

Introduction to IT Systems

Course Code- TH-1(a)
(Common to 1st & 2nd sem)



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Basic Internet Skills:-

Basic internet skills include the ability to use a computer, navigate the internet, and use common software applications.

→ Some examples of basic internet skills are -

(1) E-mail:- one of the most basic messaging resources on the internet, email is faster and more secure than traditional mail.

→ It's also useful for communicating with colleagues, clients and customers.

(2) Social Media:- Social Media skills are in high demand, especially for positions in marketing, public relations and advertising.

Ex - Facebook, Instagram, LinkedIn, Youtube etc.

Internet Glossary:-

Browser - A s/w program that allows internet documents (like web pages) to be viewed, is called a web browser.

Cyber space - The world of computer networks.

Domain Name - A unique name that identifies a specific computer on the internet.

Download - A term for transferring s/w or other files from one computer to another.

Email - Electronic mail - Message sent from one specific user to another using the internet.

Email-Address - The way a specific user is identified so that they may receive email. An email address can be identified by the "@" sign. Ex - sushree437@gmail.com

Home Page:-

The 1st page of website.

HTTP:-

Hyper text Transfer Protocol.

~~Comp~~ The way that hypertext documents are sent via the World Wide Web and viewed using a browser.

URL - Uniform Resource Locator - The entire Address for a piece of information of the internet.

Ex. www.google.com

Website - A collection of web pages.

Search Engine :-

A search engine is a searchable database which collects information on web page from the internet and ~~the~~ indexes the information and then stores the result in a huge database, where it can be quickly searched.

Ex - Google

on

→ Search engine is a special kind of website that helps users to ~~the~~ find the web pages from the other websites.

→ There are different types of search engine are:-
Google, Yahoo!, Bing, Alta Vista (old version),

↓
(Microsoft ka)
whoj (old version) etc.

- All of the above Google is the mostly used search engine on the internet.
 - The main job of search engine are to store or arrange the information in the web page, which are retrieve from the internet.
 - A search engine has 3 parts. Spider, Index, Search engine s/w.
- Types of Search Engine:-

(1) Individual Search Engine:-

An individual search engine, uses a spider to collect its information regarding websites for own searchable index.

(2) Meta Search Engine:-

A meta search engine searches multiple individual engines simultaneously. It doesn't have its own index, but uses the indexes collected by the spiders of other search engines.

Conclusion:-

It is very useful tool for quickly and easily search for the information online. It is important to formulate the search statement using advanced searching techniques to filter the most relevant information out of search engines huge database more efficiently and effectively.

Digital Awareness:-

The term "Digital Awareness" describes the sense of experience, comfortability, and Proficiency required for basic technology usage.

The significance of Digital Awareness:-

→ Digital Awareness refers to the ability to navigate, evaluate and utilize digital technologies responsibly and effectively.

→ In a world dominated by smartphones, social media and the internet, being digitally ~~aware~~ is no longer an option but a fundamental skill.

Here's why it is important for students.

1. Information Literacy:-

Students must learn to distinguish between reliable and misleading sources of information.

2. ~~cyber~~ cybersecurity:-

With the growing ^{we} on technology, ~~students~~ need to understand the importance of protecting their personal information online.

→ So digital Awareness can help them to recognizing, create strong passwords and safeguard their digital identities.

3. Academic Excellence:-

Digital Awareness for students is necessary to leverage technology for academic purposes.

→ They can access a vast array of educational resources, collaborate ~~in~~ online and develop digital skills.

Skills that enhance their academic performance.

4. Future Ready skills:-

In the modern job markets, digital skills are in high demand. Being digitally prepared for future career opportunities can adapt to rapidly evolving workplace technologies.

5. Future-Ready skills:-

~~In the~~

Practical way to for Digital Awareness in students:-

1. Incorporate Digital Awareness for students topics into the curriculum across subjects. Students will be able to learn about online safety, ethical behaviour, and critical thinking as part of their regular lessons.

This approach ensures that digital awareness becomes an integral part of their education.

↳ Integrating Digital Awareness into the curriculum

2. Offering Workshops and Guest Speakers:-

Invite experts or guest speakers to conduct workshops on topics such as cybersecurity, digital ethics and media literacy.

→ These sessions can provide real-world insights and engage students in meaningful discussions.

Encourage students to take responsibility for their actions and hold them accountable for respectful online conduct.

3. Open communication:-

create a safe space for students to discuss their digital experiences, concerns and questions. Encourage open dialogue about online issues, and let students know they can help when needed.

Conclusion:-

Digital Awareness for students ~~to discuss~~ there is an essential life skill for students. By integrating digital awareness into the curriculum, offering workshops and promoting critical thinking, schools can empower students to navigate the digital world safely, ethically and responsibly.

What is computer Hardware:-

Computer Hardware is a term that refers to all the physical components of a computer.

That means they can be touched & seen.

→ Computer Software can't be touched & seen.

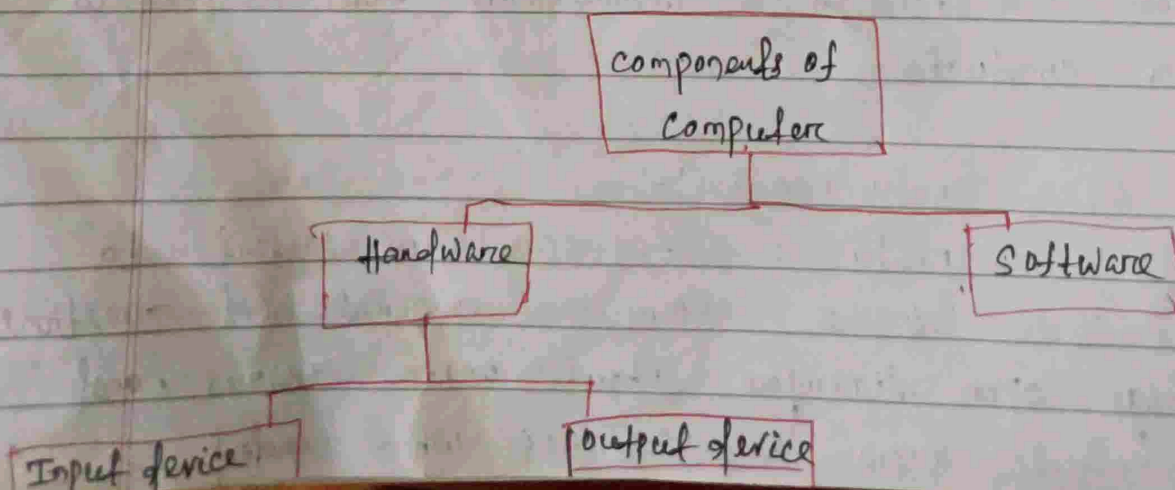
Purpose of Computer Hardware:-

Computer Hardware is required for a computer to function. It is complementary to software, without of these components, a computer wouldn't be able to operate.

→ The computer has mainly two major components.

(1) Hardware

(2) Software.



Input Device - Keyboard, Mouse, Scanner, etc.

Output Device - Monitor, Printer, Plotter etc.

Input Devices :-

Input Devices are those devices with the help of which the user interacts with the computer.

Keyboard - It is the most common and main input device for computers. The data is inputted by typing on the keyboard.

→ It consists of 104 keys in total. It contains numeric keys, alphabet keys and different function keys as well.

Mouse :- A mouse is a kind of pointing device which is rolled over to control the cursor on the screen and it has functional keys like left, middle and right buttons.

Scanner :-

As the name suggests it scans images, documents etc. and converts them into digital form and that can be further edited and used. It works just like a Xerox machine.

Output Devices :-

These are the devices that are used to display the output of any task given to the computer in human-readable form.

Monitor :- The monitor is the main output device. It is also called VDU (Visual Display Unit) and it looks like a TV screen.

Printer:- A printer is an output device that transfers data from the computer in a printed format by using text or images on paper.

Plotter:- It is similar to a printer but plotters are large in size. A plotter is used to generate large drawings, architectural blueprints etc.

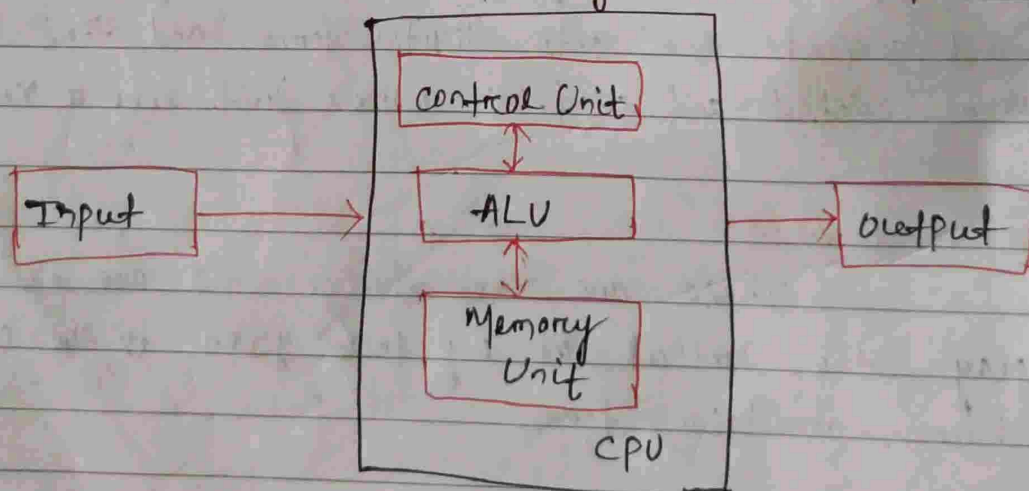
Hardware Components:-

→ Some important hardware devices known as internal components.

1. CPU (Central Processing Unit)

→ The CPU is also known as the heart of the computer. It consists of three units, they are: control unit, Arithmetic ~~and~~ Logical unit (ALU), and the memory unit.

→ Below is the block diagram of the CPU.



As shown in the diagram input is given to the CPU through input devices. This input goes to memory and the control unit gets instructions from memory. The control unit now decides what to do with the input or instructions and transfers it to ALU. Now ALU performs various operations like addition, subtraction, multiplication, division, logical operations etc. After that the final result gets stored in memory and finally passed to output devices to give the output.

Memory :-

Computer Memory is just like the human brain. It is used to store data/information and instructions. → It is a data storage unit or a data storage device, where data is to be processed and instructions required for processing are stored.

→ It can store both the input and output can be stored here.

Characteristics of Computer Memory :-

- It is faster computer memory as compared to secondary memory.
- It is Semiconductor memories.
- It is usually a volatile memory and main memory of the computer.
- A computer system can't run without primary memory.

Different types of Memory :-

There are several types of computer memory, including Random Access Memory (RAM), read only memory (ROM), cache memory, virtual memory and variables

types of Secondary Storage devices like hard disk drives (HDDs) and solid state drives (SSDs)

RAM (Random Access Memory) :-

RAM is the type of volatile memory that stores data in instructions actively used by the computer.

→ RAM Provides quick access to information, allowing the processor to read and write data rapidly.

ROM (Read only Memory) :-

→ ROM is a type of non-volatile memory that contains firmware or software instructions that are permanently stored and can't be modified by normal computer operations.

→ ROM retains its data even when the power is turned off.

Display :-

→ A display is a screen that shows pictures and words from a computer or other device. It has bright dots called pixels, that light up to create the images we see.

→ The display has multiple layers that allow it to show these images.

→ In laptops and tablets, the display is already built into the device itself. But the desktop and computers, the display is usually a separate screen called a monitor that connects to the computer. The words "display" and "monitor" mean similar things and are often used in place of each other. But not all displays are monitors. Some are just screens without being a separate monitor device.

Types of Computer Displays:-

1. Cathode Ray Tube (CRT):-

Initially, these were mainly used as displays, but they were large and very heavy with high power consumption rates.

→ Cathode Ray Tubes work by directing electron beams into the back surface of a screen causing it to emit light.

2. Liquid Crystal Display (LCD):-

→ This type of display is flat and thin. It functions through the blocking of light rather than creating it like other types do.

→ There are two glass layers with liquid crystal material between them in an LCD display.
→ The crystals rotate to either allow or block light that creates images on screens.

LED:-

- In LED displays, small lights referred to as LEDs are used as their lighting source instead of other backlights like those found in LCDs.
- This makes them thinner and lighter than any other kind of display device.

SSD (Solid State Drive) / HDD (Hard Disk Drive)

→ A solid state drive is non-volatile memory, computer hardware that stores data without moving parts, whereas hard disk drive (HDD) uses a magnetic disk and a mechanical write head to manipulate data, SSDs use charge in semiconductors.

- SSDs are a better choice for data analytics or gaming workloads. On the other hand, a hard disk drive (HDD) is a better choice if you are dealing with data backups, data archives or throughput-intensive workloads.

What are the Peripheral devices of a computer?

Peripheral devices are not essential to the functioning of a computer, but they enhance its functionality.

- These devices can be input devices, output devices or both.
- Examples of input devices include a keyboard, mouse, scanner and microphone, while output devices include a printer, speaker and display.

Unit-2

operating system :-

The installation and initial booting of the OS is called the operating system setup. Although it is possible to install an OS over a network from a server or from a local hard drive, the most common installation method for a home or small business is with CDs or DVDs.

→ An operating system (OS) is a type of software that manages a computer's resources and processes, and acts as a bridge between the user and the computer's hardware.

Steps for installing operating system :-

The steps for installing an operating system like Linux or Microsoft Windows, depending on the operating system version you are installing.

→ Each version has different steps, requirements, and options that are unique to that operating system. Also, each operating system has different requirements for your computer to run it correctly.

Purchase the operating system :-

First, you must purchase the operating system that you want to install on the computer. The best place to purchase the operating system from is a retail store like Amazon. The operating system may come on multiple CDs (Compact Discs) or DVDs (Digital Versatile Discs) or it may even come on a USB (Universal Serial Bus) flash drive.

Install the operating system:-

→ To install the computer's operating system using a CD or DVD, you must configure your computer to boot from the CD/DVD drive. You can change the boot sequence in your BIOS setup and setting the CD/DVD drive to be the first boot device.

→ Some computer may also allow you to access the boot sequence directly at computer startup, without entering the BIOS, by pressing a specific key on the keyboard. The key to press differs for each computer, but is often the Delete key or one of the function keys.

Picking a New operating system:-

(1) check the system requirements if you have decided that you want to install a new operating system. You will first

Steps for Install the operating system:-

1. Choose your OS. The first step is to decide which OS you want to install on your computer.
2. To backup your data. (The second step is to backup your data before installing a new OS).
3. Prepare your installation media.
4. Install the new OS.
5. Configure your new OS.
6. Restore your data and programs.
7. Here's what else to consider.

Linux & Windows:-

→ Linux is an open source operating system, but windows is not. In terms of compatibility, the windows operating system is much more secure.

→ In terms of security between Linux & kernel, Linux is much more secure.

→ Windows have four types of users, whereas Linux operating system has three types of users.

→ Windows operating system also known as Microsoft Windows is a GUI (Graphical User Interface) based system software or OS which is developed and marketed by Microsoft.

→ Linux is a Unix-based operating system that is free, open-source and community-developed.

Difference between Linux & Windows :-

Linux

→ Linux is open source software. means source code can be changed.

→ Linux is free of cost.

→ No license is required to use Linux software.

→ Linux is more secure.

→ In Linux, file names are case sensitive.

→ Linux is customizable.

→ In Linux, it is not easy to catch viruses.

→ Linux is less user friendly.

Windows

→ Windows is not open source software.

→ Windows is paid.

→ User needs license to use this software.

→ Windows is less secure.

→ In Windows, file names are case insensitive.

→ Windows is not customizable.

→ In Windows, it is easier to catch viruses.

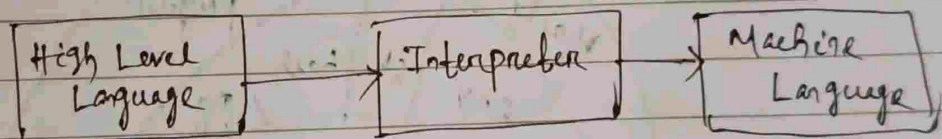
→ Windows is more user friendly.

Unix shell and commands:-

- A Unix shell is a command-line interpreter or shell that provides a command line user interface for Unix-like operating systems.
- The shell is both an interactive command language and a scripting language, and is used by the operating system to control the execution of the system using shell scripts.

Interpreter means, for instance right now am speaking in odia language which you can't understand so I will add captions in youtube for your native language

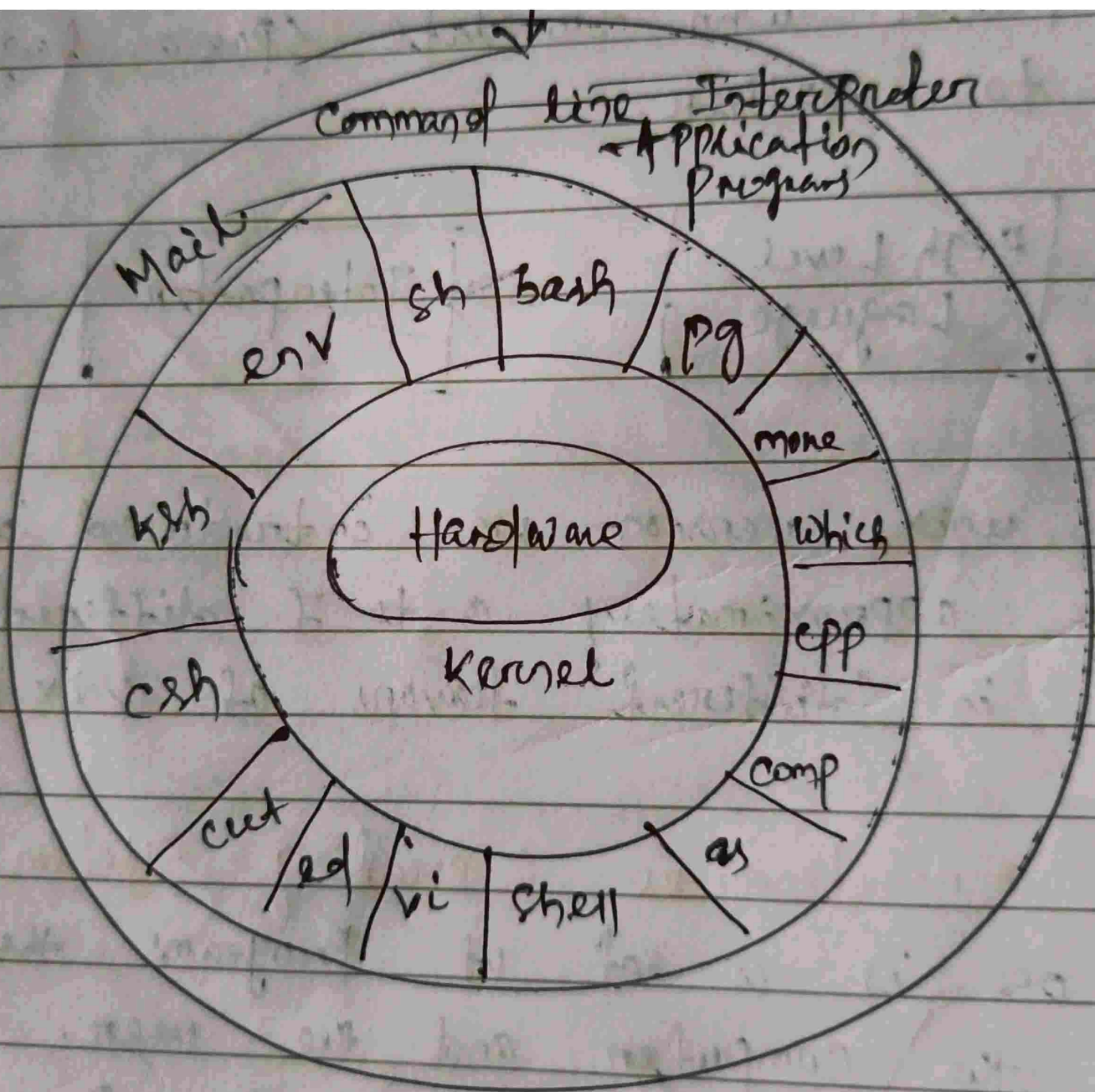
A interpreter who translate spoken language from one language to another.



- First unix version was introduced in 1969 and till date approximately 6 to 7 different shells are available in different flavors of Unix/Linux.

Unix Architecture Operating System:-

- Unix OS is a set of Programs that act as a link between the computer and the user.
- kernel OS are the computer Programs that allocate system resources & co-ordinate all the details of the computer's internals.
- User communicate with the kernel through a Program known as Shell → It is command.



Vi Editor:-

Visual Editor:- Default Text Editor that comes with most LINUX system.

- It is available in almost all Linux Distributions.
- It works the same across different platforms and Distributions.
- It is user friendly.

Command Mode:-

- vi editor opens in this mode.
- Move the cursor and cut, copy, paste the text.
- Save the changes to the file.
- Commands are case sensitive.

Insert Mode:-

- This mode is for inserting text in the file.
- Press 'I' on the keyboard for insert mode.
- In Insert mode, any key would be taken as an input.
- Press ESC key to save changes and return to command mode.

Keystrokes

I
 a
 A
 ESC
 u
 U
 O
 dd
 3dd
 D

Action

Insert at cursor
 Write after cursor
 Write at the end of line
 Terminate insert mode.
 Undo last change
 Undo all changes to the entire line.
 Open a new line
 Delete line
 Delete 3 lines.
 Delete contents of line after the cursor