application software
- System software is responsible for controlling, integrating, and managing the individual hardware components of the computer system.
- Application software helps the user to accomplish specific tasks.
- Operating systems, utility software and programming languages are some examples of system software.
- Word processing, spreadsheet, database management, graphics software are some examples of application software.
- A word processor is an application program that allows users to create, edit, and format documents.

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Review Questions

Part I. Write TRUE if the statement is correct and FALSE if it is incorrect.

1. Computer hardware and software can work independently.
2. View button is used to switch between different view modes for a document.
3. System software does not accomplish specific tasks to the user.
4. Application software is designed to accomplish a particular task.
5. Spreadsheet is an example of system software.

Part II. Choose the best answer among the given alternatives.

1. _____ is an application software used to write and edit text.

   A. Spreadsheet C. Word processor

   B. Database management D. Graphics editor

2. Which one of the following is not an example of application software?

   A. Utility software C. Operating system

   B. Language software D. All

3. The screen element of Microsoft Word that consists of the major menu items such as Home, Insert, Page Layout and others is:

   A. Title bar C. Toolbar

   B. Menu bar D. Task bar

4. _____ is an example of system software.

   A. Microsoft word C. Spreadsheet

   B. Microsoft Windows D. All

5. Which one of the following statements is true?

   A. Application software is designed for solving a specific task.

   B. System software is designed for solving a specific task.

   C. Utility software is designed for a general purpose.

   D. All

Part III. Write the correct answer in each of the following spaces provided.

1. Using _____ application program you can add pictures, tables, and charts to your documents.
2. _____ is responsible for controlling, integrating, and managing the individual hardware components of a computer system.
3. _____ is a collection of computer programs or instructions that tell the computer what to do.
4. Computer software can be classified as _____ and _____.

Part IV. Discussion points.

1. Define computer hardware and software.
2. What are the main screen elements of Microsoft Word processor?
3. Write the steps to create and save a word document in MS-Word.
4. Explain the differences between system software and application software.

UNIT 4

Internet

Unit Outcomes

At the end of this unit, students will be able to :

- *define internet;*
- *identify the internet and the world wide web;*
- *identify the different types of internet browser;*
- *open a browser and identify the screen elements;*
- *use web addresses to access websites.*



Overview

In the age of information, the internet has become a very popular mode of communication and way of accessing information on any topic of your interest. It also provides tremendous opportunities to students, researchers and professionals for getting information on matters related to academic and professional topics, and a lot more. In the present world, most of people who have computers around themselves use the internet to access information from the World Wide Web. Therefore, this unit will introduce you to the concepts of internet and related terms such as web page, website, internet browsers and search engine. You will be introduced to participate in the internet world.

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4.1. Definition of the Internet

Brainstorming activity

- What is internet? What do you think one can do using internet
- Have you ever used an internet?

Internet is a network of networks. It consists of private, public or government networks. The Internet can also be defined as a collection of computers, all connected together, to share/access information globally. A computer network is a group of computer
s connected to each other that enables computer to communicate with another computer.



Figure 4.1: Interconnected computer networks

4.2. Basic Internet Terminologies

Brainstorming activity

Can you tell the diffrence between web brower, website and web page?

The differences between Internet and Web

The internet is a global network of networks while the web is a

means of accessing information available on the internet. A web is also known as World Wide Web and it is a collection of information accessed through the internet.

Website

A website is composed of a web page or collection of related web pages linked together to have more information.

Web page

It is a single page of information that consists of text, images, sound or video clips on a website.

Organizations and people create web pages to:

- share information and news;
- sell or advertise products;
- express a point of view.

Home page

Home page is the first page of a particular website with links to other pages in the website.

Browser

It is a software application used for exploring or searching the internet. A web browser, or simply browser, enables users to locate and view web pages and to move from one page to another.

Search Engine

Search engine is an internet tool that facilitates and speeds the search for information and resources on the internet. Google (*www.google.com*) and Yahoo (*www.yahoo.com*) are the most common examples of search engines.

Web Address

It is the location or name of the webpage which has information and resources available on the internet. Each web address on the web has to be unique to easily identify it.

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Activity 4.1

- Discuss about website and a web page in groups. Then write the differences between them and present your report to the class.

4.3. Web Browser Application

Brainstorming activity



Have you ever used an internet browser before? Do you remember any screen elements of that browser?

There are various types of browser applications such as Internet Explorer, Mozilla Firefox, Google Chrome, Safari, and Opera. Figure 4.2 shows the most common web browsers.

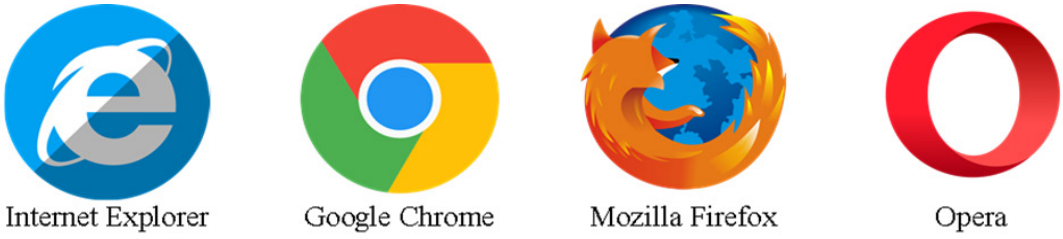


Figure 4.2: Common Internet browsers

4.3.1. Screen elements of internet explorer

The browser screen consists of various screen elements such as data elements, labels, or screens. The most common screen elements of a browser are depicted in figure 4.3.

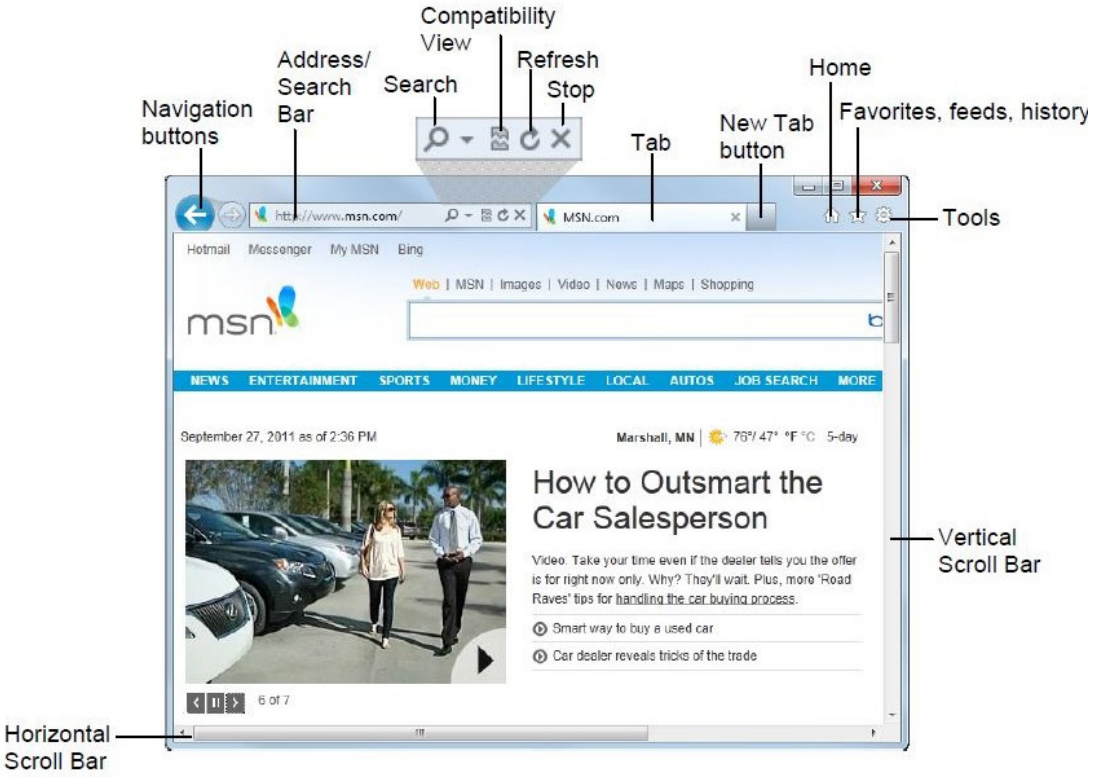


Figure 4.3: Internet Explorer browser window elements

- **Menu bar:** is a horizontal strip that contains lists of available menus for a certain program or application interface.

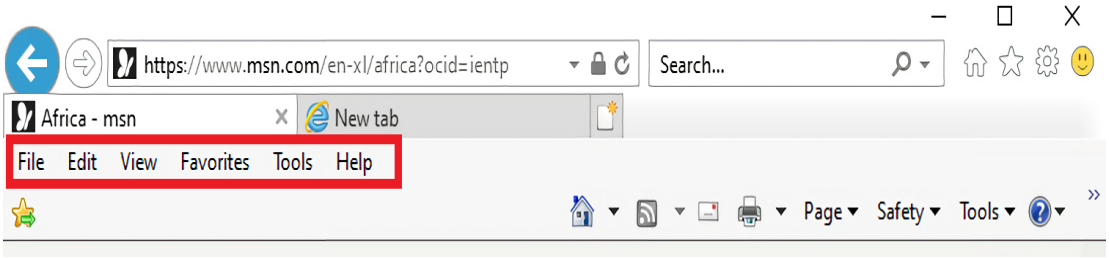


Figure 4.4: Menu bar of internet explorer browser

- **Address bar:** is referred to a location bar or URL bar that let you type a web address.

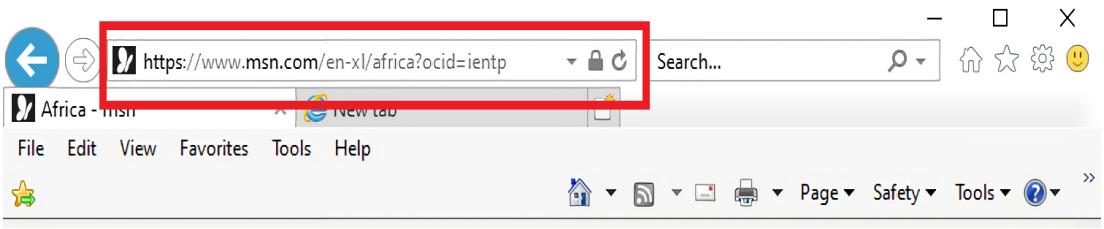


Figure 4.5: Address bar of internet explorer browser

Once you have typed the URL in the address bar to access a web page, you can click the GO button or press the Enter key from the keyboard.

- **Status bar:** is a bar at the bottom of the browser window that displays messages such as a webpage's download progress.

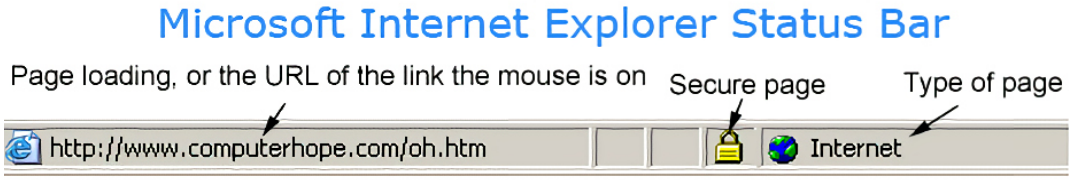


Figure 4.6: Status bar of internet explorer browser

Activity 4.2

- Open a browser on one of your school computer laboratories. List and describe the basic screen elements of the browser that you opened. Write them on Microsoft word.

4.4. Structures of Web Address and Accessing a Website

Brainstorming activity

- Do you know what a website is? Can anyone tell us the address of any website that you might know before?

To visit a website, users should type the address of the website on the web browser. For example, *http://www.google.com*, is the address of Google. A website address consists of 4 main parts:

- Hypertext transfer protocol (e.g ***http://***)
- World Wide Web or web pages (***www***)
- Domain name (***google***)
- Domain extension (***.com***)

There are various domain extensions where their names identify the type of website. The most common domains extensions are: -

- .org - nonprofit or private organization;
- .edu – education institution (belongs to educational institutions);
- .gov – government site;
- .net – network site;
- .et - in Ethiopia, etc.

Here is a typical website of Ministry of Education of the Federal Democratic Republic of Ethiopia: *http://www.moe.gov.et*

4.4.1. Accessing a website

The use of a browser is to look for information on the internet. Whether you are a doctor, an engineer, a teacher, a student or businessman, you can search for information and share it with other users. To access information from a particular website, you should know the address of the website. For example, to access information about Ethiopian grade seven students, you need to know the website of the Ministry of education of the Federal Democratic Republic of Ethiopian which is *http://www.moe.gov.et.* Then you can type this address on the address bar of your browser and follow the link for the information that you would like to access.

In addition to using a particular web address, you can also access information using searching keywords. For example, to search information about the battle between Ethiopia and Italy, you can use the keyword "the Victory of Adwa", and to search information about the preventive mechanisms of Covid-19, you can use the keyword "preventive mechanisms of Covid-19".

Internet Service Provider

To connect to the internet, we have to connect our computer to the **internet service provider (ISP)**. ISP's are companies which provide internet related services to its users. For example, Ethio-telecom is an ISP in Ethiopia.

Activity 4.3

- Search information about the great Ethiopian Athlete Abebe Bikila and present it to the class.
- Open the internet and browser about Ethiopian Airlines using ***https://*** HYPERLINK "*http://www.ethiopianairlines.com*" *www.ethiopianairlines.com* website address.

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Summary

- Internet is a network of networks that is available for users across the world.
- The major use of web browser is for searching information stored in millions of computers on the internet.
- Internet Explorer, Mozilla Firefox, and Google Chrome are the most commonly used examples of internet browsers.
- Screen elements of Internet Explorer includes menu bar, address bar, standard toolbar, and status bar.

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Review Questions

Part I. Write TRUE if the statement is correct and FALSE if it is incorrect.

1. Web address and web browsers are the same terms.
2. Google Chrome is one of the examples of internet browsers.
3. Ethio-telecom is an example of an Internet Service Provider in Ethiopia.

Part II. Choose the best answer among the given alternatives.

1. A single page of information is:
   A. Webpage
   B. Website
   C. Browser
   D. Search engine
2. A collection of webpages is called_____.
   A. Website
   B. Search engine
   C. Homepage
   D. Web address
3. Which one of the following is **not** part of a web address?
   A. www
   B. http//
   C. google chrome
   D. .com
4. Which one of the following is the domain name of the web address http://www.google.com?
   A. http://
   B. www
   C. google
   D. .com
5. Which one of the following is correct?
   A. Internet is a network of network.
   B. Home page is the first page of a website.
   C. Website is a collection of webpages.
   D. All

Part III. Write the correct answer in each of the spaces provided.

1. The network of networks is called.....
2. The domain name of educational institutes is written as .....
3. .....is a single page of a website.
4. A collection of information which is accessed through the internet is called.....

Part IV. Discussion questions

1. What is the internet? Where do we get internet service?
2. Explain the difference between internet and network?
3. Define a website, home page, and a web page.
4. List at least four different types of internet browsers.
5. List the screen elements of your Internet Explorer browser.

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UNIT 5 Security and Safety of Computer

Unit Outcomes

At the end of this unit, students will be able to :

- *carefully handle components of the computer system;*
- *properly clean hardware components of the computer;*
- *turn on and shut down the computer system properly;*
- *use a password to protect a computer from unauthorized access.*



Overview

The unit introduces you to the fundamentals of computer security and safety. It provides basic knowledge of careful handling of computer components and how to protect a computer from unauthorized access through creating a strong password to ensure its security. This unit will also look at the various issues of improper care of computers and related remedies for safety and security.

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5.1. Care for a computer

Brainstorming activity



Do you know how to protect a computer?

In units two and three, we have learnt the different components of the computer system. This unit mainly focuses on how to handle and properly use these computer system components.
Improper use of the computer is dangerous for the health of individual users and the safety of the device itself. Sitting at the computer for a long period of time will have an impact on the health of the user. Such health problems include back pain, stiff neck and shoulders, sore hands and wrists and tired legs.

Guidelines, which are usually referred to as precautions, should be followed to prevent damage to computers or injury to people. The following are some important precautions that we should follow while using computers.

- Before cleaning any electrical equipment, make sure that it is switched off and unplugged from the power source.
- Allow certain equipment such as monitors and laser printers to cool down and lose their capacitance (charge) before cleaning them for at least 30 minutes.
- Some equipment such as power supplies and monitors use high voltages which are dangerous for anyone. Therefore, it should only be maintained by specially trained people.

For cleaning computer equipment, please use only specifically designed cleaning tools. Unsuitable cleaners may:

- cause fumes which are dangerous to inhale;
- damage the plastics used in computer hardware;
- not be effective to clean.

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In addition to the above precaution methods, to avoid dangerous physical hazards from happening, we should also:

- choose a safe and healthy workplace;
- identify the risks of hazards in the workplace;
- follow manuals;
- apply occupational health and safety requirements.

Safety Signs and Hazards

Safety signs and symbols show dangerous areas in and around computer laboratories to alert students and staff members.



Figure 5.1: Safety Signs and Hazards in a computer Laboratory

The best way to care for our computer is to provide it with basic care. It is easy to perform basic software and hardware maintenance.

Activity 5.1

- Form a group and discuss how to prevent a dangerous physical hazard from happening in your computer laboratory.
- Visit your school computer laboratory and write a report about the safety signs and their meaning on Microsoft

5.1.1. Cleaning Computer Hardware Components

Brainstorming activity



Why do we clean our computer?

You probably like a clean home. It is also a good idea to keep your computer as clean as possible. Cleaning hardware can help your computer run more smoothly and extend your computer's lifespan, which can save time and money. Regular cleaning protects your computer to be safe and clean. Dust acts as an insulator that prevents air circulation and causes overheating. If dust contains conductive particles, it can also cause a short circuit, which can damage the components of the hardware or even cause a fire. Therefore, by regularly cleaning dust out of the fan vents and case, you can help protect the system from overheating and causing permanent damage to the internal parts of your computer.

How often does cleaning need to be done?

Clean the outer part of your computer with a dry cloth at least once a week.

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Cleaning kits



Figure 5.2: examples cleaning tools of computer system

The contents of cleaning kits may vary, but generally cleaning kits depicted in Figure 5.2, include items listed in Table 5.1.

Table 5.1: Computer cleaning kits

Item	Item use
Small brush	dusting components of electrical equipment
Cleaning wipers	small cloths for cleaning the system unit casing, monitor and keyboard
Compressed air	used for blasting dust
CD-Cleaning kit	cleans dust and grease from the CD. Also keeps the CDs in their cases, handles them by edges and periodically cleans them using the cleaning kit.

Cleaning monitors

Dirt, fingerprints, and dust can make your computer screen difficult to read; however, it is easy to clean your screen when needed. The safest method to clean a computer monitor is to use a soft and clean cloth moistened with water.

When you clean your computer monitor, you should:

- turn off the computer;
- unplug the monitor from the power;
- use a soft and clean cloth moistened with water to wipe the screen clean.

⚜**Do not spray any liquids directly onto the screen. The liquid could leak into the monitor and damage the internal components.**

Cleaning keyboards

The keyboard tends to accumulate a lot of dust, hair and lint clothing. If you are having trouble removing sticky dirt, try using cotton moistened with alcohol. Gently wiping around the keys can help keep the keys from sticking or failing.

Cleaning mouse

The mouse accumulates a mixture of dust from the surface it rolls on. Dust can make it difficult to track or move the mouse properly. If the mouse pointer does not move smoothly, the mouse may need to be cleaned. Therefore, to properly clean the mouse, follow the basic cleaning steps below.

- Unplug the mouse from the computer;
- Moisten a cotton cloth with rubbing alcohol, and use it to clean the top and bottom of the mouse;
- Allow all of the parts to dry before reconnecting the mouse.

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Since water conducts electricity, there is a greater risk of serious injury or death when we clean electronic equipment with water.

Activity 5.2

- Discuss the cleaning kits in groups and list at least two IT equipment cleaning kits that you might know other than the ones listed in Table 5.1.

5.1.2. Starting up and Shutting Down a Computer

Before starting your computer, please take a moment to check whether the computer parts are connected and seated properly. Ask your teacher to check whether the power cord is plugged into the power source. To power on and off your computer, follow the steps below:

- We need to plug or connect devices such as keyboard, monitor, and mouse to their appropriate connectors with the system unit.
- Press the power button in the system unit. If your monitor does not turn on by itself when you turn on the system unit, then press the power button of the monitor.

Once we have pressed the power button, we should wait until the operating system loads automatically.

If you are asked to type a password and sign in, you need to know or have a password of that computer. To know more about password, please read section 5.2 Figure 5.3 below shows how to start up a computer.

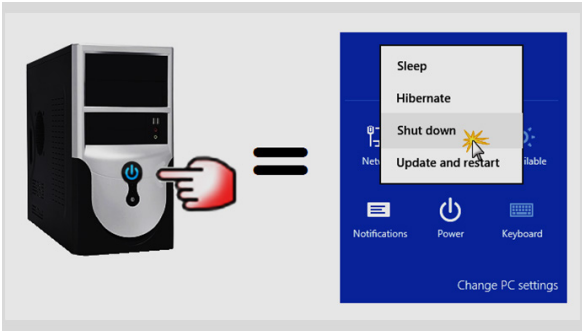


Figure 5.3: Starting up a computer

Shutting down your computer

When you finish working on your computer, you have to shut down your computer properly. To shut down your computer, you can use the following steps:

- **Shut down:** To turn off your PC in Windows 10, click on the Start button , select the power button, and then click on the shutdown button as shown in Figure 5.4.

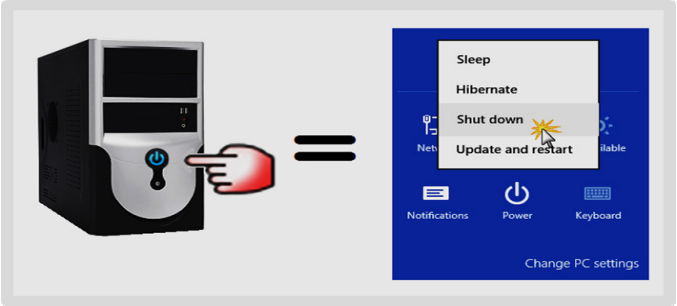


Figure 5.4: Shutting down a computer

- **Sleep:** helps the computer to appear like turned off, but when you turn it back on again, it starts up back faster. To sleep your computer, please first click on the start button and select the power button and then click on sleep as shown in Figure 5.5.

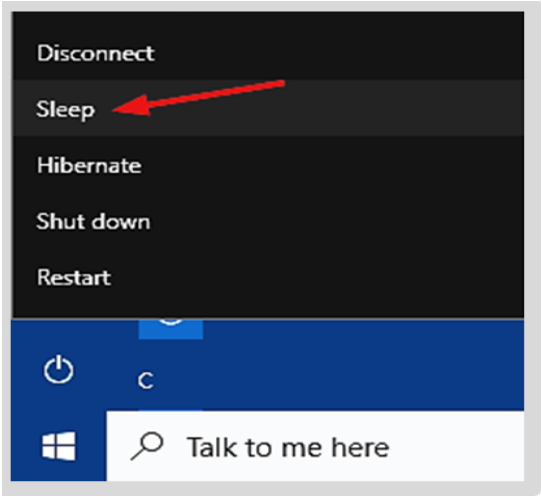


Figure 5.5: Sleeping a computer

- Sign Out: helps to sign out your user account and lets someone else to sign in immediately. To sign out, you can click the currently signed-in user name in the upper-right corner of the Start screen, and then choose Sign Out from the menu as shown in Figure 5.6 below.

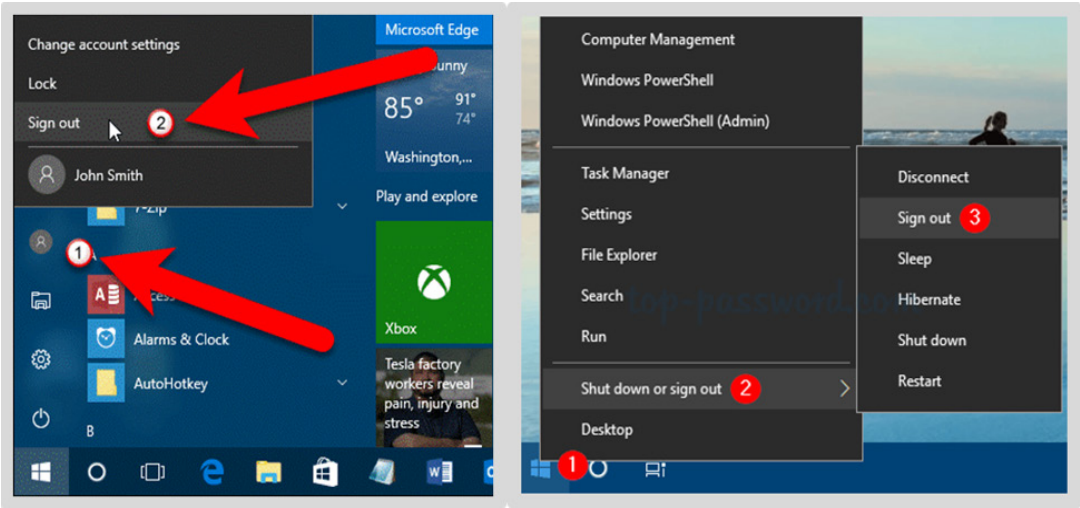


Figure 5.6: Signing out from the current user account

Activity 5.3

- Form a group and discuss the shut down and sleep modes of a computer, specifically on how and when we need to put our computer in either modes and present it to your class.

5.2. Computer security

Brainstorming activity



Do you know what computer security is? How can we protect our computer from unauthorized access?and present it to your class.

Computer security is the protection of computer systems and information from unauthorized use. Traditionally, computer facilities

have been physically protected for the following reasons:

- to prevent theft of or damage to the hardware
- to prevent theft of or damage to the information
- to prevent disruption of service

⚜We can protect our computer from unauthorized access using passwords for each user account. The next section discusses the creation of a user account and setting a password.

5.2.1. Creating a User Account and Setting a Password

A user account is an identity created for a user in a computer. It helps the user to login to the computer system. Windows operating system offers three types of user accounts: Administrator, Standard, and Guest account.

- **Administrator**: User account helps to control the entire computer, and can allow others to use the computer. They can run or install new programs.
- **Standard:** user account holders can access most of the computer, but they cannot make any big changes to it. They cannot run or install new programs, for example, but they can run existing programs.
- **Guest:** user accounts allow users to play with the computer, but the computer does not recognize them by name. Guest accounts function much like standard accounts and anybody can sign in to the computer.

To begin using the computer, click the user account's name and insert the password when the Windows sign in screen appears as shown in Figure 5.7.

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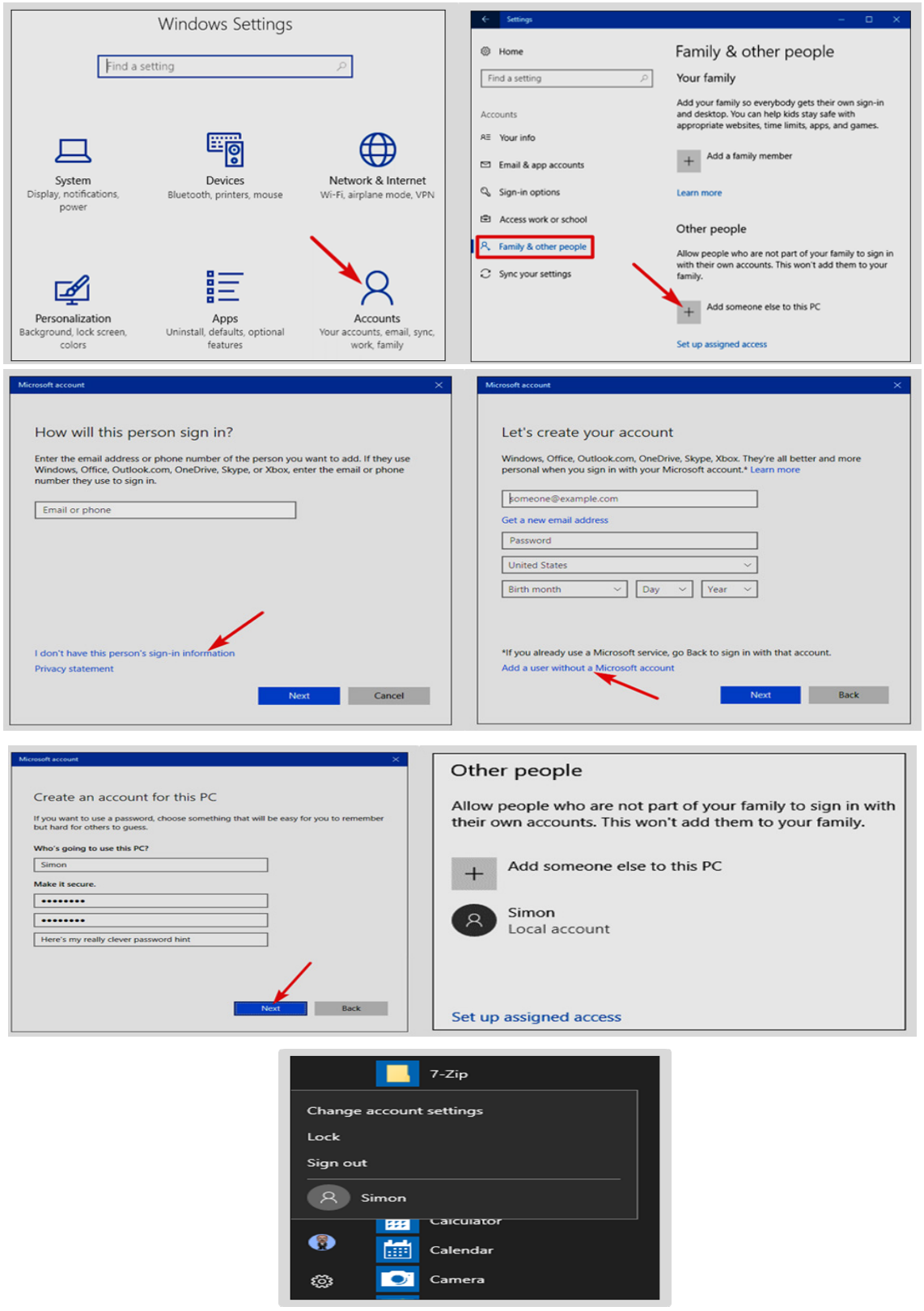


Figure 5.7 Creating a new user account

What is Password?

A password is a sequence of characters or simply a word that used to verify the identity of a user during the authentication process. It provides the first line of defense against unauthorized access to our computer and personal information. The stronger the password, the more protected our computer will be from hackers and unauthorized access.

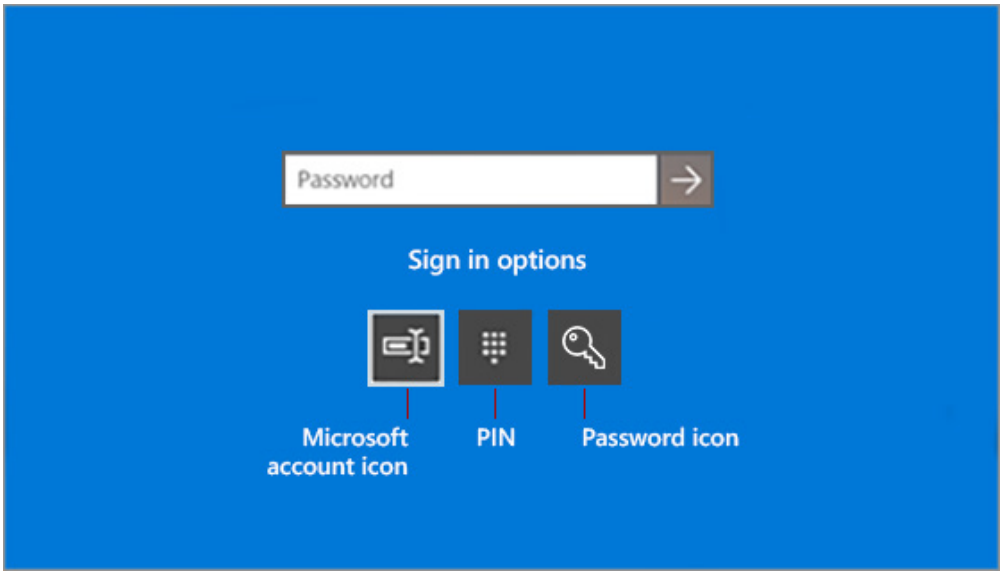


Figure 5.8: Types of password options used to login to our system

Some useful tips are provided below for creating strong passwords and keeping our computer system and information secured:

- Use a unique password for your computer system account.
- Your password should be at least 8 letters (characters) long that consist of lowercase and uppercase letters, numbers and symbols.
- Never tell your password to anyone.

Activity 5.4

- In groups, discuss the problems we may face if our computer is not protected by a password?
- What is a strong password? Please give two examples of a strong password

Summary

- Improper use of computer exposes to health risks of individual users and to safety issues of the device itself.
- Safety signs are displayed to show the danger areas in and around the computer laboratory to alert students and staff members
- To run your computer more smoothly and extend its lifespan, you should clean the hardware components regularly.
- Computer security is the process of safeguarding a computer from unauthorized access.
- A password is a set of alphabets and numbers or special symbols that are used to verify the identity of a user during the authentication process.
- Windows operating system offers three types of user accounts: Administrator, Standard, and Guest accounts.

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Review Questions

Part I. Write TRUE if the statement is correct and FALSE if it is incorrect.

1. It is not mandatory to unplug power cable from the main power outlet during cleaning a computer.
2. Password is one of the computer security techniques to protect a computer from unauthorized users.

Part II. Choose the best answer among the given alternatives.

1. Which one of the following is true about computer security?
   A. Security is the process of safeguarding a computer from unauthorized access.
   B. Cleaning a computer improves the performance of the computer.
   C. To clean the computer, we should turn off it first.
   D. All
2. Which one of the following is the safety sign around the computer laboratory?
   A. No smoking
   B. Electrical hazard
   C. First aid
   D. All
3. A user account that allows everyone to use a computer without recognizing the user is_____.
   A. Administrator account
   B. Guest account
   C. Standard account
   D. All
4. Which one of the following is an example of a complex password?
   A. ABC
   B. 1Abc@23
   C. 1234567
   D. Laboratory
5. Turning off a computer when we finish working on it is called_____.
   A. Sleep
   B. Logout
   C. Shutdown
   D. Starting up

III. Write the correct answer in each of the spaces provided.

1. A user account that controls the whole computer system is called .....
2. ..... are symbols displayed to show danger areas in and around the computer laboratory to alert students.
3. ..... acts as an insulator that prevents air from circulating over or through the components and this can cause overheating.

IV. Discussion

1. What is computer security?
2. Write the steps to change the computer from **On mode** to ***Sleep mode***.
3. List at least three computer hardware cleaning kits and discuss their usage.
4. Write the effects of using unsuitable cleaners for cleaning computer hardware components.

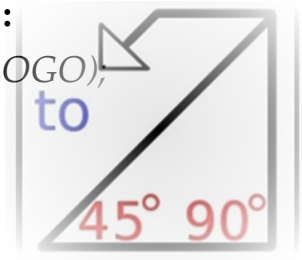
UNIT 6

Logic Oriented Graphics Oriented Programming

Unit Outcomes

At the end of this unit, students will be able to :

- *define Logic Oriented Graphics Oriented (LOGO);*
- *describe graphical elements of LOGO;*
- *write procedures on LOGO environment.*



Overview

This unit will introduce students to programming in LOGO and describes the basic elements of LOGO environment. LOGO is a text-based programming language where children type commands that are then drawn on screen. This unit also introduces the basic LOGO commands where the students use their knowledge of LOGO commands to read and write a code.

6.1. Programming Language

Brainstorming activity

Do you know what computer languages are?

if so? Is it diffrent from human languages like english

What is programming language?

A computer programming language is an artificial language designed to instruct a computer what to do. There are different types of computer programming languages such as C++, python, Java, and LOGO. In this unit, LOGO programming language is discussed.

LOGO is a programming language specifically designed for its ease of use and graphics capabilities. It was originally designed to introduce children to programming concepts.

LOGO's graphics language is called turtle graphics which allows complex graphics images to be created with a minimum of coding. LOGO is a programming language that is very simple and easy to learn. It is used for teaching students and children how to program a computer.

Why should we learn LOGO programming language?

- Because it is lots of fun.
- It enhances the logical sense of the children.
- It develops programming skills.

⚜To write programs using LOGO programming language, first we need to have the software installed in our computer. MSW Logo is the most commonly used software to write programs in LOGO programming language.

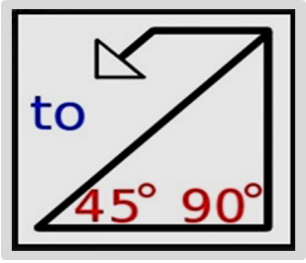


Figure 6.1: MS Logo software icon

Steps to Open MSW Logo

To open the MSW Logo, you can open by clicking on the icon as shown in Figure 6.2 directly from the desktop, or you can use the following steps:

- Click on the start button.
- Click on programs.
- Then click on Microsoft Windows Logo.

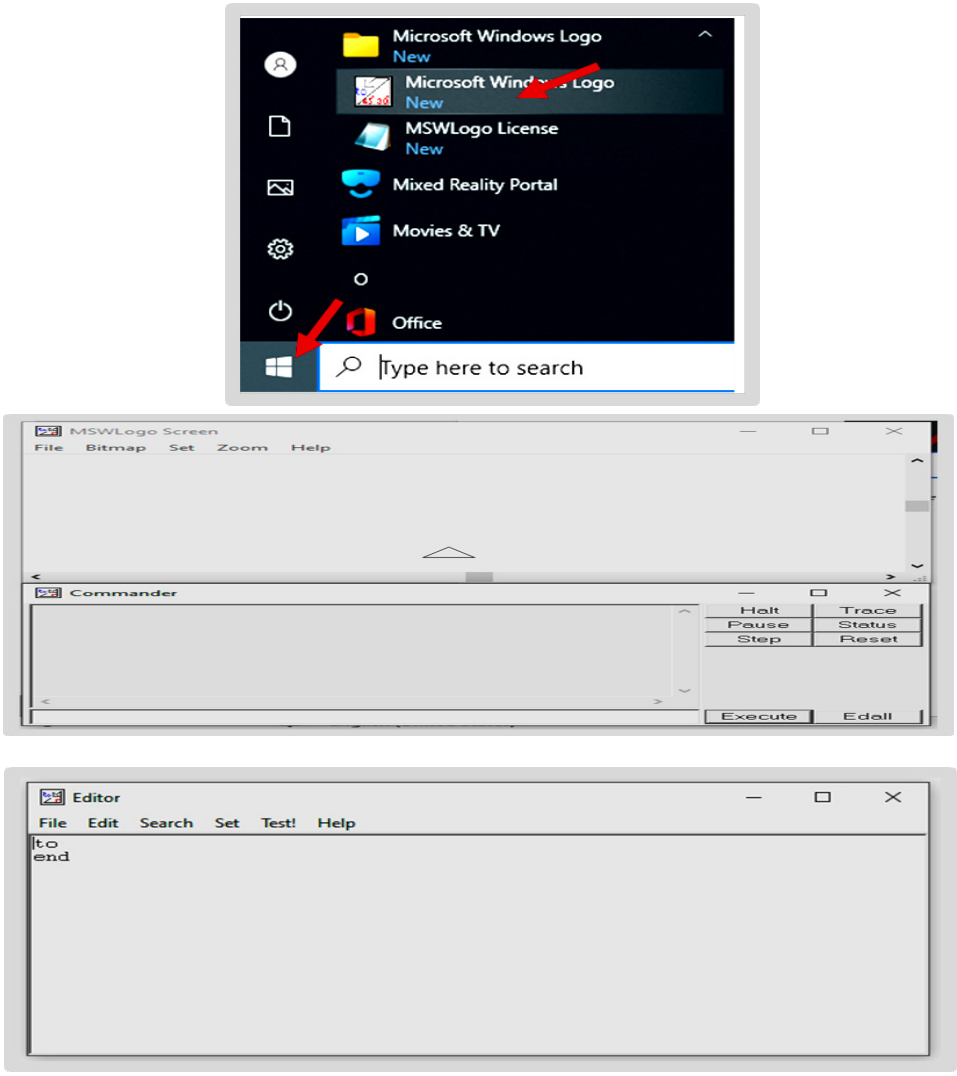


Figure 6.2: Steps to open MSW LOGO

Once you have opened the MSW Logo application, you can run the demonstration by clicking on Help menu and then click on Demo.

Activity 6.1

- Discuss in group and write the differences between programming language and natural language.
- What is the purpose of using computer programming language?

6.2. Graphical Elements of MSW Logo

As illustrated in Figure 6.4, the MSW Logo screen has two parts:

- **Main screen:** is also known as the graphic screen. It is the place to draw pictures or figures.
- **Commander window:** is the place to give commands to the turtle.

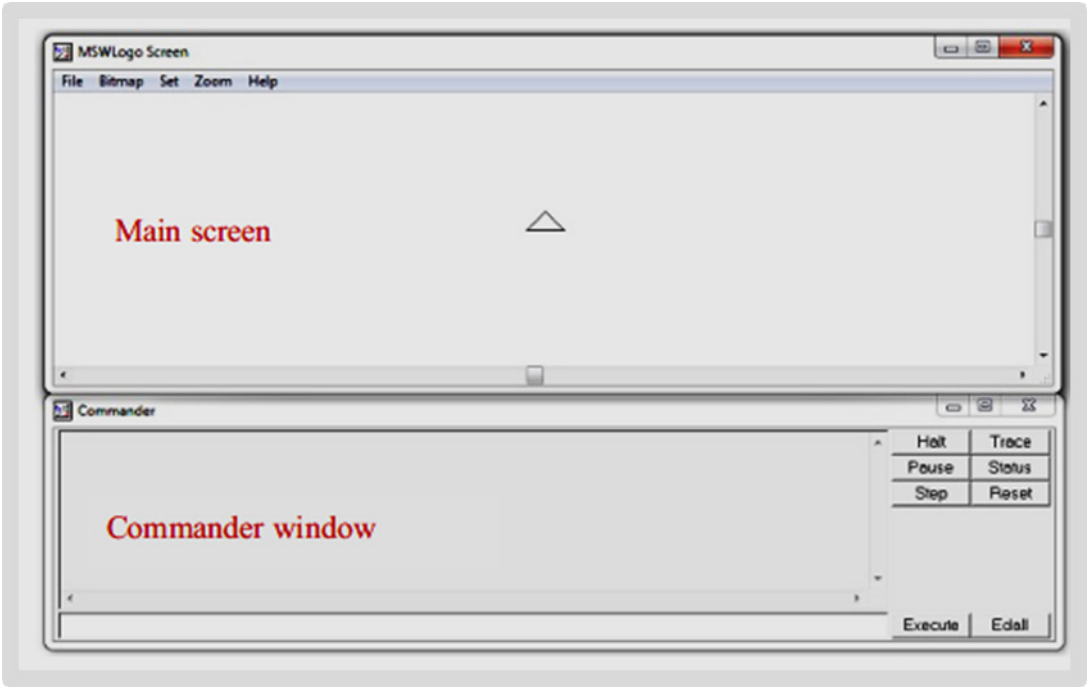


Figure 6.3. The two main parts of MSW Logo

The MSW Logo screen elements are shown in Figure 6.5, and the detail descriptions of each of the screen elements are given below.

- **Title bar**: Title bar contains the name of the program (MSW Logo).
- **Menu bar**: Menu bar contains various options for handling, editing and formatting file. Menu titles contain various sub-options which come when these menu titles are clicked upon.
- **Button bar:** Button bar provides additional shortcuts for LOGO commands. To execute a button command, position the mouse cursor on the button and press the left mouse button.
- **Listener window:** Listener window is the area where the commands are typed.
- **Turtle**: The triangle shape in the center of the graphic screen is called **turtle**. The turtle moves on the screen according to the commands you give it.
- **Command input box:** It is where you type commands in and execute them by clicking on the **Execute** button or by pressing the **Enter** key on the keyboard. The command input box is located in the bottom left portion of the command window.
- **Output or command-recall list box**: displays and records all the commands that are executed and any messages which are outputs of these commands. Output or command-recall list box is located above the Command Input Box.

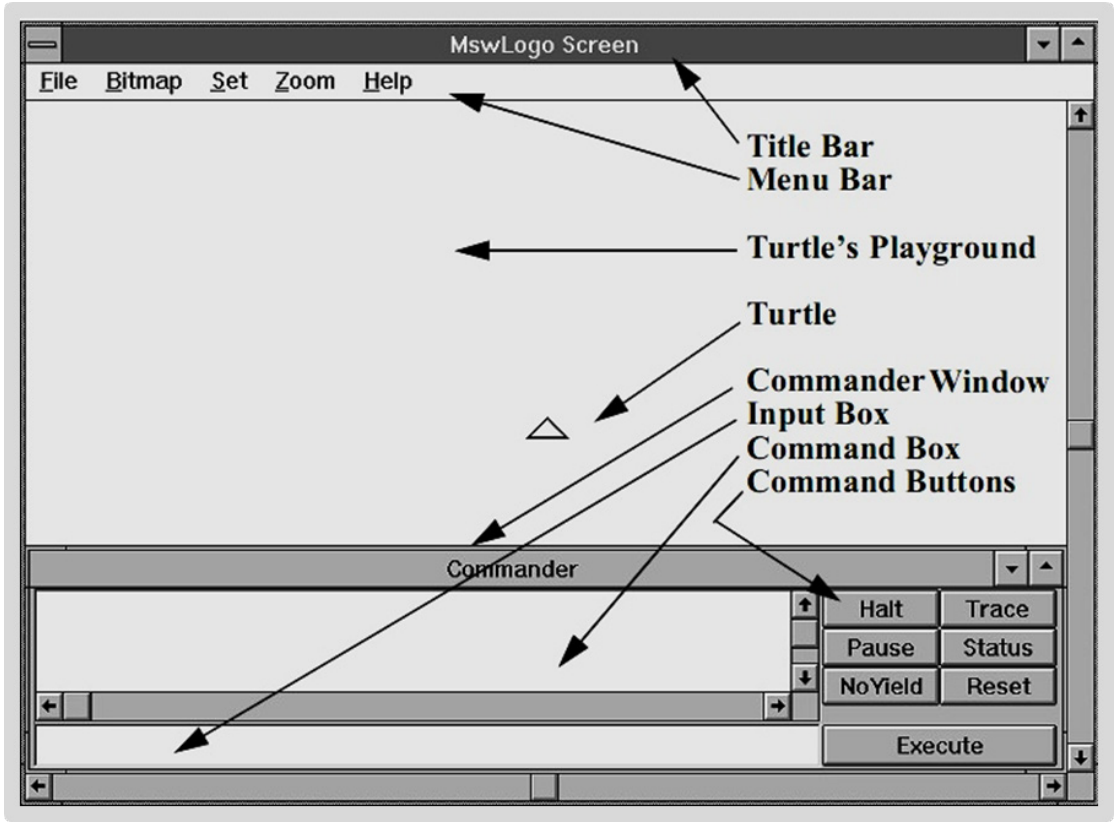


Figure 6.4: MSW Logo screen elements

6.3. Basic MSW LOGO Drawing Commands

The MSW Logo consists of four basic drawing commands:

- Move the turtle forward
- Move the turtle backward
- Turn the turtle right
- Turn the turtle left.

LOGO drawing command understands only the LOGO commands. The center of the MSW LOGO screen is the home of the turtle. We can use the abbreviations of the basic commands where the abbreviations of these commands are given as **fd – forward, bk – backward, rt – right,** and **lt – left**. Each of these commands must be followed by one value called **argument**. The arguments for **fd** and **bk** are units; **rt** and

lt are angles that can be any integer.

For example:

- **forward 10** or **fd 10** means go forward 10 steps;
- **right 90** or **rt 90** means right turn 90 degrees;
- **left 90** or **lt 90** means left turn 90 degrees;
- **back 10** or **bk 10** means go back 10 steps.

In addition to the above four basic drawing commands, **clear screen** (**cs)** is the other commonly used MSW Logo command that helps to erase all drawings and set the turtle at the center.

Activity 6.2

- In a group, discuss and report the four major MSW LOGO screen elements to the class.
- Write the MSW LOGO drawing commands that move the turtle 20 steps forward, then turn 50 degrees left and move 20 steps forward. Draw the shape created by this command on a sheet of paper.

6.4. Procedures

A procedure is a set of instructions that is given a name that describes it. It help us to organize a large project into smaller parts that work together to achieve a goal. The MSW Logo commands described in section 6.3 such as FORWARD and BACK are called **primitive** procedures. They are words that LOGO has already known. We can also add new words to the language and then use them as if they were built-in. The details on how to create a new words are usually called procedures.

Usually it is much easier to type a one-word procedure name than to type all of the instructions that would do the same thing. For example, we would type SQUARE or REPEAT 4 [FORWARD 100 RIGHT 90] every time we want a square. Defining a procedure is so simple that we will often do that before even typing out a long sequence of

commands. A procedure's name is one word that should describe what the procedure does so that you can easily remember what it is for.

We have to always define the procedure before using it; otherwise we will receive a message like "your procedure is not in LOGO 's vocabulary yet" as illustrated in Figure 6.6.

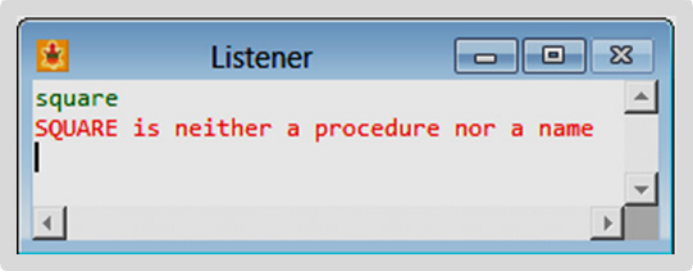


Figure 6.5. Message in the Listener window of MSW LOGO

6.4.1. Defining a Procedure

To write a LOGO procedure we can use either of the following options:

- The TO command
- The Editor windows

Steps to write a PROCEDURE using TO commands:

STEP 1 : Click in the Command Input Box

STEP 2 : Type <TO> followed by a name for the procedure, for example: TO SQUARE

STEP 3 : Now, press the <Enter> key

STEP 4 : After pressing the <Enter> key, the To Mode Input box appears as shown in Figure 6.7.

STEP 5 : Click inside the box

STEP 6 : Enter the commands one after the other, pressing the <Enter> key after each command

STEP 7 : Type <END> to mark the end of the procedure



Figure 6.6: To Mode Input box

Steps to write a PROCEDURE using Editor window:

Alternately, we can write a LOGO PROCEDURE using an EDITOR WINDOW.

STEP 1: Click in the Command Input box and type <Edit "Square"> and press the <Enter> key. Square is the name of a new procedure. The Editor Window appears as shown in Figure 6.8.

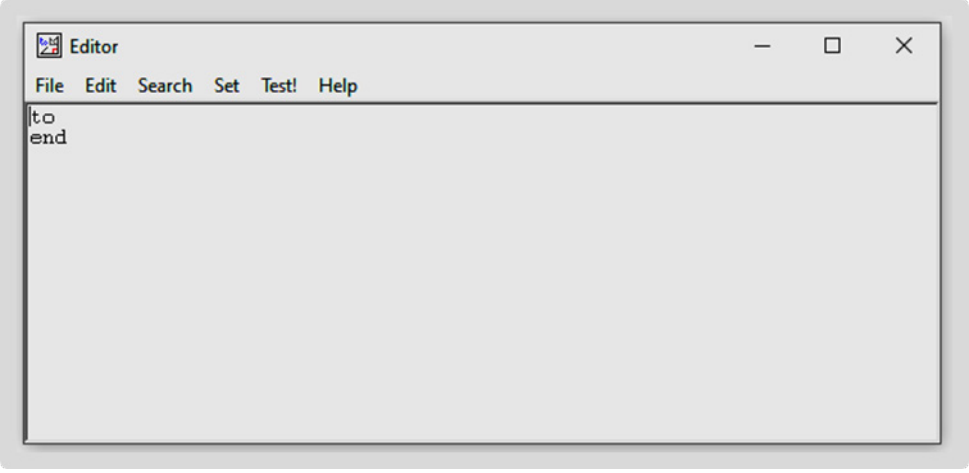


Figure 6.7: Editor Window of MSW Logo

STEP 2 : Insert a blank line after the line containing TO SQUARE by pressing <Enter> key.

STEP 3 : Type the commands that you want to be included in the procedure as shown in Figure 6.9

STEP 4 : Click on <File> in the Menu bar of the Editor window.

STEP 5 : Click on <Save and Exit> option in the Dropdown menu.

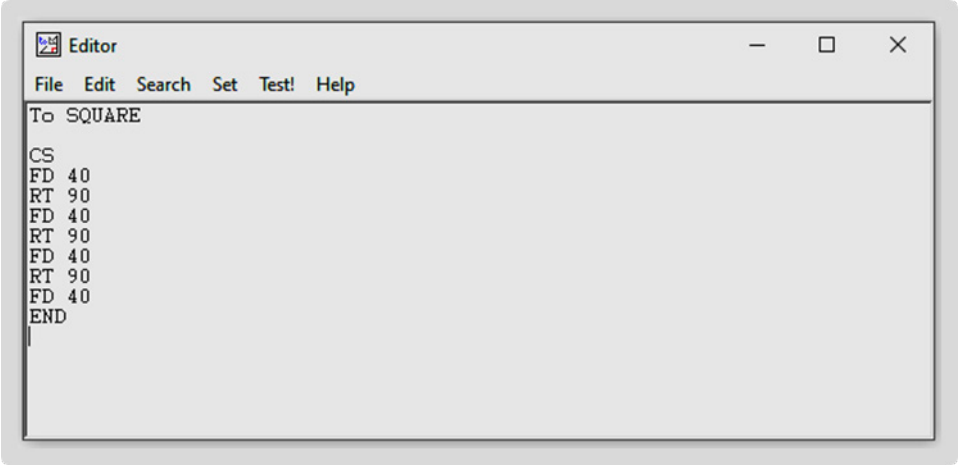


Figure 6.8: Commands in editor window on MSW LOGO

The instructions/commands you type in the commands input box or editor window are remembered for later - not run immediately.

6.4.2. Running A Procedure

Running a procedure means executing the set of commands typed and saved in the procedure. A defined procedure can be called any time by simply typing the name of the procedure in the command input box. You can run a procedure by typing the name of the procedure, for example, SQUARE in the command input box and then pressing the <Enter> key. For example, a SQUARE picture in Figure 6.10 is a sample output for the procedure defined in Figure 6.9.

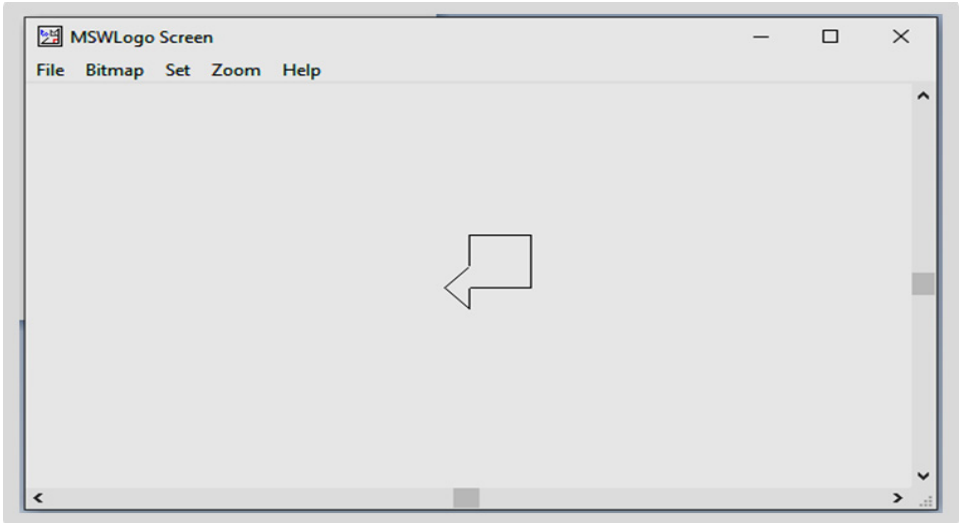


Figure 6.9: Sample output of a procedure defined in fig 6.9

Activity 6.3

- Define a procedure and give an example of a procedure that draws a 10 by 5 unit rectangle.

Summary

- LOGO stands for Logic Oriented Graphics Oriented.
- MSW LOGO screen is divided in two parts: graphics window and listener window.
- CS command clears the graphics screen.
- A procedure is a set of instructions, which is given a name that describes it.
- We can write a procedure in two ways using the "Input Box" or using the "Editor window".
- Procedures are small programs that can be called on again and again through one word without typing them all out.
- Running a procedure means executing the set of commands typed and saved in the procedure.
- The file saved in LOGO will have an extension of LOGO.

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Review questions

Part I. Write TRUE if the statement is correct, and FALSE if it is incorrect.

1. Command input box is one of the graphics elements of MSW LOGO.
2. MSW LOGO can only be used to draw figures.
3. FD 50 command makes the turtle take a half turn.

Part II. Choose the best answer among the given alternatives.

1. Which one of the following is not a programing language?
   A. LOGO C. C++
   B. English D. Java

2. Which one of the following turns the turtle 10 degree to the left?
   A. fd 10 C. lt 10
   B. rt 10 D. lf 10

3. The triangle shape at the center of the main screen is_____
   A. Listener Window C. Command Input Box
   B. Turtle D. Button bar

4. Which one of the following is the extension for files saved in LOGO?
   A. .LG C. .LOGO
   B. .LOG D. . GO

5. Which one of the following is the characteristic of LOGO programming?
   A. LOGO is fun.
   B. LOGO enhances the logical sense of the learner.
   C. LOGO is easy to learn.
   D. All

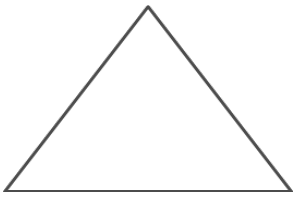
Part III. Write the correct answer in each of the spaces provided.

1. LOGO is an acronym for_____?
2. The shape of a turtle in MSW LOGO is like_____?
3. The two main parts of MSW LOGO windows are_____ and_____.

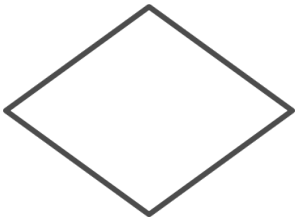
Part IV. Discussion questions

1. What is another name of LOGO commands?
2. Where do we type the commands?
3. Which command is given to make the turtle take a half turn?
4 .Why do we define a procedure?
5. How can we make the turtle reappear on the screen?
6. Which command does bring the turtle back to the center of the screen?
7. Write a procedure to draw the following diagrams:

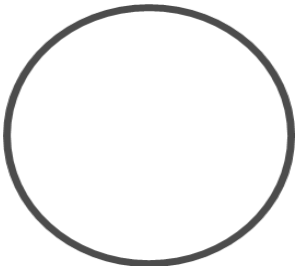
a)



b)



c)



Glossary

- **Accessing a website**: a process of searching for information via internet
- **Administrator user account**: a user account which helps to carry out tasks that require special permissions, such as installing software, changes to system setting and manage the other user accounts
- **Application Software**: a program that is designed to perform specific tasks.
- **Backup**: to copy files or data to a second source or media so as to safeguard it.
- **Browser**: software program that allows the user to find and read encoded information in a form suitable for display especially on World Wide Web.
- **Communication**: a mechanism for sending or receiving information that could include phone lines, satellite communications and/or computers
- **Compacted Disc (CD):** is a digital optical disc data storage format that was invented to store and play digital audio recordings.
- **Computer**: a computer is an electronic device that accepts, processes, stores and outputs data under the control of a set of instructions.
- **Compiler**: is language translator software that helps to translate the high-level programming language into low-level/machine code. It works by translating the whole source code to its equivalent machine code at a time
- **Central Processing Unit (CPU)**: usually called a processor that serves as the 'brain' of the computer.
- **Cleaning Kit**: A variety of tools and products created and designed in various colors, materials,

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shapes, sizes and styles to clean our computer easily, effectively.

- **Data**: a collection of raw facts and figures or a raw input which when processed or arranged makes meaningful output.
- **Domain name**: a human readable address where you can be found online.
- **Domain name extension**: is the notation at the end of a web address that specifies an internet category or a country code
- **Digital Versatile Disc or Digital Video Disc (DVD):** is an optical disc storage device similar to Compacted Disc (CD) with enhanced data storage capacities as well as with higher quality of video and audio formats.
- **Format Painter**: a device that helps to copy the format that has been applied to text and apply it to another.
- **Guest user account**: a user account that provides limited access to a computer system. With this account users cannot install a software or change system settings.
- **Hardware**: the physical equipment used in a computer system such as the CPU
- peripheral devices and memory.
- **Home Page**: The initial page of a site on the World Wide Web.
- **Hypertext transfer protocol (HTTP):** communications protocol used to connect to Web servers on the Internet or on local network.
- **Icon**: a picture or symbol to represent a command on a computer screen.
- **Information Technology**: the development, implementation, and maintenance of computer hardware and software systems to organize and communicate information electronically.
- **Input device**: hardware

components that are used to insert data to the computer systems.

- **Internet**: the internet is a network of networks all of which use the same set of communications protocols.
- **Internet Service Provider (ISP):** a company that provides access to the internet.
- **Interpreter**: language software which translates a high level language format to machine understandable form. Interpreter translates the source-code to its machine code equivalently line by line.
- **Language software**: software that converts a high-level language or assembly language code into machine understandable form.
- **LOGO (Logic Oriented Graphics Oriented)**: a high level programming language specifically designed for its ease of use and graphics capabilities.
- **Motherboard**: is the backbone of the computer system that ties the components of a computer together and allows them to communicate to each other.
- **Memory**: internal storage areas in the computer.
- **MS-Word**: word processing application software provided by Microsoft.
- **Natural language:** any language that has evolved naturally in humans like Amharic, Afaan Oromo, and English.
- **Network**: is a collection of computers connected together.
- **Operating System**: a system software program that works as a bridge between computer hardware and the user.
- **Output Device**: a device that translates information processed by the computer into a form that humans can

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understand.

- **Painting software:** is used to create original pieces of work or pictures using your mouse, graphics tablet or touch screen.
- **Password**: is a sequence of letters and/or numbers used to verify the identity of a user during the authentication process.
- **Payroll**: refers to the salary payment of employees by their employer and it is one of the applications of Microsoft-excel.
- **Plotter**: a computer output device that draws images on paper using a pen.
- **Primitives**: basic commands in LOGO programming.
- **Procedure**: is set of instruction or code that fulfills some specific tasks and is referenced within a larger body of source code.
- **Programming language**: set of grammatical rules for instructing a computer or computing device to perform specific tasks.
- **Random Access Memory (RAM)**: a volatile computer memory available to the user for the temporary storage and manipulation of data.
- **Read-Only Memory (ROM)**: a memory in which program instructions, operating procedures, or other data are permanently stored, generally on electronic chips during manufacture and that ordinarily cannot be changed by the user or when power is witched off.
- **Scroll Bar**: a widget found in graphical user interface and used to show and control which portion of a document is currently visible in a window. A window may have a horizontal or, vertical scroll bar, or both.

- **Secure digital (SD card):** a type of memory card typically used in digital cameras, mobile phone and other portable devices.
- **Software**: the set of instructions used to direct the operation of a computer, as well as documentation giving instructions on how to use them.
- **Standard user account**: Standard accounts are the basic accounts that we use for normal everyday tasks. It allows you to do just anything you would need to do, such as running software or personalizing your desktop.
- **System**: a combination of the hardware, software, and firmware. A system typically consists of components (or elements) which are connected together in order to accomplish a specific function or set of functions.
- **System Software**: it is a set of master programs that keeps the computer system working.
- **System unit:** is also known as a case and it looks like a box case that contains the electronic components of a computer.
- **Task bar**: the bar that contains the start button and appears by default at the bottom of the desktop.
- **Universal Serial Bus (USB)** is used to establish connection or it is used as interface between cables, connectors, power supply, peripherals and other computers.
- **User account:** a user account is an identity created for a person in a computer which consists a user name and a password.
- **Turtle**: a triangular shape pointer used in LOGO that helps in drawing figures.
- **Utility Program**: a program developed to run within an operating system to perform a specific service.

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- **Video Editing software:** is software program that used to edit, modify, generate, or manipulating a video file.
- **Virus**: a program or piece of code that is loaded onto your computer without your knowledge and runs against your wishes.
- **Web page**: a single, usually hypertext document on the World Wide Web that can incorporate text, graphics, sounds, etc.
- **World Wide Web (WWW)**: is collection of documents that are interconnected through hypertext.

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