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FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA
MINISTRY OF EDUCATION

INFORMATION TECHNOLOGY

STUDENT TEXTBOOK

GRADE 7

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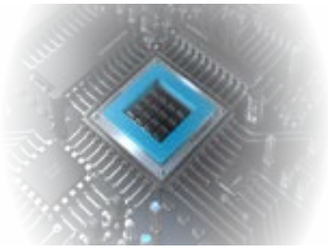
UNIT 1 FUNDAMENTALS OF INFORMATION COMMUNICATION TECHNOLOGY

UNIT OUTCOME

AT THE END OF THIS UNIT, LEARNERS WILL BE ABLE TO :

- define ICT
- define the concepts technology and information technology
- identify basic elements of ICT system
- discuss the definition of computer



1.1. DEFINITION OF INFORMATION COMMUNICATION TECHNOLOGY

The term Information Communication Technologist (ICT) first came in to picture in 1997 in a report prepared by Dennis Stevenson for the United Kingdom (UK) government. It has been widely used in education. Even though ICT has no universally accepted definition, it is generally used to represent a broader and more comprehensive list of all components related to computer and telecommunication infrastructure. ICT refers to all communication technologies, including the internet, and cell phones. More recently, the term ICT has been used to refer 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.

Sometime people use IT in place of ICT and vice versa. IT and ICT must not be confused with each other because they are two different fields. These two terms are related but they are not the same. IT is a technology related to computing data while ICT is related to both computing data and communication technologies. IT is common in industry and ICT is a common term in education.

Digital technologies are electronic tools, systems, and devices that used to generate and store data.

1.2. BASIC ELEMENTS OF ICT SYSTEM

One of the basic elements of ICT system is **data**. Data can be defined as any type of representation of an object or an event. Numbers, text symbols, speech, static or dynamic image, and so on are all examples of representation. Most data represent only a very small number of attributes of the object or the event in question. Data therefore has to be processed, or provided with a context, before it can have meaning.

Example 1

- Abebe, kebede, Sara, Melat, Alemu, Dawit
- 15,17,10,15.10,20

These are meaningless sets of data. They could be the name list and age of grade 7 students, but without a context we don't know them.

Information:- is the result of data processing. **Data processing** occurs when data is collected and translated into usable information. This results, in facts, allowing the processed data to be put into context and given meaning. Information is data that has meaning.

Data by itself is meaningless. It only takes on 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.

Raw input is referred to as data, which is then processed or structured to provide meaningful output. When data is transformed into information, it becomes understandable and valuable.

Example 2

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 does the data become information. It all becomes meaningful when we are told.

- Abebe, Kebede, Sara, Melat, Alemu, and Dawit is a list 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 and utilizes **ICT.** It is humans who develop and operate the software, input the data, create and maintain the hardware, define the procedures, and finally determine if an ICT succeeds or fails.

Communication :- is the sense of moving information from one place to another. You'll need some sort of infrastructure or network to deliver and receive data which is commonly called the communication network. Providing information to computer, reading information from any system, or the transfer of message between two people are some of the examples of communication.

Communication devices are basically devices that allow computers and other ICT systems to communicate with one another. They facilitate the transmission and receiving of information and data over the transmission media that link them to each other. Communication devices such as modems, routers, switches and hubs that are connected to computer systems help to transmit and receive information to and from other computers and ICT systems. Communication devices and the infrastructure or transmission media that link them togetherconstitute Communication Networks.

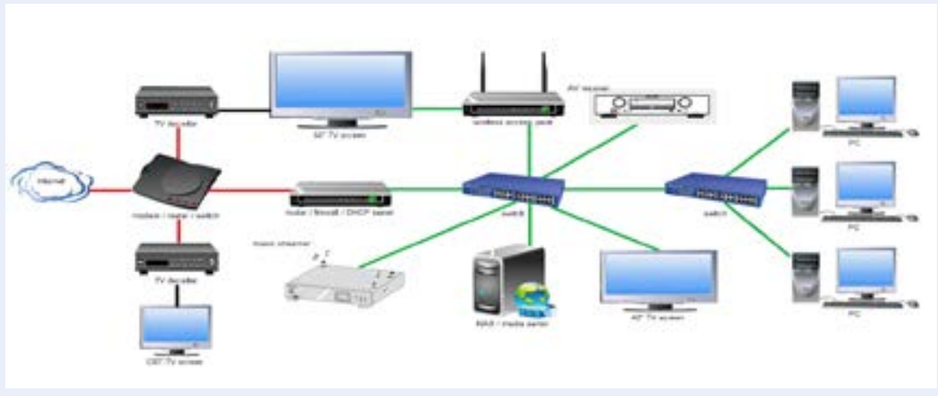


Figure 1.1 Pictures that shows communication devices

Technology :-is the **study and transformation of techniques, tools, and machines created by humans.** Technology allows humans to study and evolve the physical elements that are present in their lives.Technology has made us ever more productive.

We are surrounded by technology in modern life. It's an essential component of all we do. Technology can be found in our homes, personal places, in industry, business, and the medical profession. Our lives have been made easier, faster, better, and more enjoyable thanks to technological advancements. For example, we can use cellular phones technology that is designed for communicating with other people even if they are miles away far from us.

Figure 1.2 Pictures that shows sample technology

Activity 1.1

1. Write the difference between IT and ICT.
2. Identify and explain basic elements of ICT system.

1.3. ICT IN OUR DAILY LIFE

ICT is a broad subject and an evolving concept. ICT has a great impact on our daily lives. It refers to any product that stores, retrieves, manipulates, transmits, or receives data in a electronic format. We encounter many new technologies in our everyday lives: at home, school, workplace, in the streets, in places we visit for holidays, on business, in public spaces, through conversations. We can also consider radio, television, telephone technologies that we use in our daily lives. Thus, ICT has a great impact on our lives.

Information communication technology in communication

We all know that information and communication technologies (ICT) play an important role in our lives; in the past, our parents used to write letters. However, with the help of information and communication technology, it is now easy to communicate with our loved ones. For example, Short Message Service (SMS), Email and social medias are the most common services of ICT that we use in our daily life to communicate with our loved ones. If you miss them in just one tap and you can now talk to them and enjoy the moment. Through the usage of the internet, ICT allows us to contact with our relatives who live in other countries.

Nowadays people are very enthusiastic about using social media to interact to other people and to search for everything

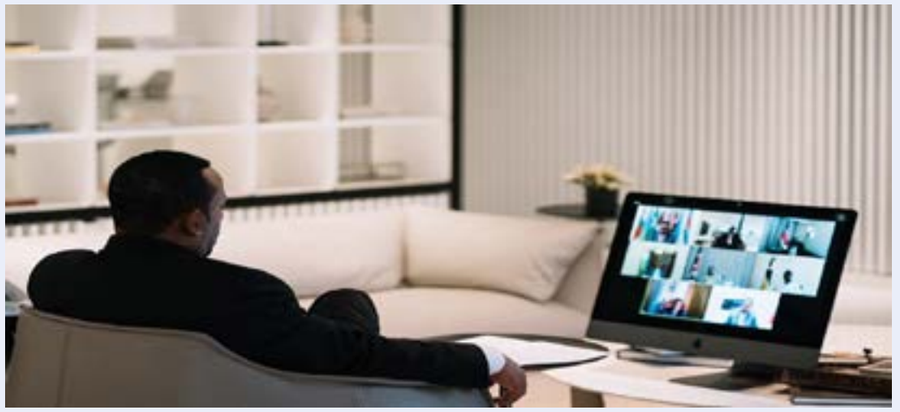


Figure 1.3 Picture that shows ICT in communication

ICT in Education :-Information and communication technology contributes greatly to education because it improves the way of education and provides a better educational environment. For example, we can consider radio education program, television program from Ethiopian ministry of Education. Plasma Educational channels for Secondary schools. The use of computers, tablets, data displays, interactive electronic boards, ICT technologies tend to expand access to education.

Through ICT, learning can occur anytime and anywhere. For example, online course materials can be accessed 24 hours a day, seven days a week. Learning and teaching are no longer solely dependent on printed materials thanks to ICT.

On the Internet, there are numerous resources available, and knowledge may be gained through video clips, audio sounds, and visual presentations, among other things.

Figure 1.4: Picture that shows Information communication technology in education

ICT in Entertainment :-ICT provides a variety of entertainment and leisure activities that can be accessed easily from the comfort of one's home. Directly from the Internet, one can watch movies and listen to music. In addition, we can also

Figure 1.5 Picture that shows Information communication technology in entertainment

Information and Communication Technology (ICT) is all around us. It is becoming increasingly important in people's lives, and this tendency is predicted to continue. The use of information and communication technology (ICT) to complete activities is not limited to a single organization or industry.

Activity 1.2

1. Give and explain some examples of ICT in daily life.

1.4. DEFINITION OF COMPUTER

In its literal meaning, a computer is any calculating device or machine, which is electrical, mechanical or electromechanical. But that doesn't mean that computer performs only calculation. This literal meaning was attached because the inventors (Mathematicians or physists) invent computers for making calculations only. But today's computers not only process numbers, they process texts, pictures, and multimedia and so on. Therefore the meanings of a computer, nowadays, are broader than computing concepts.

Generally a computer is an electronic device that takes an input process it under a set of instructions called program and produce an output. Computers can also store data in appropriate storage devices for later use and retrieve it as needed.

Why we use Computers?

The reason of why people use computer:

1. Computer also become a good communication tools for human because it has some software that can make us communicate all around the world
2. Perform complex mathematical computations and make comparisons;
3. computers have a large storage capacity and can store a large amount of data; unlike humans
4. Computer do not require to rest , they can do their own jobs for all day long
5. Computers do not require rest and can complete their tasks independently.

Unit Summary

- Information and communication technology (ICTs) refers to all communication technologies, including the internet, wireless networks, cell phones, computers, software, middleware, video-conferencing, Social networking , and other media applications and services enabling users to access, retrieve, store, transmit, and manipulate information in a digital form.
- Information Technology is the use of computers, storage, networking and other physical devices to create, process, store, secure, retrieve dataand information.
- Data can be defined as any type of representation of an object or an event
- Information is the result of processing data
- User is a person who has access to and utilizes **ICT**
- Technology is thestudy and transformation of techniques, tools, and machines created by humans.
- Communication is the sense of moving information from one place to another.
- ICT has a great impact on our daily lives. For example, contributes greatly to education, communication, entertainment and so on.

- Computer is an electronic device that takes an input process it under a set of instructions called program and produce an output.

Review Questions

Write TRUE if the statement is correct, otherwise write FALSE

1. Computer is only calculating device or machine.
2. ICT tools cannot be used for entertainment.
3. The nature of teaching and learning system has changed because of ICT.
4. People use computer to makes their job can be done easier and faster.
5. Data on its own 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

Write the correct answer on the spac

1. _____ refers to the development, maintenance, and use of computer software, hardware and networks.
2. Data representation could be in the form of _____, _____, _____, _____.
3. _____is store data for later uses in appropriate storage devices, and retrieve whenever it is necessary.
4. _____ is 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 and utilizes ICT.
7. _____ is usually the processed outcome of data.
8. _____is tool that is designed based on scientific knowledge

Discussion questions

1. Define 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. Explain the term data and information.
6. Define Information and communication technology (ICT)

UNIT 2 COMPUTER HARDWARE

UNIT OUTCOME

AT THE END OF THIS UNIT, LEARNERS WILL BE ABLE TO :

- Explain computer Hardware
- Identify the hardware components of the computer.
- Recognize the functions of the hardware components.

2.1. COMPONENTS COMPUTER SYSTEM

A computer is an electronic device used to manipulate data or information. It can store, retrieve, and process information. A computer system, like a human, can be viewed as a combination of body and mind. The computer is a two-part system with a body that serves as the hardware and a mind that serves as software. As a result, a computer is a collection of electronic parts (body) controlled by a set of instructions (mind).

Computer can be divided into two parts.

- Hardware
- Software

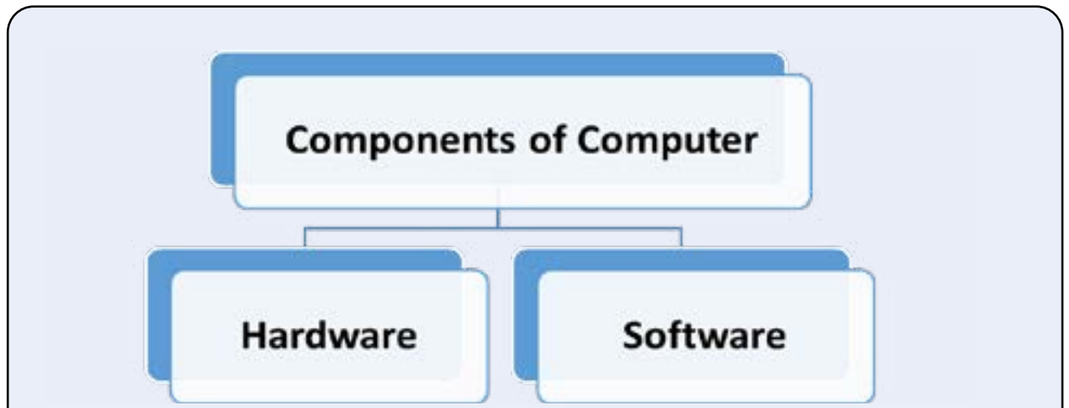


Figure 2.1 : Figure that shows components of the computers

2.2. INTRODUCTION TO COMPUTER HARDWARE

Computer hardware is the physical equipment of the computer you see and touch. Computer hardware refers to the physical parts or components of a computer such as the monitor, mouse, keyboard, hard drive disk, etc. All hardware components of a computer are physical objects that can be touched and seen. All computer systems, no matter how small or large, have the same fundamental capabilities: processing, storage, input and output.

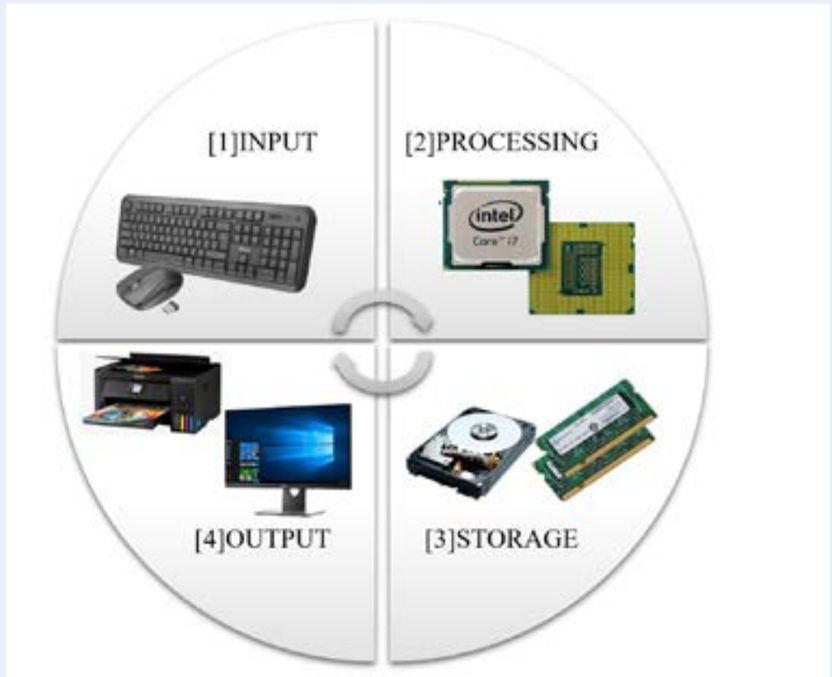


Figure 2.2 :Picture that shows fundamental capabilities of computer system

Hardware components of a computer system can be classified as:

- Input Devices
- Processing Device
- Output devices
- Memories / Storage devices

Input Devices

An input device is a piece of computer hardware equipment used to provide data and control signals to the computer. It enables the user to input information into the computer. The input device converts data from a human-readable format to a computer-readable format. Common input devices are:

- Keyboard
- Mouse
- Joystick
- Scanner
- Touch Sensitive Screen
- Light Pen
- Digital Stills Camera
- Bar Code Reader
- Voice Data Entry

Figure 2.3 : Picture that shows sample input devices

Keyboard

is the most common and widely used input device for entering data into a computer.

Figure 2.4 :Figure 4: Picture that shows sample Keyboard

pointing device

allows you to point to things on the screen, click on them, and move them around. Generally, it has two buttons called the left and the right button and a wheel is present between the buttons. A mouse can be used to control the position of the cursor on the screen, but it cannot be used to enter text into the computer.

Figure 2.5 Picture that shows the sample wired and wireless Mouse

Joystick

Also a pointing device, which is used to move within the screen's environment, and is widely used in the computer games industry. It is a stick having a spherical ball at its

both lower and upper ends. The lower spherical ball moves in a socket. The joystick can be moved in all four directions.

Figure 2.6: Picture that shows sample Joystick

Scanner

is used when data is available on paper and needs to be transferred to the computer's hard disk for further processing. Scanners are used to reproduce photographs on the computer screen.

Figure 2.7: Picture that shows sample Scanner

Touch Sensitive Screen

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

Figure 2.8: Picture that shows sample touch Sensitive 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. The light pen's tip has a light-sensitive element that detects the light from the screen when it is placed against it, allowing the computer to recognize the pen's location on the screen.

Figure 2.9: Picture that shows sample Light Pen

Digital Camera

captures an image that is saved in the camera's memory. When the memory is full, it can be deleted to make space for more photographs.

Figure 2.10: Picture that shows sample Digital Camera

Bar Code Reader

A bar code is a pattern made up of different-thickness lines. The technology allows for quick and error-free data entering into the computer. Bar codes make it easy to keep track of what's been sold.

Figure 2.11: Picture that show sample Bar Code Reader

Microphone

This system accepts the spoken word as input data or commands.

Figure 2.12: Picture that shows sample Microphone

Processing Device – CPU

The central processing Unit (CPU) is the brain of the computer which performs all arithmetic, logical and control operations. It is responsible for all functions and processes.

Figure 2.13: Picture that shows sample central processing Unit

The CPU consists of arithmetic-logic unit, registers and the control unit.

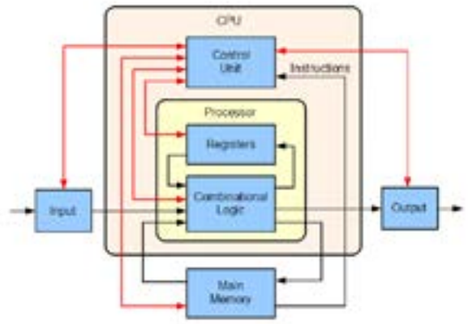


Figure 2.14: Picture that shows sample parts of CPU

Arithmetic-Logic Unit (ALU)

The arithmetic logical unit (ALU) is responsible for performing arithmetic and logical operations and comparisons of data**.** Arithmetic calculations like as addition, subtraction, multiplication and division. Logical operation like compare numbers, letters, or special characters.

Control Unit (CU)

The control Unit of the CPU controls and directs the operation of the entire system.

Registers

The CPU also contains a small high speed memory which is used to store temporary results and control information.

Activity 2.1

1. List and explain examples of input devices.

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 easy to be understand by a human.

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

- Monitor
- Printer
- Plotters
- Speaker
- Headphone

Figure 2.15: Pictures that show all sample output devices.

Monitor

Monitors, also known as Visual Display Units (VDUs), are the main output device of a computer. The visual and graphics information generated by the computer is shown on the monitor via the video card.

Figure 2.16: Picture that shows sample CRT,LCD and LED Monitor

Printer

A printer is a type of output device that prints data on paper. A 'hard copy' is created when you print something. Printers are one of the most often used computer peripherals, and they are used to print text, pictures, and photos.

Figure 2.17: Picture that shows sample Printer

Plotters

A plotter is an output device much like a printer that is used to produce graphs or diagrams. Plotters are different from printers in that they use a pen to draw lines. Plotters are considerably more expensive than printers.

Figure 2.18: Picture that shows sample Plotters

Speaker

A computer speaker is a hardware device that outputs sounds generated by the computer. The computer's sound card generates the signal that produces the sound that comes from a computer speaker. Speakers can be used to play music, as well as to play sounds that are meant to notify the user.

Figure 2.19: Picture that shows sample Speaker

Memories / Storage devices

A storage device is used in the computers to store the data. It's any device that can store data, either temporarily or permanently. There are two types of storage devices used with computers: a primary storage device, such as RAM, ROM and a secondary storage device, such as a hard drive.

Primary Storage Devises

Primary storage (also known as main memory) is the part of the computer that stores current data, programs, and instructions. It is memory architecture within a computer system that is responsible for temporarily storing data so that it can be accessed by the processor as needed.

Random Access Memory (RAM)*:* RAM is responsible for storing the instructions and data that the computer is using at that present moment in time. It is called Random Access Memory because any storage location can be accessed directly.

It is described as volatile memory as the contents of RAM chips can be lost when the computer is turned off or when new data is being written to RAM while other data is being processed.

Figure 2.20: Picture that shows sample RAM

Read Only Memory (ROM)*:* ROM It refers to computer memory chips containing permanent or semi-permanent data. ROM stays active regardless of whether power supply is turned on or off. ROM is further classified into PROM, EPROM, and EEPROM.

- **PROM (Programmable read-only memory)**–It can be programmed by the user. Once programmed, the data and instructions in it cannot be changed.
- **EPROM (Erasable Programmable read only memory)** – It can be reprogrammed. To erase data from it, expose it to ultraviolet light. To reprogram it, erase all the previous data.
- **EEPROM (Electrically erasable programmable read only memory)**– The data can be erased by applying an electric field, with no need for ultraviolet light. We can erase only portions of the chip.

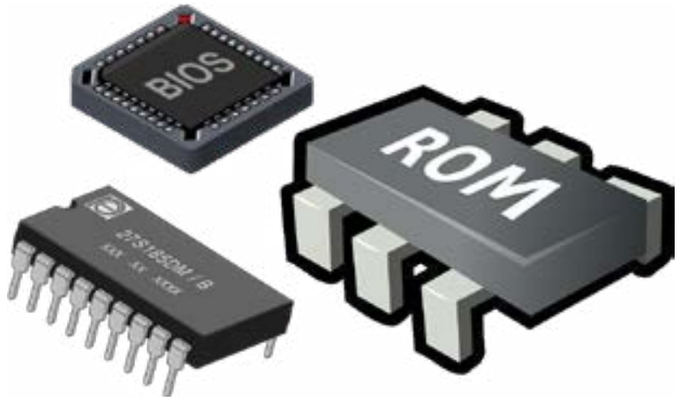


Figure 2.21: Picture that shows RAM and ROM.

RAM	ROM
Data stored in RAM can be retrieved and altered.	Data stored in ROM can only be read.
Store data in megabytes	Store data in Gigabytes
Volatile which could store the data as long as the power is supplied.	Non-volatile which could retain the data even when power is turned off.
It is a high-speed memory.	It is much slower than the RAM.
Used to store the data that has to be currently processed by CPU temporarily.	It stores the instructions required during bootstrap of the computer.

Table 1: Difference between RAM and ROM

Secondary Storage

Secondary storage is the second type of storage that 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. The CPU does not have direct access to it. The computer's input/output channels are typically used to access secondary storage, and the needed data is transferred utilizing the primary storage's intermediary area. Secondary storage devices are required since primary storage does not permanently store user data and information and has a limited capacity. Auxiliary storage devices are another name for secondary storage devices. Storage Devices:

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

Hard Disk: In a computer, the hard disk drive is the most common and usually largest data storage device. This data comes in many different forms, but is essentially anything saved or installed to a computer: such as computer programs, family photos, operating systems, word-processing papers, and so on. Hard drives, unlike floppy disks, are normally installed inside the computer and are not easily removed. They can store very large amount of information and provide for more rapid storage and retrieval of data and information than the floppy diskette.

Figure 2.22: Picture that that shows sample Hard disk images

Magnetic Tape: A recording medium consisting of a thin tape with a coating of a fine magnetic material, used for recording analogue or digital data. Magnetic tape is a serial access medium, similar to an audio cassette, and so data (like the songs on a music tape) cannot be quickly located.

Figure 2.23: Picture that shows sample magnetic tape images

Floppy Disk: Floppy disks, sometimes called **flexible disks** or **diskettes**, can store between a few hundred thousand and several million alphabets or symbols of information. It is a type of storage media capable of storing electronic data, like a computer file. Once data is stored on a floppy disk it can be 'write protected' by clicking a tab on the disk. This prevents any new data being stored or any old data being erased.

Figure 24: Picture that shows sample floppy disk images

Optical Disk: An optical disk is any computer disk that uses optical storage techniques and technology to read and write data.

Figure 25: Picture that shows sample Optical Disk images

The most common types of optical media are

- Blu-ray (BD)
- Compact Disc (CD)
- Digital Versatile Disc (DVD)

CDs can store up to 700 megabytes (MB) of data and DVDs can store up to 8.4 GB of data. Blu-ray discs, which are the newest type of optical media, can store up to 50GB of data. This storage capacity is a clear advantage over the floppy disk storage media (amagnetic media), which only has a capacity of 1.44 MB.

USB flash drive: it is a data storage device that includes flash memory with an integrated USB interface. It is typically removable, rewritable and much smaller than an optical disc.

Figure 26: Picture that shows USB flash drive

Secure Digital card: is a type of removable memory card used to read and write

large quantities of data in a wide variety of mobile electronics, cameras, and smart devices.

Figure 27: Picture that Shows Secure Digital card

Activity 2.2

1. Identify and explain the basic parts of computer Hardware with example.
2. Explain and demonstrate different examples of primary and secondary storage devices.

Summary

- Computer can be divided into two parts: Hardware and Software
- Computer hardware is the physical equipment of the computer you see and touch.
- Hardware can be classified as: Input Devices, Processing Device. Output devices, Storage devices
- An input device is a piece of computer hardware equipment used to provide data and control signals to the computer.
- Common input devices are: Keyboard , Mouse , Joystick , 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.
- The CPU consists of arithmetic-logic unit, registers and the control unit.
- An output device is computer hardware equipment used to communicate the results of data processing carried out by a computer to the outside world.
- Common input devices are: Monitor, Printer, Robot, Plotters, Speaker, and Headphone…
- A storage device is used in the computers to store the data.
- There are two types of storage devices used with computers: a primary storage, such as RAM, ROM and a secondary storage device, such as a hard drive.
- Primary storage is holds data, programs and instructions that are currently in use.
- Secondary storage is stores data and information permanently.
- Random Access Memory (RAM) is responsible for storing the instructions and data that the computer is using at that present moment in time.
- Read Only Memory (ROM is a permanent form of storage.

Review Questions

I. Write TRUE if the statement is correct, otherwise write FALSE

1. Scanner is the most common and very popular output device.
2. Secondary storage is stores data and information permanently.
3. Random Access Memory (RAM) is a permanent form of storage.
4. Plotters differ from printers in that they draw lines using a pen.
5. Keyboard is commonly known as a **pointing device,** used to control the position of the cursor on the screen.
6. Control Unit of the CPU controls operation of the entire computer system.
7. Light Pen is used to select a displayed menu item or draw pictures on the monitor screen.
8. The arithmetic logical unit (ALU) is used to store temporary results.

II. Write the correct answer on the space provided.

1. _____ allows data to be transmitted by the computer in a human-friendly form.
2. _____ is an output device, which is used to print information on paper.
3. _____is parts of CPU used to store temporary results and control information.
4. The storage devices are classified as _____ and _____.
5. Computer can be divided into two parts_____ and _____.
6. _____allows the user to enter data into the computer.
7. _____ is an input device widely used in computer games industry.
8. _____ is the brain of the computer.

III. Discussion questions

1. Give the differences between input and output device.
2. Explain Memories or Storage devices.
3. Explain the term Random Access Memory (RAM) and Read Only Memory (ROM).
4. List examples of output devices.
5. Explain computer hardware.
6. Explain the term input device.
7. What is central processing Unit (CPU)?
8. What are 3 parts of a CPU?

Grade 7 Information Technology Student's Textbook

UNIT 3

COMPUTER SOFTWARE

UNIT OUTCOME

AT THE END OF THIS UNIT, LEARNERS WILL BE ABLE TO :

- Explain Computer Software
- Explain application and system software
- Discuss system software with example
- Discuss application software and provide example
- Differentiate between hardware and software

3.1. COMPUTER SOFTWARE

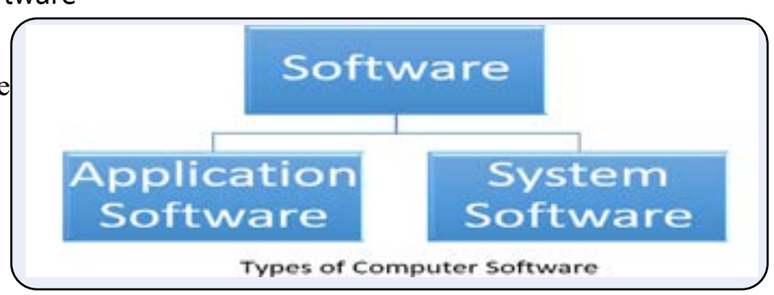
Computer hardware cannot perform alone. It is virtually useless without computer software. To accomplish any task, hardware must give a serious of instructions called software. A program is a finite set of instructions that the computer follows to complete a task.

Computer software, or simply software, is a collection of data or computer instructions that tell the computer how to work. Computers would be useless if they didn't have software. For example, without your Internet browser software, you could not sure the Internet and read what you want. Without an operating system, the browser could not run on your computer. Software is a generic term used to describe computer programs.

The hardware is designed to accomplish a variety of tasks, and the software instructs the hardware on how to complete each one. Software is defined as everything that may be stored electronically on your computer. Both computer hardware and software are interdependent, and neither can be used effectively on its own.

There are two types of software

- System Software
- ApplicationSoftware



Types of Computer Software

System software

System software is responsible for controlling, integrating, and managing the individual hardware components of a computer system. It does not perform specific tasks for the user, such as document creation or data analysis. System software consists of programs that enhance the hardware system's capabilities.

Systems software is developed in order to automate the following routine tasks:

- Loading of programs that perform routines to control peripheral devices.
- Execution of programs.

System software helps the user, hardware, and application software to interact and function together. These types of computer software allow an environment or platform for other software and applications to work in. This is why system software is essential in managing the whole computer system. Types of system software includes Operating Systems, utility software, and language translator.

Operating System

The operating system is the best-known example of system software.It is the most important program that runs on a computer. Every computer system runs under the control of an operating system.

Operating systems are responsible for providing essential services within a computer system:

- Initial loading of programs and transfer of programs between secondary storage and main memory
- Supervision of the input/output devices
- File management
- Protection facilities

All of your computer-like devices run on an operating system, including your desktop, laptop, phone, and tablet, etc. Here is a list of examples of an operating system. For desktop computers, laptops and tablets:

- Microsoft Windows (Windows XP, 7, 8, 10 and 10)
- Mac (for Apple devices)
- Linux based os distribution like ubuntu, Kubuntu, Fedora, Mandirva Linux

Windows OS Linux OS MAC OS

Figure 3.2: Picture that shows sample Computer operating System

For phones:

- Apple's iOS
- Google's Android
- Windows Phone OS

Figure 3.3: Picture that shows sample Phone operating System

Utility programs

Utility program is another example for system software generally used to support, enhance, or expand existing programs in a computer system. Many operating systems have utility programs built in for common purposes because of its existence can be an effort in prevention when suddenly a computer error or error occurs. Additional utility programs are available separately. Some of examples of the utility programs are the following.

- ***Backup software:*** it is a type of software which facilitate to a user to have a recovery copy if his/her computer suddenly stop. It enables the creation of an exact duplicate of computer files that can be used for restoring the original files in case of file corruption, accidental deletion.
- ***Disk Cleaner:*** Disk cleaner software works to clean the files on the hard disk drive that is no longer useful.
- ***Driver Scanner:*** Driver Scanner is a tool that is easily used to be able to scan a computer for drivers, identify those who are out of date, incompatible, or damaged.
- ***Data recovery****:* it is used to restore data that has been physically damaged or corrupted. Data can be damaged by viruses, bad software, hardware failure, and power fluctuation.
- ***Virus protection:*** if there is an attack of computer viruses on your computer system there may be a need to have antivirus utility software. Computer viruses attack the data and programs stored on your computer. It is important to have antivirus software installed to help prevent data loss or corruption.
- ***Data compression utility****:*removes redundant elements, gaps and unnecessary data from the computer storage space so that you will have enough space to work and to transport data.

Language translator:

it is the other example of system software which is normally used by the programmer to develop application program. It is a generic name consisting of various programs that serves as compilers and translators to develop program in a number of different programming language.

Application Software

Application Software, also known as end-user programs or productivity programs are software that helps the user in completing tasks. Application Software's are designed to satisfy a particular need of a particular environment.

Figure 3.4: Picture that shows sample applications software

The common application programs are.

Word processing:

These applications for documentation. It is a type of software which permits the user to create, edit, format, file and print usually text documents.

For example: MS-WORD, WordPerfect, WordStar, and WordPad.

3.5: Picture that shows sample MS-WORD, WordPerfect, WordStar, and WordPad

Spreadsheet:

it is an electronic tabular spreadsheet displayed on the VDU of the computer. It provides the user the opportunity to create, edit, format, file, print, calculate, and analyze data in tabular form. For example: FoxPro, MS-Excel and so on.

Figure 3.6: Picture that shows sample Spreadsheet soft wares

Database management:

serve to create computerized datable, to insert records, to make queries, to analyze data, and append data. Example, Microsoft office access

3.7: Picture that shows sample Database management Software

Graphics software:

these are a type of application software which provides the user the workspace to create, edit, format image, and graphical information. AutoCAD is one of the example of graphical software.

Figure 3.8: Picture that shows graphics software

Presentation application software:

which provide the user to create edit and present presentations, For example: MS-power point, Key Notes and google slides.

9: Picture that shows sample presentation application software

Difference between System Software and Application Software

	System Software	Application Software
	System software can run independently of the application software.	Application software cannot run without the presence of the system software.
	System software is used for operating computer hardware.	Application software is used by user to perform specific task.
	It starts running when the system is powered on and runs until the system is powered off.	It starts when the user begins, and it ends when the user stops it.
	Users do not interact with system software as it works in the background.	Users always interact with application software while doing different activities.
Example:	➢ *Microsoft Windows* ➢ *Linux based OS* ➢ *DOS*	➢ *Microsoft Word (Word Processing)* ➢ *Microsoft Excel (Spreadsheet software)* ➢ *Microsoft PowerPoint (Presentation Software)*

Activity 3.1

1. Explain and demonstrate different examples of system and application software..

3.2. OVERVIEW OF WORD PROCESSING

A word processor is an application program that allows users to create, edit, and print documents. It allows you to type text, save it electronically, display it on a screen, edit it using keyboard instructions and characters, and print it. You may use this tool to add images, tables, and charts to your documents. You can also double-check

Main features of word processing applications:

word processor allows one to

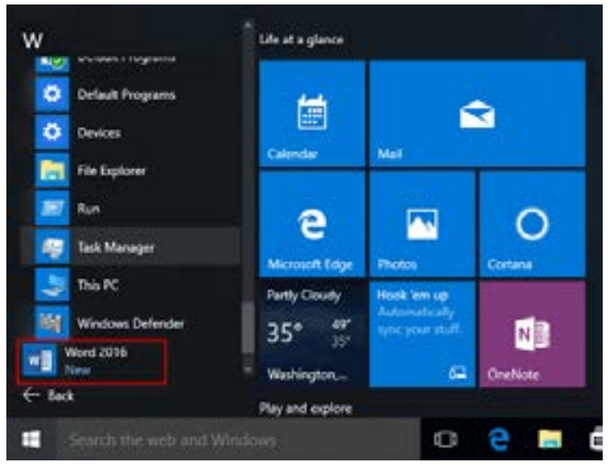
- **Enter text**
- **Edit text**
  - ✓ **Insert**
  - ✓ **Delete**
  - ✓ **Copy**
  - ✓ **Move**
- **Save and Open text documents**
- **Format text and the document**
- **Export and save your word documents in PDF and XPS file format.**
- **Indices of keywords and their page numbers;**
- **Validate text**
  - ✓ **Spelling**
  - ✓ **Grammar**
- **Add graphics**
  - ✓ **Pictures**
  - ✓ **Graphs**
  - ✓ **Equations**

Open word Processor

MS-Word is a member of the MS-Office family provided by Microsoft. The Word screen is similar to any other Microsoft Office application. Let us assume that your computer has MS-Word 2010 installed on it.

To start Word Processor, use one of the listed options:

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



igure 3.10: Picture that shows how to start Word Processor

2. use the **Search** command – enter "**word**" in the search field and select **Microsoft Word 2016** from the offered search results

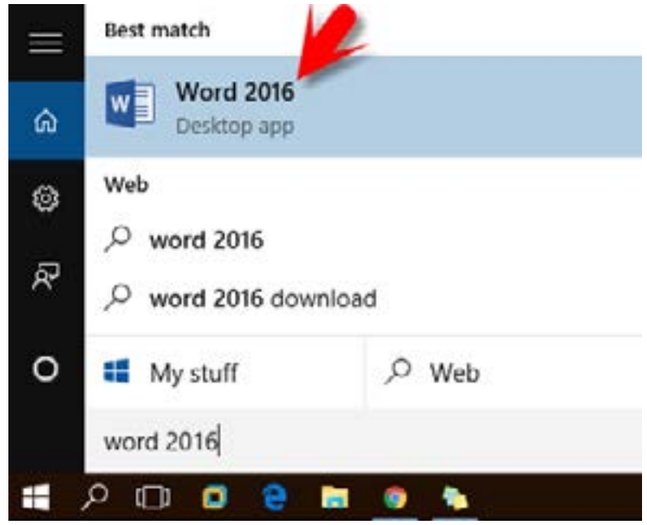


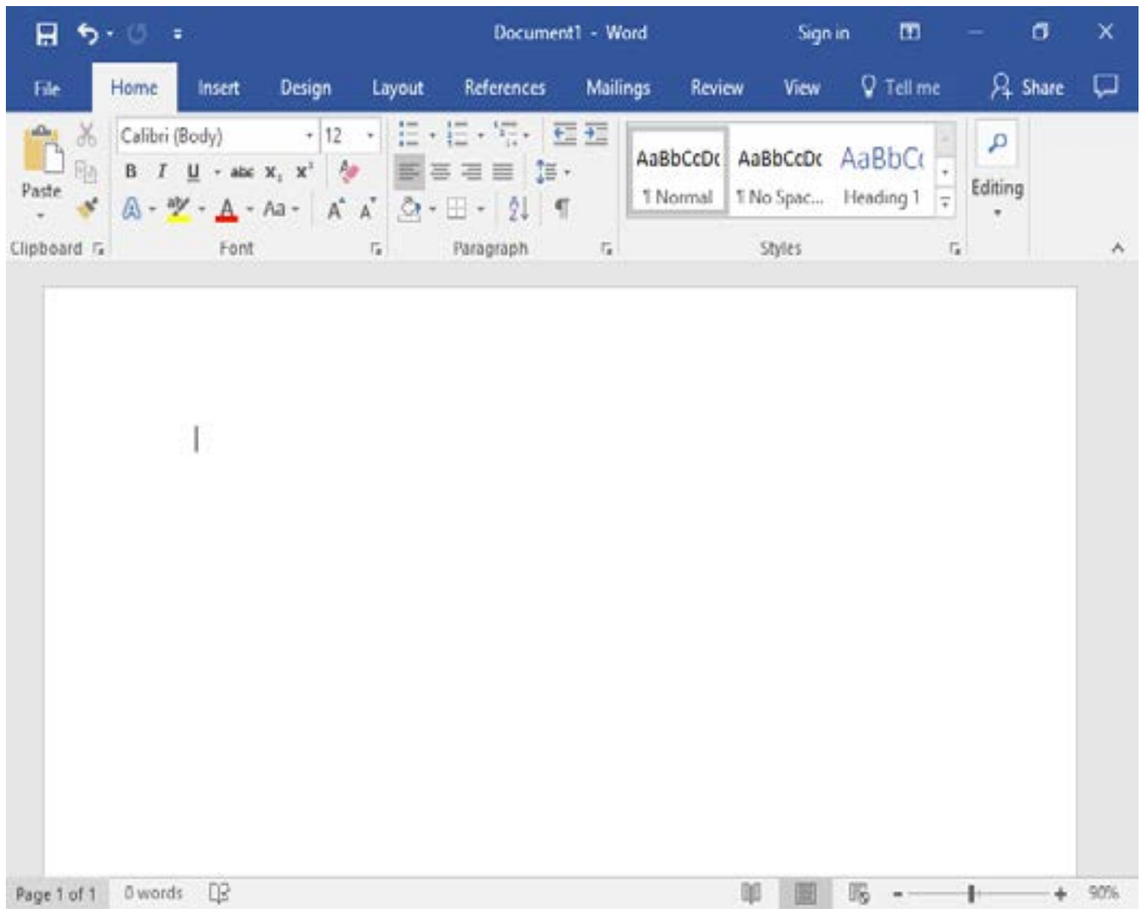
Figure 3.11: Picture that shows how to start Word Processor

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

Figure 3.12: Picture that shows how to start Word Processor

These listed options will open and display a blank document, ready for text to be entered.

Figure 3.1shows the screen which should appear when you start Word. A brief description of each of the screen elements follows.



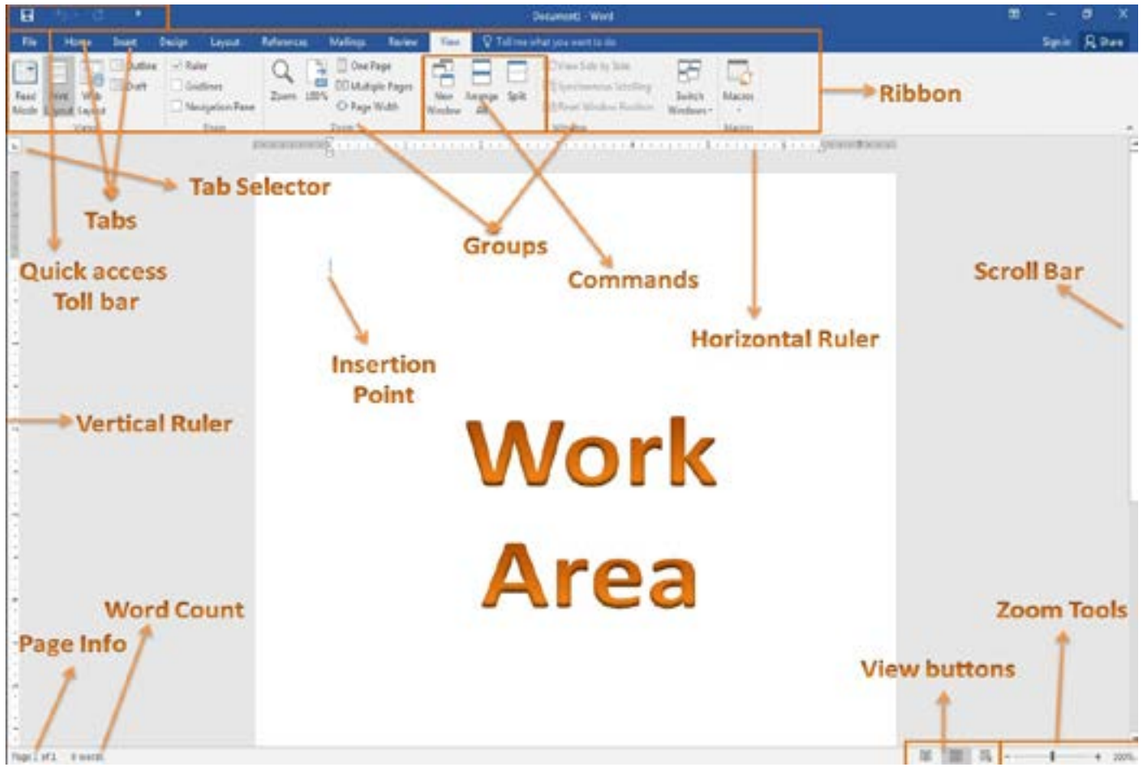


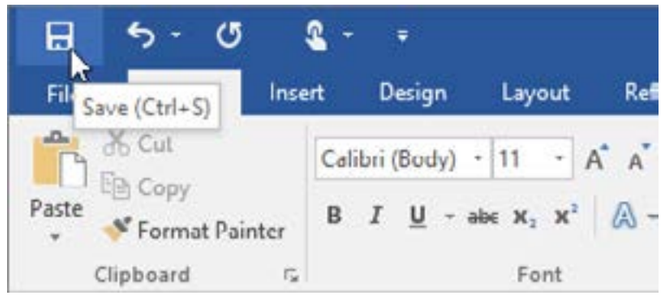
Figure 3.13: Picture that shows the Microsoft word 2016 working area Screen

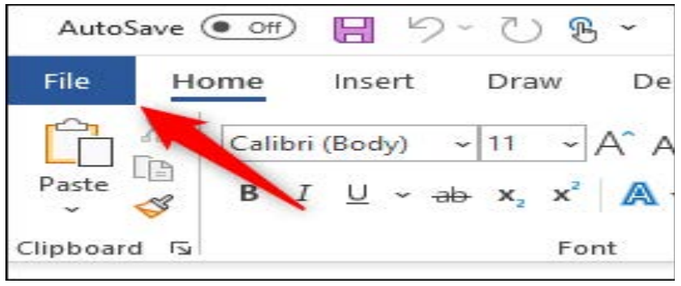
- ***Title Bar:*** This lies in the middle and at the top of the window. Title bar shows the program and document titles.
- ***Quick Access Toolbar:*** This you will find just above the **File tab**. It is a customizable toolbar that displays common commands. By default the **Save, Undo** and **Repeat** icons appear on the toolbar.
- ***Ribbon:*** The ribbon shows the most commonly used buttons associated with a certain task. The Ribbon stretches across the top of the application and is divided in to Tabs for specific activities.
- ***Rulers:*** Word's ruler measures your document and shows indenting and tabs. Rulers show the positions of margins, tabs, indents and table columns on the page.
- ***Help:*** The Help Icon can be used to get word related help anytime you like.
- ***Status Bar:*** Status Bar displays the document information as well as the insertion point location. Displays information such as the current page number, the number of words in the document.
- ***Document Area:*** Document area is the area where you type.
- ***File Tab:*** The main options accessible from the File tab are: Save, Save as, Open, Close, Info, Recent, New, Print as well as other document settings.

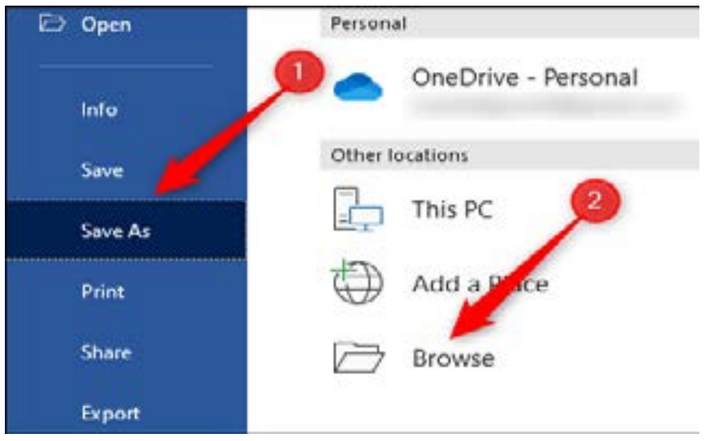
- ***View Buttons:*** View Buttons is used to switch between different views modes for a document: Print Layout, Full Screen Reading, Web Layout, Outline and Draft.
- ***Zoom control:*** Zoom control allows you to zoom in and out of a document to view it at a selected zoom level.

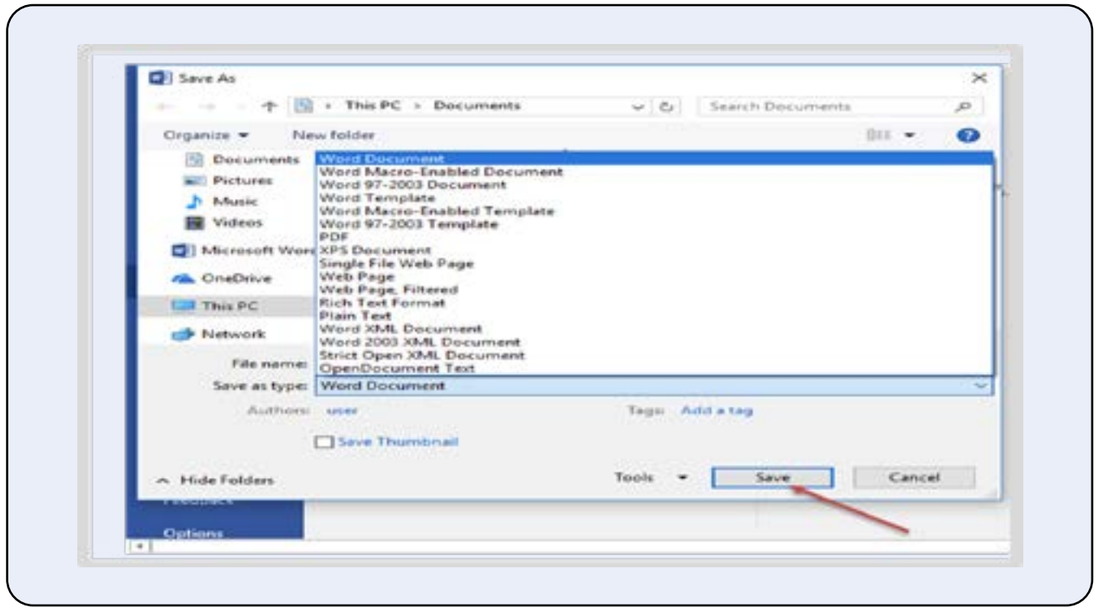
Save word document

If you're saving a document for the first time, go to the **File** menu and choose **Save As**. By utilizing the Save in field and providing the file name in the File Name area in the **Save As dialog box**, you may select the location where the file will be saved. It is required to select the Save command from the File menu for each subsequent saving.









gure 3.14: Picture that shows steps to save the document

Microsoft Word automatically adds the **.docx** suffix to the document name. This is used by the computer to recognize what type of file this is.

Close word Processor

- click the **Close** button placed on the window's title bar
- open the **File** menu: choose the **Exit** command

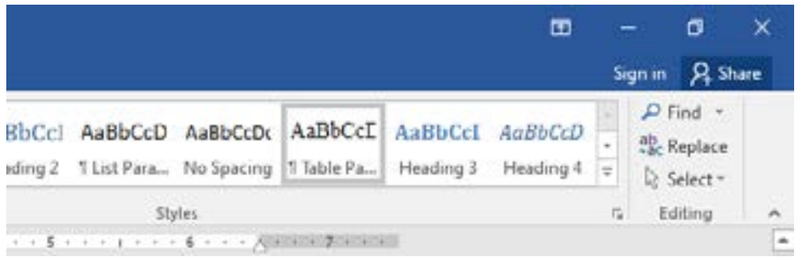


Figure 3.15: Pictures that shows steps to close the document

Activity 3.2

1. Locate where the word processing software is in the computer and open, save and close the document.
2. Using Word processer, write a text about yourself. Put your name and class section at the top of the document and include text on: what is your favorite food? , What do you want to be in the future?Who is your friend? etc.
3. Use the View icons on the status bar to switch between the different views of the document.
4. Save the document created in Task 1 to your user desktop calling it My_history. docx.
5. Close the Word Help dialogue box by clicking on close at the top-right of the Help dialogue box.

Summary

- Computer software is a collection of data or computer instructions that tell the computer how to work.
- Computer hardware and software require each other, and neither can be realistically 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 a computer system.
- Application Software is software that helps the user in completing tasks.
- Operating Systems, utility software and programming languages are some examples of system software.
- Word processing, Spreadsheet, Database management, Graphics software, Presentation application software's are some examples of application software.
- A word processor is an application program that allows users to create, edit, and print documents.
- MS-Word is a member of the MS-Office family provided by Microsoft.
- Text can be entered anywhere in a document area by placing the cursor at that place.
- To start Word Processor, on the Start menu click All Programs and from the Microsoft Office folder select Microsoft Word 2010.

Review Questions

I. Write TRUE if the statement is correct, otherwise write FALSE

1. Computer hardware and software require each other, and neither can be realistically used on its own.
2. By default the Save,Undo and Repeat icons appear on the status bar.
3. A word processor allows you can check spelling and grammar.
4. View Buttons is used to switch between different views modes for a document.
5. Computer hardware can perform any task alone.
6. System software does not accomplish specific task to the user.
7. Application Software's are designed to satisfy a particular need of a particular environment.
8. Spreadsheet is example of system software.

II. Write the correct answer on the space 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 elements of word processer that shows the program and document titles.
4. _____ is example of system software which is normally used by the programmer to develop application program.
5. _____ is a collection of data or computer instructions that tell the computer how to work.
6. Computer software can be classified as _____ and _____.
7. Every computer system runs under the control of _____.
8. _____ is also known as end-user programs.

III. Discussion questions

1. Define computer Hardware and software.
2. What are main features of word processer?
3. Explain the steps to create and save a word processing document in MS-Word.
4. List and explain examples of utility program.
5. Define Computer hardware.
6. Give the differences between System and Application software.
7. Define operating system.
8. What is utility program?

UNIT 4 INTERNET

UNIT OUTCOME

AT THE END OF THIS UNIT, LEARNERS WILL BE ABLE TO :

- define Internet
- identify the internet and the world wide web
- list and describe different types of browser
- open a browser and identify the screen elements
- use web addresses to access websites

4.1. DEFINITION OF INTERNET

Have you ever heard the term internet?

A computer network is a group of computers linked to each other that enables the computer to communicate with another computer. Computer networks are the basis of communication in Information Technology (IT). Internet is a network of networks that consists of private, public, academic, business, and government networks of local to global scope. It is a collection of computers, all linked together, to share/access information globally.

Figure 4.1: Picture that shows sample Internet

Who owns internet?

In actual terms no one owns the Internet, and no single person or organization controls the Internet in its entirety. It is owned by everyone that uses it.

Basic Internet Terminologies

- **Internet** versus **web**

The Internet is a global network of networks while the Web is a means of accessing information available on the Internet using software called a browser and it is a synonym for the World Wide Web. World Wide Web is a collection of information which is accessed via the Internet.

- **Website**

A website is composed of a web page or collection of related web pages linked together to have more information. A computer with a domain name is called a website (site). The top-level domains are .com, .edu, .org, and .net. For example, when you decide to buy books at the online site of a bookseller, you would visit its website. Each website has a unique address. The details about the web address are given in the web address section below. A single page of information containing text, images, sound, or video clips on a website is called **web page**.

- **Home page**

Home page is the first page of a particular website with links to other pages in the website. The first page you see on a website is like the title page of a book. This is usually also referred as a welcome page that identifies the website and contains links to other web pages at the site. For example, If you have your own personal website, it might consist of just one page while other large websites have many pages. The contents of home pages often change.

- **Browser**

A browser is a software tool for exploring the Internet. A web browser, or simply browser, is software that enables users to locate and view web pages and to move from one page to another. It is what you use to get around the web. A web browser makes it easy to navigate the web, to search, and to download items. A browser runs on users' computers and allows them to view and interact with the web pages on the World Wide Web. Internet Explorer, Mozilla Firefox, Google Chrome, Netscape, Safari, Opera, etc. are the most common examples web browsers. The screen elements and detail views of these browsers are discussed in section 4.2.

- **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 Server**

A web server is a computer that stores a web site, and is responsible for servicing requests for viewing or exploring that web site. Example Apache Web Server nad Microsoft's Internet Information Services (IIS).

- **Web Address**

A web address is the address or location of information and resources available on the internet. The address of the web page is called Uniform Resource Locator (URL) that displayed in the browser window. Each web address on the web has to be uniquely different to be able to identify it. The detail structures of a web address is presented in section 4.3.

Activity 4.1

1. Discuss in group about website and a web pages; write the difference between them and present your report to the class.

4.2. THE SCREEN ELEMENTS AND VIEWS OF INTERNET BROWSERS

- **Internet Explorer**

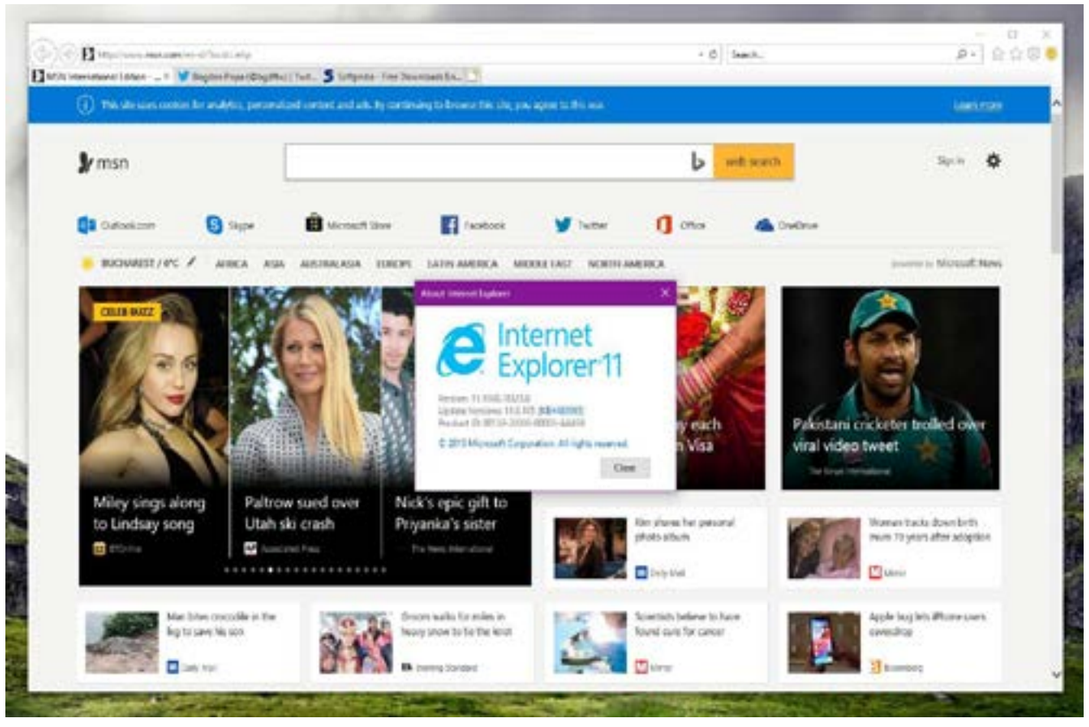


Figure 4.2: Picture that shows sample internet explorer browser image

- **Mozilla Firefox**

Figure 4.3: Picture that shows sample Mozilla Firefox browser image

- **Google Chrome**

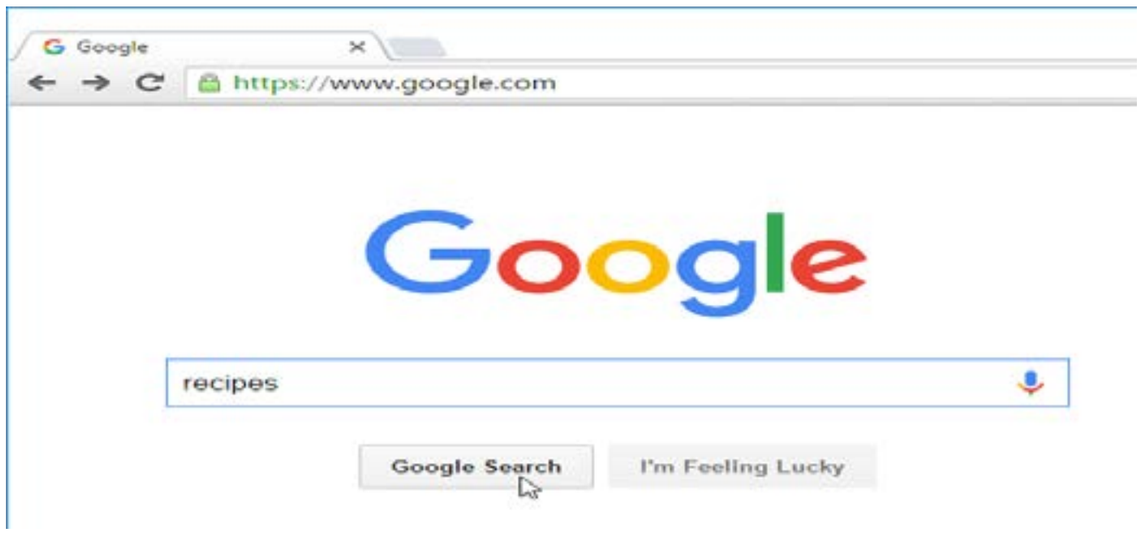


Figure 4.4: Picture that shows sample Google Chrome image

- **Opera**

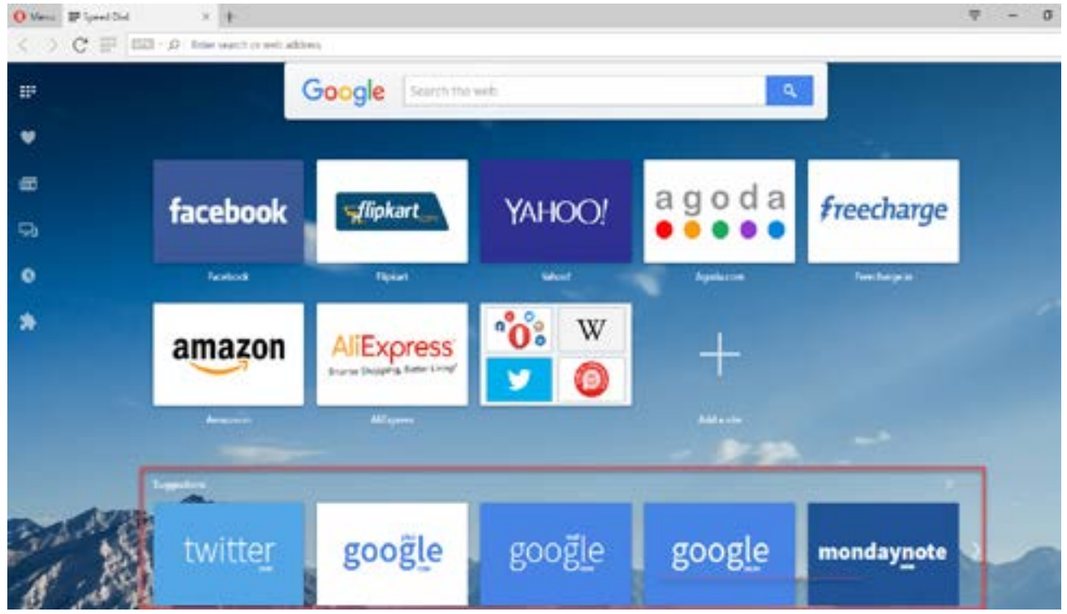
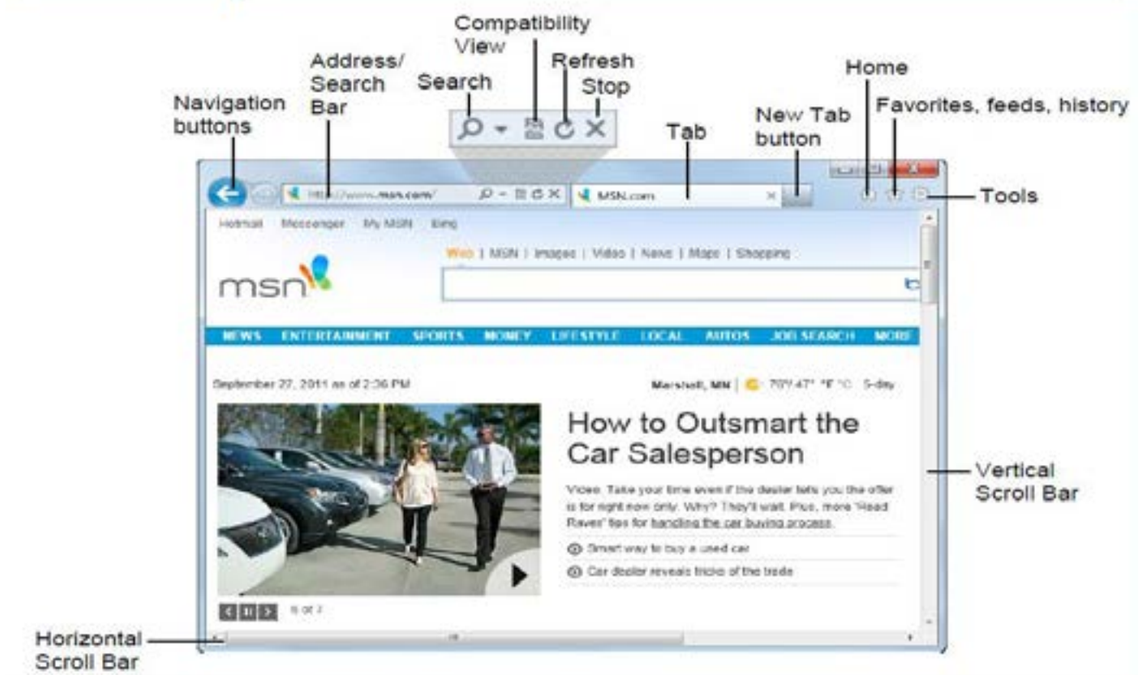


Figure 4.5: Picture that shows sample Opera browser image

Screen elements of internet explorer



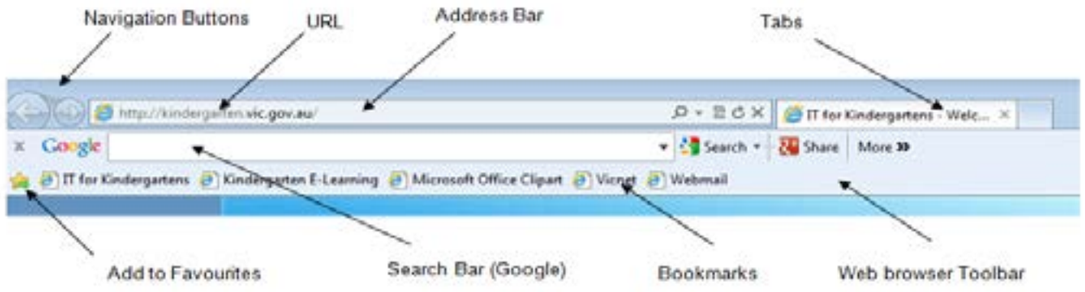


Figure 4.6: Picture that shows sample Internet Explorer browser window elements

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

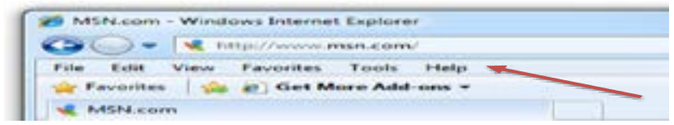


Figure 4.7: Picture that shows sample menu bar of internet explorer browser

- **The favorites or links bar:** A favorite bar can be also called navigation bar or link bar. It is a sub region of a web page that contains hypertextlinks in order to navigate between the pages of a website.

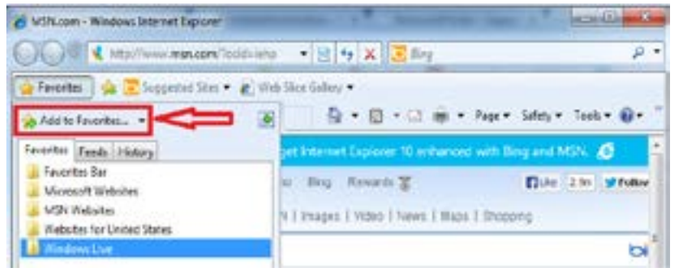


Figure4. 8: Picture that shows favorites or link bar of internet explorer browser

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

Figure 4.9: Picture that shows Address bar of internet explorer browser

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

Figure 4.10: Picture that shows status bar of internet explorer browser

- **Command bar:** the Command Bar is a bar which displays the menu informs of buttons or icons.

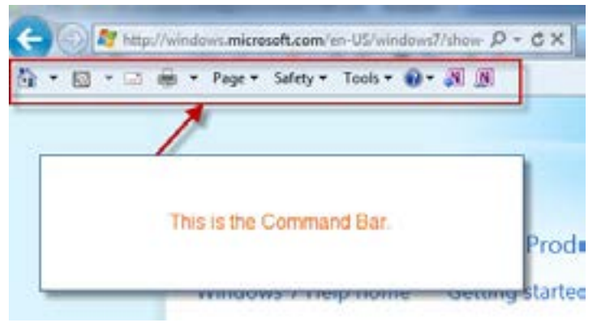


Figure 4.11: Picture that shows command bar of internet explorer

- Closing and exiting internet browser

Steps to **close/exit** a web browser, click **close** button on the upper right corner of the window or select **Exit** from file menu in the current windows.

Activity 4.2

1. Open a browser on one of your school computer Laboratory. List and describe the basic screen elements of the browser that you opened

4.3. STRUCTURES OF WEB ADDRESS AND ACCESSING A WEBSITE

To visit a website, users should type the URL (which is the site's address) on the web browser. Usually a URL is used to specify the particular machine path by which a file name accesses the resources through the client. For example, http://www.google.com, is the address of a Google server. The URL consists of 4 main parts:

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

There are various domain extensions where their name identifies 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
- .mil – military site,
- .co.uk - in the UK,
- .com – commercial site,
- .net – network site,
- .et - in Ethiopia, etc.

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

There are four parts to this particular website:

- A web address always begins with "http://" which stands for hypertext transfer protocol that refers to the manner in which web pages are sent over the Internet.
- A web address typically includes "www" which is short for World Wide Web. However, some web addresses (including those that allow you to access your e-mail over the web) do not have the www as part of their address.
- A web address includes a site name. In the example above, the site name is "moe", which stands for Ministry of Education.
- A web address includes a domain name. In the example above the category is ".gov.et" that refers to government site in Ethiopia. There is occasionally a slash ("/") and some text following the domain name. This typically represents a specific web page within the web site

Accessing a website

The use of a browser or a search engine to look for information on the internet. The major use of Internet is for searching the information stored in millions of computers of the Internet. Whether you are a doctor, an engineer, a teacher, a student or businessman; the Internet can keep you update about the latest issues in your field and the past issues already occurred. You can search for the information, take part in online test, audio or video conversation or you can share the information with the other users of the Internet.

To access information from a particular website, you should have to know the the URL of the website. For example, to access information about Ethiopian grade seven students, you need to know the website of the Federal Democratic Governmant of Ethiopia Ministry of Education 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.

To access information from internet students might use different searching techniques and searching parameter which are usually called the quick finder parameters or keywords. Keyword searching refers to a search type in which you enter words in a search box representing the concepts you wish to retrieve. In a keyword search, you can type in a few important words that explain what you are looking for from the internet. For example, to search information about the battle between Ethiopia and Italy, you can use the keyword "Adawa Victory".

Opening search engines

When you load the search engine that you need on your web browser, you can get a screen with various search engine feature. Example: Google, Yahoo, Yandex, Aol., ask.com, Baidu, and Bing

Figure 4.12: Picture that shows sample features of Google search engine

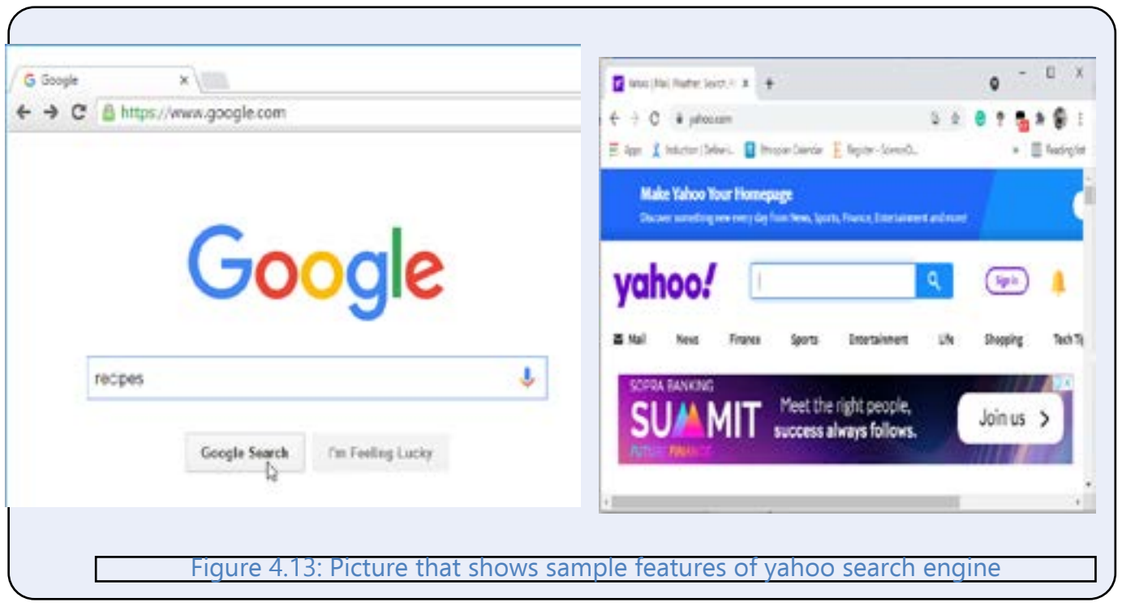


Figure 4.13: Picture that shows sample features of yahoo search engine

Internet Service Provider (ISP)

To connect to the Internet, we have to connect our computer to the computer server of Internet Service Provider (ISP). ISP's are companies which provide Internet related services to its users. ISP's have special computers called Internet Servers which are connected to the Internet from one end and to several users from the other end. Example, **Ethiotelecom** is an ISP in Ethiopia.

Dear student, do you know any other ISP in Ethiopia?

Dear students, in grade 8, you will learn about emails, FTP, social networks and other different services of internet.

Activity 4.3

1. Search information about COVID-19 and write a half page report.
2. Open the internet browser and find the Ethiopian national archive and library agency website address

Unit Summary

- Internet is the network that is available to users across the globe.
- The major use of Internet is for searching the information stored in millions of computers of the Internet.
- A web browser, or simply browser, is software that enables users to locate and view web pages and to move from one page to another. For example, Internet Explorer, Mozilla Firefox, Google Chrome, etc.
- Screen elements of Internet Explorer are: Menu bar, Address bar, Standard toolbar, Status bar etc.
- Examples of popular search engines are Google and Yahoo.

Review Questions

I. Write TRUE if the statement is correct, otherwise write FALSE

1. Internet is owned by everyone that uses it.
2. Search engine and web browsers are the same terms.
3. Google is one of the popular search engine.
4. 'Kids' can be used as a keyword to search news about Ethiopian athletics in world athletic champion.

II. Write the correct answer on the space provided.

1. The network of network is called.....
2. The domain name of educational institutes is called a.....
3. .....is a single page of a website.
4. A collection of information which is accessed via the Internet is called.....

II. Discussion questions

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

UNIT 5 SECURITY AND SAFETY OF COMPUTER

UNIT OUTCOME

AT THE END OF THIS UNIT, LEARNERS 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
- Using a password to protect a computer

5.1. CARE FOR A COMPUTER

In unit two, you have covered the different components of computer system. This unit mainly focus on how to handle and properly use it.

Improper use of the computer is one of the most dangerous physical hazards in the workplace where a hazard is defined as 'anything that could cause harm'.
Sitting at the computer, using the keyboard and looking at the screen for long periods of time, will often result in back pain, stiff neck and shoulders, sore hands and wrists and tired legs.

Dear students, you will learn the impact of improper use of computer on our health which referred as "computer Ergonomics" in Grade 8.

Guidelines should be followed to prevent damage to computing equipment or injury to people which is usually referred to as precautions. The following are very important precautions:

- Before cleaning any electrical equipment make sure that it is switched off and unplugged from the mains.
- 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.
- When cleaning inside the PC, or handling parts from a PC such as hard disk or circuit boards, you should earth yourself using antistatic wrist strap.
- Always refer to the manufactures manual before attempting to clean any equipment, because improper cleaning or maintenance may be dangerous

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

- Cause dangerous fumes that is dangerous to inhale
- Damage the plastics used in computer hardware
- Release ozone-damaging gases
- Not clean effectively

In addition to above the precautions, to prevent dangerous physical hazards from happening we should also:

- Provide a safe and healthy workplace
- Recognize hazards in the workplace
- Assess the risks of the hazards in your workplace
- Control the hazards in your workplace
- Follow Manufacturer's requirements
- Apply Occupational Health and Safety (OH & S) requirements and safe work practices

Safety Signs and Hazards

Safety signs and symbols are displayed to alert students and staff members of the public to danger areas in and around computer laboratory.

Figure 5.1: picture that shows Safety Signs and Hazards in a computer Laboratory t way to care

The single best way to care for our computer is to provide it with routine care. Basic software and hardware maintenance is easy to perform and extends the life of our computer.

Activity 5.1

1. Make a group and discuss how to prevent dangerous physical hazard from happening in your computer laboratory.
2. Visit your school computer Laboratory and write a report about the safety signs and their meaning.

5.2. CLEANING COMPUTER HARDWARE COMPONENTS

why cleaning your computer?

You probably like a tidy home. It is a good idea to keep your computer tidy, too. Cleaning your computer's hardware and software is important for a lot of reasons.

Clean hardware can help your computer run more smoothly and extend your computer's lifespan, which can save time and money. Regular cleaning protects your investment and your data. When you wipe off the screen and empty crumbs from your keyboard, you're helping your equipment perform better and you reduce the risk it will cause.

Dust acts as an insulator that prevents air from circulating over or through the components and this can cause overheating. If dust contains conductive particles it can also cause a short circuit, which can damage components 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 and the information you store on it.

How often does cleaning need to be done?

Dust off the outside of your computer with a soft, dry cloth at least once a week. If you don't want to hurt your PC's performance and lifespan with the added stress and heat, give it a deep cleaning at least every three to six months.

Dustisn'tjustunattractive—itcanpotentiallydamageorevendestroypartsofyour computer.Cleaning your computer regularly will help you keep it working properly and avoid expensive repairs.

Cleaning kits

The contents of kits may vary, but generally kits include items listed in Table 5.1:

Table 5.1: Computer cleaning kits

Item	It's use
Small brush	Or dusting components of electrical equipment
Antistatic grounding strap	To earth yourself while cleaning inside a PC
Lint-free foam cleaning swabs or buds (looks like cotton buds)	Are used with isopropyl alcohol, which is dabbed on the bud and then used to clean such components as the edge connectors on cards, the contacts inside mice, and keyboards.
Cleaning wipes	Are small lint-free cloths for cleaning the system unit casing, monitor and keyboard
Contact cleaning solution	Not only helps clean the edge connectors and electrical contacts inside the PC but also helps to promote reliable connections.
Compressed air	Is used for blasting dust out of obscure corners which might not be able to reach with a mini vacuum cleaner.
Cleaning disks for 3.5 and 5 1/4 disk drives	sists of an outer shell and replaceable inner material on to which you put a few drops of special cleaning fluid.
CD-Cleaning kit	Cleans dust and grease from the CD. Also keep the CDs in their cases, handle them by edges and periodically clean them using the cleaning kit.
Cleaning sheets for laser printers, plain-paper fax machines and photocopiers	Are fed through the device in the normal way for paper, but they remove toner, dirt and dust from the paper path, which improves the print quality.


Small brush


Antistatic grounding strap


Lint-free foam

Contact cleaning


Compressed air


CD-Cleaning kit

Figure 5.2: Pictures that shows sample cleaning tools of computer system

Cleaning Computer Hardware Components

Monitors

Dirt, fingerprints, and dust can make your computer screen difficult to read; however, it's easy to clean your screen when needed. Carefully clean dust away from the vents in the monitor's enclosure using a vacuum cleaner. Anything other than a vacuum cleaner (e.g. an air blower) is likely to push the dust inside the enclosure where it can lie on electrical components, causing failure. There are also other monitor-cleaning kits you can buy, but they may damage your monitor if they're designed for a different type of monitor. For example, a monitor cleaner that is designed for glass screens may not work with some non-glass LCD screens. The safest method is simply to use a **soft clean cloth moistened with water**.

When you clean your computer monitor, you should:

- Turn off the computer.
- Unplug the monitor from the power. If you are using a laptop, unplug the laptop.
- Use a soft 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.

Do not use glass cleaner to clean a monitor. Many screens have anti-glare coatings that can be damaged by glass cleaner.

Keyboards

The keyboard tends to not only accumulate a lot of dust and skin residue but also some hair and lint form clothing. Pick up your keyboard, turn it over, and gently pat it on the back to dislodge crumbs, stray hairs, and other tiny bits of dirt. If you're having trouble removing sticky dirt, try using a cotton swab dipped in rubbing alcohol, or the cleaning mixtures mentioned above.
Gently wiping around the keys can help keep the keys from sticking or failing. If your keyboard is acting up, you may need to open it in order to "deep clean." Check your computer or keyboard manual for instructions on how to open and clean this component safely.

Mouse

The mouse tends to accumulate a mixture of dust and skin residue from the surface it rolls on. As you have learned in chapter two, there are two main mouse types: optical and mechanical. Each is cleaned basically in the same way, although the mechanical mouse requires a bit more work.
Optical mousses require no internal cleaning because they do not contain any rotat-

ing parts; however, they can get sticky over time as dust collects near the light emitter. This can cause erratic cursor movement or pre

While Mechanical mouses are especially susceptible to dust and particles that can accumulate inside the mouse. It can make it difficult to track or move properly. If the mouse pointer does not move smoothly, the mouse may need to be cleaned.

Therefore to properly clean the mouse follow the below basic cleaning tips below:

- Unplug the mouse from the USB or PS/2 port. If the mouse is plugged into the PS/2 port, you will need to shut down the computer before unplugging it.
- Moisten a cotton cloth with rubbing alcohol, and use it to clean the top and bottom of the mouse.
- If you have a mechanical mouse, remove the tracking ball by turning the ball-cover ring counter-clockwise. Then clean the tracking ball and the inside of the mouse with a cotton cloth moistened with rubbing alcohol.
- Allow all of the parts to dry before reassembling and reconnecting the mouse. If you are connecting it to a PS/2 port, you will need to connect it before turning on the computer.

Dear students, check where you can find the USB or PS/2 port in computer.

Activity 5.2

1. Discuss in group about the cleaning kits and list at least two other cleaning kits that are not listed in Table 5.1.

5.3. STARTING UP AND SHUTTING DOWN A COMPUTER PROPERLY

Before starting your computer for the first time, take a moment to check the computer parts connected and seated properly. In the case of our country, Ethiopia, the correct power setting is 220 Volt outlets. Plug the power cord into the power supply, and the other end into a divider.

To power on and off the computer, follow the steps bellow:

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

Once we pressed the power button, we should wait until the operating system loads automatically. At that point, the operating system's desktop (or other interface) may appear, or you may be prompted to sign in. If prompted 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 5.4.

Figure 5.3: Picture that shows Starting up and shutting down of a computer properly

Shutting down your compute

In a computer with Windows 10 operating system, when you are finished with your computer session, you can do any of the following:

Shut down: To turn off your PC in Windows 10, select the Start button, select the Power button, and then select Shut down.

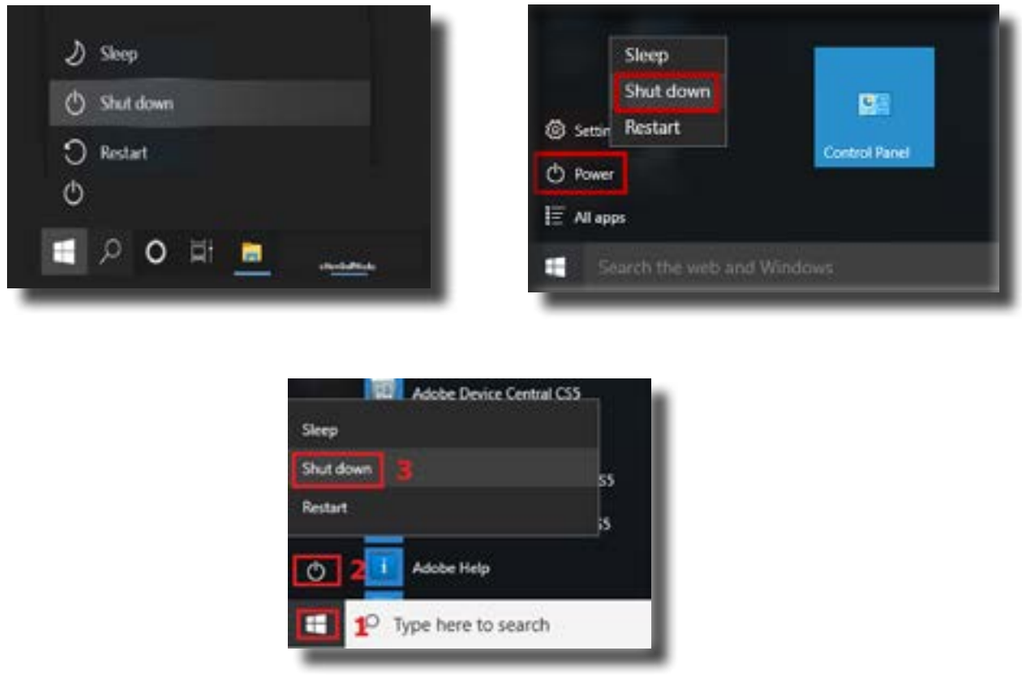


Figure 5.4: Picture that shows sample shutdown a computer with windows 10 operating sys-

Sleep: The computer goes into a low power-consumption mode that keeps only the memory powered; it appears to be off, but when you turn it back on again, it comes back up faster because the memory has remained powered. owered.

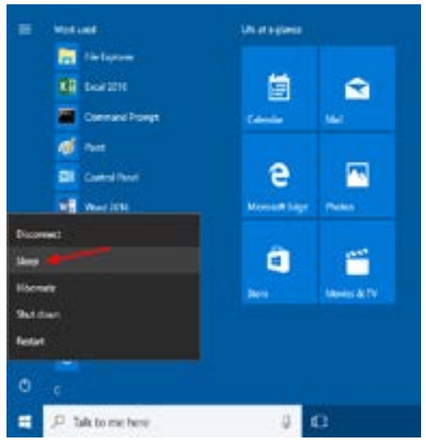


Figure 5.5: Picture that shows sample sleep a computer with windows 10 operating system

Sign Out: Using this command, it signs out your user account and displays a prompt for someone else to sign in. 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 then choose Sign Out from the menu.

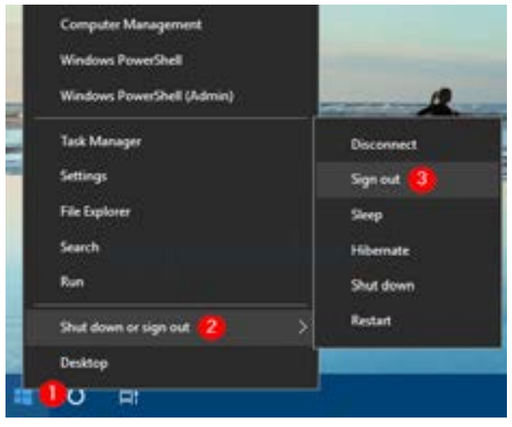


Figure 5.6: Picture that shows sign out from current user account in Windows 10

Activity 5.3

1. When do we need put our computer in shut down and sleep mode.
2. Do you think that the power outlet of countries in the world are the same to 220 Volt?

5.4. COMPUTER SECURITY

The term **computer security** is the protection of computer systems and information from unauthorized use. The meaning of the term computer security has evolved in recent years. Before the problem of data security became widely publicized in the media, most people's idea of computer security focused on the physical machine. 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

Depending on the operating system and the way it is set up, you may be prompted to sign in, to your computer system, by selecting a user account. If that account is password-protected, you will also be asked for the password.

Creating a User Account and Setting a Password

To use a computer everybody needs to setup a user account. A user account helps the operating system of your computer to recognize who is sitting at the keyboard. Windows operation system offers three types of user accounts: Administrator, Standard, and Guest. The details of each account are given bellow.

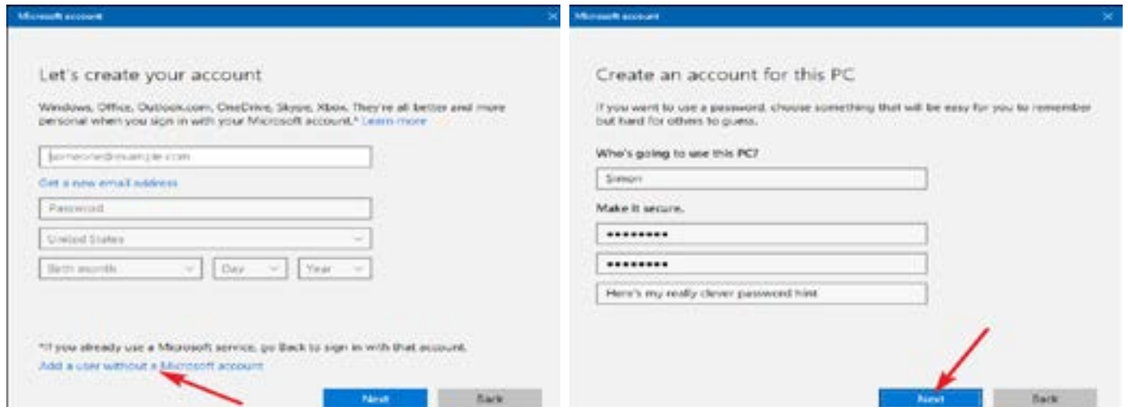


Figure 5.6: Picture that shows password setting for a user account

- ***Administrator:*** The administrator controls the entire computer, deciding who gets to play with it and each user may do on it.
- ***Standard****:* Standard account holders can access most of the computer, but they can't make any big changes to it. They cannot run or install new programs, for example, but they can run existing programs.
- ***Guest*:** Guests can play with the computer, but the computer does not recognize them by name. Guest accounts function much like Standard accounts but with no privacy: Anybody can sign in with the Guest account, and the desktop will look the way the last guest left it.

To begin using with computer, people click their account's name and picture when the Windows Sign In screen first appears, as shown in figure 5.7.

Figure 5.7: Picture that shows Click one's Own account's name and to sign in to the computer system

Windows 10 operating system also offers a special Standard account for children called ***Child account*** *whose setting is actually just a Standard account with the Family Safety settings automatically turned on.*

What is Password?

A password is a string of characters 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. We have the right to choose our own password to protect our computer from unauthorized access. It is recommended as computer system owners should maintain strong passwords for all accounts on your computer.

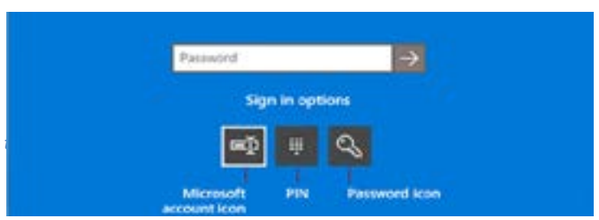


Figure 8:Picture that shows sample types of passwords to login

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 characters long that consist of lowercase and uppercase letters, numbers and symbols.
- A long password will offer more protection than a short password if it is properly created.
- Do not use personal information such as your name, age, date of birth, family's name, or favorite color when creating your password.
- Avoid consecutive keyboard combinations (i.e. QWERTY), consecutive alphabets (e.g abcd), and numbers (e.g 12345).
- Look around and make sure no one is watching while you enter your password. Never tell your password to anyone.
- Never write down your passwords on a sticky paper and hide underneath your workstation or computer because somebody will find it.

We all have a responsibility to keep our information secure. A password is sometimes called a ***passcode*** *or* ***passkey*** *when the password uses only numbers, such as a personal identification number (PIN).*

Activity 5.4

1. What is the problem if our computer is not protecting by a password?
2. What is a strong password? Please give two examples of a strong password.

Unit summary

- Improper use of the computer is one of the most dangerous physical hazards in the workplace where a hazard is defined as 'anything that could cause harm'.
- Safety signs and symbols are displayed to alert students and staff members of the public to danger areas in and around the computer Laboratory
- Both Students and staff members should know safety signs and hazards in computer laboratory
- To run your computer more smoothly and extend it's lifespan, you should clean the hardware components properly .
- 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 used to verify the identity of a user during the authentication process.
- Windows operation system offers three types of user accounts: Administrator, Standard, and Guest accounts.

Review Questions

I. Write TRUE if the statement is correct, otherwise write FALSE

1. It is not mandatory to unplug power cable from the main power outlet during cleaning a computer.
2. Wearing a mask in computer laboratory helps you to protect COVID-19.
3. Password is one of the computer security techniques to protect a computer from unauthorized users.

II. Write the correct answer on the space provided.

1. A user account that controls the whole computer system is called.....
2. The process of protecting a computer from unauthorized users is called .....
3. ..... are symbols displayed to alert students to danger areas in and around the computer Laboratory.
4. The event, after finishing a computer session, when computer goes into a low power-consumption mode that keeps only the memory powered is called.....
5. ..... acts as an insulator that prevents air from circulating over or through the components and this can cause overheating

III. Discussion questions

1. What is computer security?
2. Write the steps to change the computer from 'ON' to 'SLEEP' mode in windows 10 operating system.
3. List at least 4 computer hardware cleaning kits and use.
4. List the three types of user account in windows 10 operation system.
5. Write the effect of using unsuitable cleaner for cleaning computer hardware components.

Grade 7 Information Technology Student's Textbook

UNIT 6

LOGO

UNIT OUTCOME

AT THE END OF THIS UNIT, LEARNERS WILL BE ABLE TO :

- define LOGO
- describe graphical elements of LOGO
- write procedures on LOGO environment

6.1. LOGO PROGRAMMING LANGUAGE

What is programming language?

A programming language is an artificial language designed to express computations that can be performed by a machine, particularly a computer. Programming languages can be used to create programs or set of instructions that tell a computer how to perform a task. LOGO is the programming language that will be covered in this unit.
LOGO is an acronym for Logic Oriented Graphics Oriented and a high level programming language specifically designed for its ease of use and graphics capabilities. LOGO was originally developed in 1967 at Bolt, Beranek and Newman (BBN), a Cambridge, Massachusetts research firm in United States, by Wally Feurzeig and Seymour Papert. Its intellectual roots are in artificial intelligence, mathematical logic and developmental psychology. It was originally designed to introduce children to programming concepts, and to help develop better thinking skills that could be transferred to other contexts. It is easy to learn, easy to use, easy to read, but also powerful and able to cope with complex problems.
LOGO is so easy that it can be understood by the 7 to 77 years old. LOGO's graphics language is called turtle graphics, which allows complex graphics images to be created with a minimum of coding. LOGO has evolved into a powerful computer language. LOGO is considered an interpreted language because its programs are executed by an interpreter. It 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.
ant precautions:

Why should we learn the LOGO language?

- Because it is lots of fun.
- Enhances the logical sense of the children.
- Develops programming skills.
- It is real Computer Science.

LOGO is a very easy and interesting programming language to learn. It has enough depth to virtually do anything, which can be done in any other computer programming language.

How to download and install MSW LOGO Software?

If LOGO Programming software is not installed on our computer, we can get it for free from the following link:
https://www.softronix.com/mswLOGO .html Or we can use the online version of LOGO software from the following link:
https://www.transum.org/Software/LOGO /

Installation steps of MSWLOGO

After the downloading is completed, install the MSWLOGO using the following steps.

1. Click the .exe file twice to running the Installation process
2. Then follow the windows installation instruction that appear until finished
3. Now, the MSWLOGO icon will appear on your Desktop, as shown below in figure 6.1
4. Click on the icon to running the Application into your windows 10 pc.

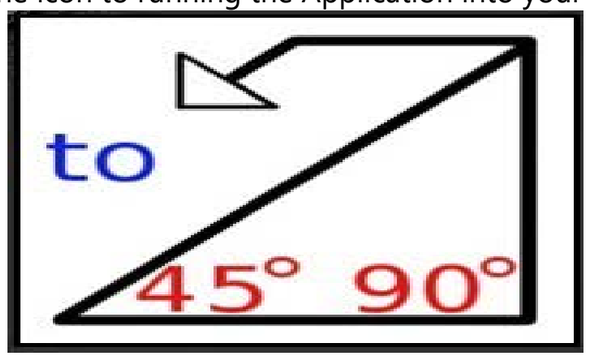


Figure 6.1: Picture that shows LOGO Programing icon

Steps to Open MSW LOGO

To open the MSW LOGO, you can open by clicking on the icon shown in figure 6.1 directly from the desktop or you can use the following steps.

- Open MSW LOGO on your computer.

1.Go to the START button.

2.Go to PROGRAMS.

3.Go to MICROSOFT WINDOWS LOGO.

4.Click on MSWLOGO.

Once you have opened the MSWLOGO application, you can run the demonstration by clicking on Help menu and then click on Demo. Also, if you would like to run the tutorial click on Tutorial.

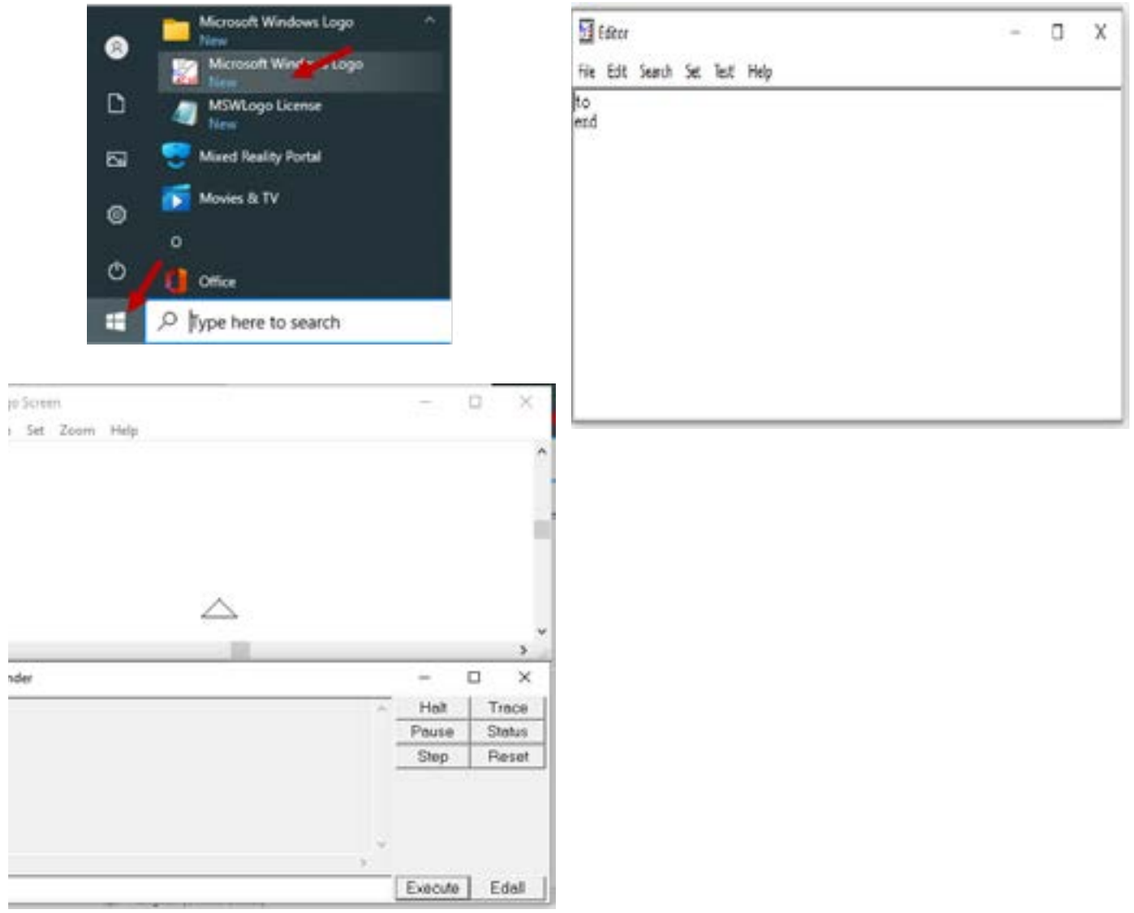


Figure 6.1: Picture that shows how to open a LOGO

Activity 6.1

1. Discuss in group and write the difference between programming language and natural language.
2. What is the purpose of computer programming language?.

6.2. GRAPHICAL ELEMENTS OF LOGO

The Microsoft Window (MSW) LOGO screen has two parts:

- **A Main screen/graphics window:** is also known as the graphic screen. It is the place to draw pictures or figures. The triangle shape in the center of the graphic screen is called Turtle. Turtle moves on the screen according to the commands given by you. These commands are also known as primitives.
- **A Commander window:** is the place to give commands to the Turtle.

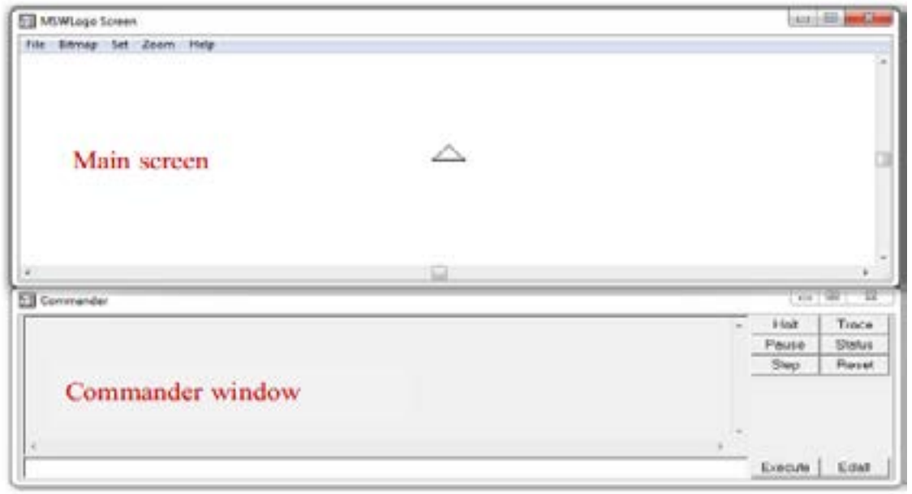


Figure 6.2. The two main parts of MSW LOGO

The details of some MSW LOGO screen elements are given below:

- ***Title bar***: Title bar contains the name of 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. You will see small question marks (?) in this area.
- ***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 commander window.
- ***Output or Command-Recall List Box***: - Displays and records all the commands that are executed and also any messages which are outputs of these commands. Output or command-recall list box is located above the Command Input Box.

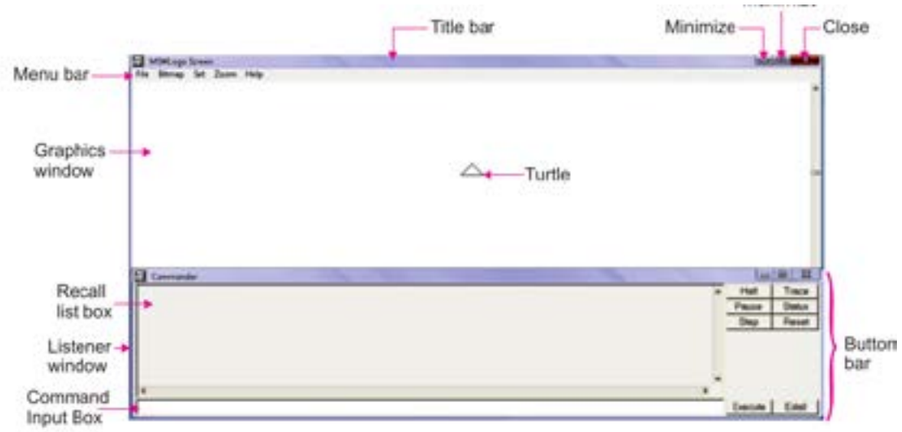


Figure 6.3. Graphical elements of MSW LOGO

Basic LOGO Drawing Commands

Basic LOGO Drawing Commands move the Turtle forward and backward and also turn it right or left. LOGO Drawing Commands understands only LOGO commands. Center of the screen is the home of the turtle. Basic commands and their abbreviations are given below –

fd – forward

bk – backward

rt – right

lt – left

cs – clearscreen

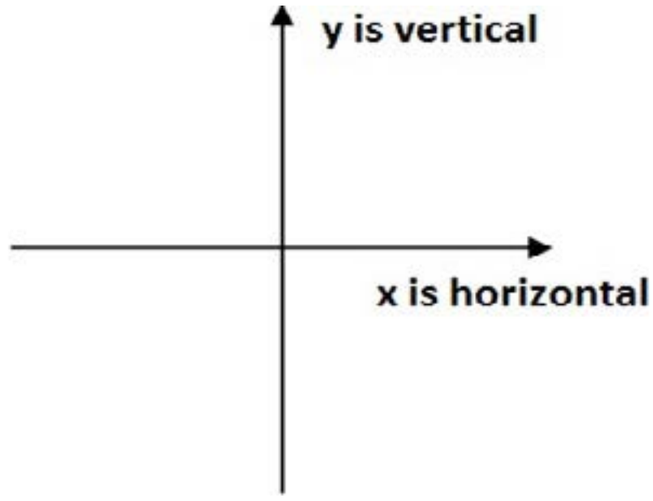
Either version of these commands can be used. Except the **cs** command, each of these commands must be followed by one value called as its **argument**. The arguments for fd and bk are units; those of rt and lt are angles that can be any integer.

Examples:

- **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
- **clear screen** or **cs** means erase all drawings and sets the turtle at the center.

The graphics window has a coordinate system. The values of the two coordinates (normally called x and y) at the center are 0, 0. At the northeast corner, they are 250, 250; at the southeast corner, they are 250, -250. At the southwest corner, they are -250,

-250; etc. If the turtle tries to walk off onto one side of the screen, it wraps around. The right side wraps to the left side and the top wraps to the bottom. Many programming systems work on the same kind of two-axis 'xy' coordinate plane, which we work with in Algebra as well.



Here, '0 0' is the center, or origin (no comma or parentheses here!). In its centered, zoom-"normal" state, LOGO 's drawing screen shows an area of about 150 points up or down and 300 points right or left from the center. The turtle can be directed with headings that correspond to a compass rose, with 0 or 360 degrees pointing straight up, 90 degrees straight to the right, and so on. You can set a variable to a number between 0 and 360 and then walk on that path.

LOGO commands described above such as FORWARD and BACK are called primitive procedures. They are words that LOGO already knows. Part of the power of LOGO is that you can 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 usually called procedure are presented in the following sections.

Activity 6.2

1. List and describe the major MSW LOGO screen element.
2. Write the MSW LOGO drawing commands that move the turtle 20 steps forward, then turn 50 degree left and move 20 steps forward. Draw the shape created by this command on a sheet of paper.

6.3. PROCEDURES ON LOGO ENVIRONMENT

A procedure is a set of instructions that is given a name that describes it. It is an abstraction from the low-level details that define how it works to a higher-level expression of the idea or concept of what it does when we run it. 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 would we rather type SQUARE or REPEAT 4 [FORWARD 100 RIGHT 90] every time we want a square? Procedures also help us to organize a large project into smaller parts that work together to achieve a goal. Making changes is easier, too. If we wanted to change the square to 50 turtle steps, modifying the procedure definition is much easier than making changes to each occurrence of the REPEAT instructions.

When we want to type the same sequence of commands over and over again, we should consider defining a procedure. It will not only save our typing time, but also helps us to better understand what we are doing now and to more easily recall what we did later. Procedures are also helpful when explaining our work to others, too.
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. A word in LOGO can be just one character, but that's not usually good for a procedure's name. We should 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 6.4.

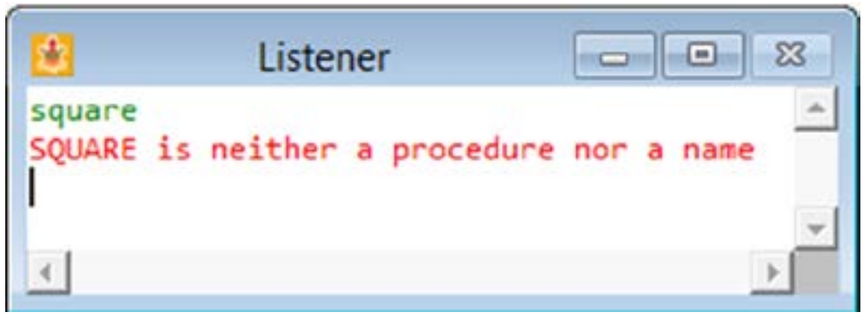


Figure 6.4. Picture that shows a message in the Listener window of MSW LOGO

NB: *The procedure name should be simple and related to the action performed, the design drawn, or something else that helps us to remember it. For example, SQUARE is a much better name than EQUILATERAL.RECTANGLE.*

Defining a Procedure

To define a Procedure we use a special form of LOGO instruction called the TO command.
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 6.2.

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 6.5: Picture that shows To Mode Input box

Alternately, we can write a LOGO PROCEDURE using an EDITOR WINDOW. The Editor Window allows you to make changes in an already existing procedure and also to write new procedures. Steps to write a new procedure using Editor Window are given below:
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 6.6.

Figure 6.6: Picture that shows the Editor Window of MSWLOGO

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 6.7

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 6.7: Picture that shows sample of procedure 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. That's what a procedure definition is - the plan of what to do when asked.

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 6.8 is a sample output for the above defined procedure.

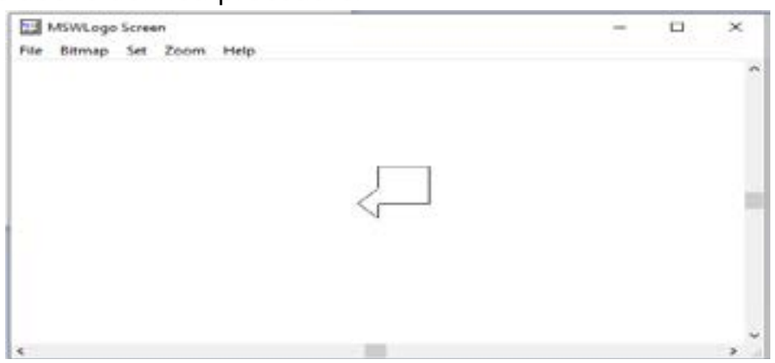


Figure 6.8: Picture that shows Sample output of a procedure defined in fig 6.7

You will learn other advance concepts of LOGO programming such as recursive procedures, primitives, Variables, and Conditional Statements.

Activity 1.1

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

Unit 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 that 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 .LGO.

Review questions

I. Write TRUE if the statement is correct, otherwise write FALSE

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

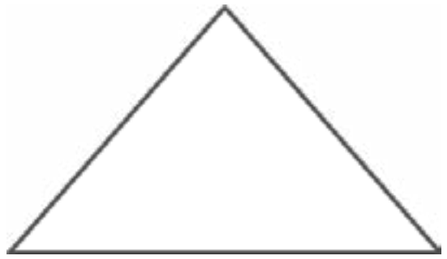
II. Write the correct answer on the space provided.

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

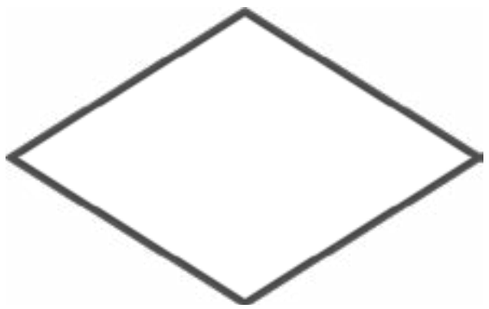
III. Coding/Discussion questions

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

a)



b)



c)