GOVERNMENT POLYTECHNIC, NAYAGARH

SUB :- INTRODUCTION TO IT SYSTEMS

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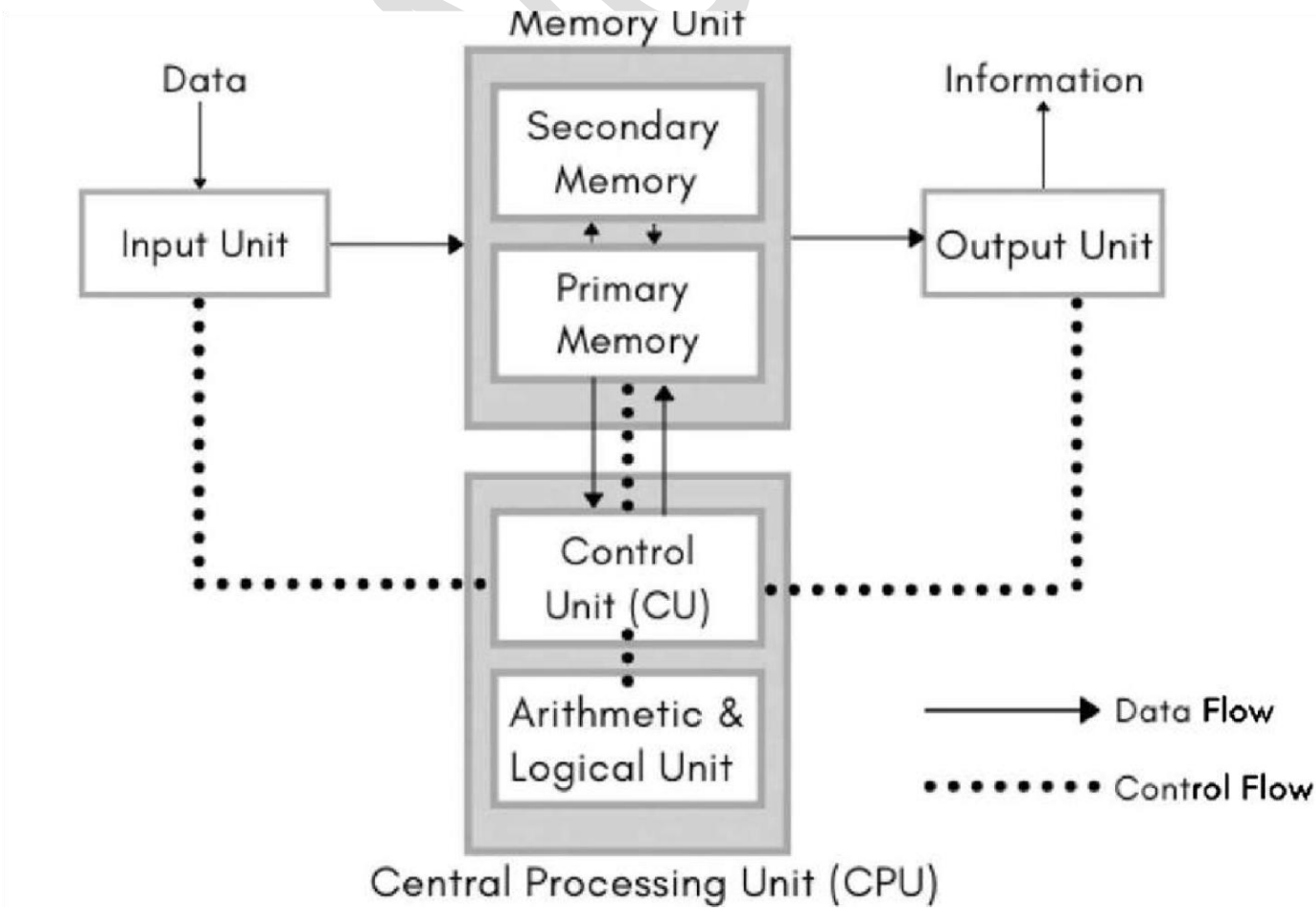
SPY NOTES

Q) COMPUTER :

1. **Electronic Device**: A computer is a device that processes information or data.
2. **Input and Output**: It accepts data (input), processes it, and produces results (output).
3. **Programmable**: Computers can be programmed to perform different tasks using software.
4. **Data Storage**: They can store data for future use, allowing easy retrieval.
5. **Types of Calculations**: Computers handle both numerical and logical calculations.
6. **Components**: Important parts include the CPU, memory (RAM), storage (HDD/SSD), and devices like the keyboard and mouse.
7. **Versatility**: Computers are used for many tasks, from word processing to complex scientific work.
8. **Connectivity**: They can connect to the internet and other networks for communication.
9. **Automation**: Computers can automate tasks, improving efficiency and reducing errors.
10. **Evolution**: Computers have evolved from large machines to small, powerful devices like laptops and smartphones.

Block Diagram of a Computer System:



Ans. A computer system is designed to take a set of inputs, process them, and generate a set of outputs. This is achieved through a combination of hardware and software. The main components of a computer system include the following:

1. Input Unit:
    - The input unit is responsible for receiving data and instructions from the outside world.
    - It converts the input data into a form that the computer can understand and then sends this data for further processing.
    - Common input devices include mouse, keyboard, scanner, punched card reader, and magnetic tape readers.
2. Central Processing Unit (CPU):
    - The CPU consists of the Arithmetic and Logic Unit (ALU), Control Unit (CU), and Memory Storage Unit. o The CPU is where the actual processing of data takes place. It processes most of the data and turns input into output. o The ALU performs all arithmetic and logical operations, such as addition, subtraction, comparison, etc.
        - It consists of:
        - Adder: Where calculations are performed.
        - Register: Temporarily stores data.
        - Accumulator: Stores intermediate results from calculations.
    - The Control Unit (CU) manages and coordinates all operations within the CPU by sending control signals to all parts of the computer system. These signals help in the execution of instructions and communication over buses to memory and I/O devices.
    - The Memory Unit stores instructions and data needed by the CPU.
3. Memory Unit:
    - Memory stores data, instructions, and results during processing.
    - It is divided into two parts:
        - Primary Memory (Main Memory): Volatile memory used for temporary storage while processing. Data is lost when the system is powered off. Examples include RAM (Random Access Memory) and ROM (Read-Only Memory).
        - Secondary Memory (Auxiliary Memory): Permanent storage for data and instructions. It is much larger in size than primary memory and

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retains data even when the system is switched off. Examples include hard drives, SSDs, and optical discs.

4. Output Unit:
    - The output unit consists of devices that present the results of the computer's data processing to the outside world.
    - After processing, the results are stored and sent to an output device (such as a monitor, printer, or speaker) in a format that is understandable to the user.

Q Computers have many important features that make them powerful tools. Here are some key characteristics in simple terms:

1. **Speed**: Computers work very fast, processing millions of tasks per second.
2. **Accuracy**: Computers perform tasks without errors, unless caused by humans or software.
3. **Reliability**: Computers always give the same result for the same task.
4. **Storage Capacity**: Computers can store large amounts of data, both temporarily (RAM) and long-term (hard drives).
5. **Automation**: Computers can perform tasks automatically, saving time and reducing
6. **Memory**: Computers have both short-term (RAM) and long-term (hard drive) memory for storing data.
7. **Connectivity**: Computers can connect to the internet and share information globally.

Q) Computers have evolved through several generations, each marked by significant technological advancements. Here's an overview of the five main generations of computers:

2. First Generation (1940-1956): Vacuum Tubes o Technology: Used vacuum tubes for processing and memory.
    - Characteristics: Large, expensive, used a lot of power, and often overheated.
    - Examples: ENIAC, UNIVAC.
3. Second Generation (1956-1963): Transistors
    - Technology: Replaced vacuum tubes with transistors, making computers smaller and faster.

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- Characteristics: Reduced heat and power use compared to the first generation.
- Examples: IBM 7094, CDC 1604.

4. Third Generation (1964-1971): Integrated Circuits (ICs)
   - Technology: Used integrated circuits, which combined many transistors on a single chip.
   - Characteristics: Smaller, cheaper, faster, and more efficient. o Examples: IBM 360 series, PDP-8.

5. Fourth Generation (1971-Present): Microprocessors o Technology: Introduced microprocessors, which put the CPU on a single chip. o Characteristics: Led to personal computers, with much faster speeds and easier use.
   o Examples: Intel 4004, Apple II.

6. Fifth Generation (Present and Beyond): Artificial Intelligence (AI)
   - Technology: Based on AI, machine learning, and new computing methods like quantum computing. o Characteristics: Computers that can understand natural language, recognize patterns, and make decisions.
   - Examples: IBM Watson, Google DeepMind.

Each generation built on the technology of the previous one, leading to the advanced computers we use today.

Q) MICROPROCESSOR

A microprocessor is a compact integrated circuit that serves as the central processing unit (CPU) of a computer or other digital devices.

It performs arithmetic and logic operations, controls other components, and executes instructions from software.

Essentially, it acts as the brain of the computer, processing data and executing commands to enable various functions.

Microprocessors are fundamental to modern computing and are used in everything from personal computers to smartphones and embedded systems.

Q ALU

- An Arithmetic Logic Unit (ALU) is a crucial component of a computer's central processing unit (CPU).

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- It performs arithmetic operations (like addition and subtraction) and logical operations (such as comparisons) on binary data.
- Essentially, it executes the mathematical and logical instructions that are fundamental to program execution.

Q CU

- The Control Unit (CU) is a key component of a computer's central processing unit (CPU).
- It directs the operation of the processor by fetching instructions from memory, decoding them, and executing them.

Table 1.6: Measurement Units for Digital Data

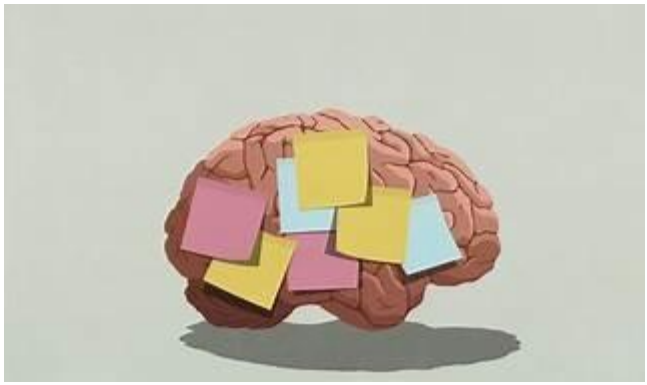
Unit	Symbol	Capacity
Bit	b	1 or 0 (on or off)
Byte	B	8 bits
Kilobyte	KB	1024 Bytes
Megabyte	MB	1024 Kilobyte
Gigabyte	GB	1024 Gigabyte

Unit	Symbol	Capacity
Terabyte	TB	1024 Gigabytes
Petabyte	PB	1024 Terabyte
Exabyte	EB	1024 Petabytes
Zettabyte	ZB	1024 Exabytes
Yottabyte	YB	1024 Zettabytes

- The CU manages the flow of data between the CPU and other hardware components, coordinating the activities required to perform tasks and execute programs.

Q MEMORY UNIT

The instructions and data given to the computer are stored in the memory or storage unit. This data along with the program instructions are used by the CU and ALU. It is also used to store intermittent results and information (final results). Types of memory are discussed in detail, in the next topic. The smallest unit of memory is called a 'Bit'. A bit can have the value 1 or 0 which is known as binary values. Groups of eight bits form a Byte and similarly higher order units are formed. The Table 1.6 shows measurement units for digital data with their denoting symbol and corresponding capacity.



Q) Explain different types of Computer Memory briefly.

Ans. Computer memory is an essential component of a computer system, crucial for storing data and instructions that the CPU needs for processing. Depending on how the CPU accesses the memory, it can be classified into Primary Memory and Secondary Memory.

Types of Computer Memory:

1. Primary Memory:

Primary memory is also known as main memory or internal storage because it is directly accessible by the CPU. It is used to store program instructions, data, and intermediate results. It is faster and more expensive than secondary memory. Without primary memory, the computer cannot function. Examples of primary memory include RAM, ROM, and Cache Memory.

- a) Random Access Memory (RAM):
  - RAM is temporary or volatile memory, meaning data is lost when the power is turned off.
  - It is essential for running programs and handling tasks in a computer.
  - RAM is classified into two types:
    - Static RAM (SRAM): Retains its data as long as power is supplied.
    - Dynamic RAM (DRAM): Uses less power and is denser, but data needs to be refreshed constantly.
- b) Read-Only Memory (ROM):
  - ROM is non-volatile memory, meaning data is not lost when power is switched off. o It stores essential programs that are permanent and cannot be modified easily.
  - Types of ROM include:
    - PROM (Programmable ROM): Can be written once.

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        - EPROM (Erasable Programmable ROM): Can be erased and reprogrammed by ultraviolet light.
        - EEPROM (Electrically Erasable Programmable ROM): Can be erased and reprogrammed electrically, typically up to 10,000 times.

- c) Cache Memory:
    - Cache memory is a small, high-speed memory located between the CPU and primary memory.
    - It stores frequently accessed data to increase the CPU's performance.
    - Types of cache memory:
        - L1 Cache: Fastest and smallest, directly integrated with the CPU.
        - L2 Cache: Slower than L1 but larger and cheaper.
        - L3 Cache: Largest, slower, and the least expensive.

2. Secondary Memory:

Secondary memory is used for permanent data storage. It is also known as external memory since the CPU does not have direct access to it. It is non-volatile, meaning the data remains intact even after the system is powered off. Examples include:

- HDD (Hard Disk Drive)
- SSD (Solid State Drive)
- Floppy Disks
- CDs, DVDs Summary:
- Primary Memory: Fast, volatile, and used for temporary storage. Includes RAM, ROM, and Cache Memory.
- Secondary Memory: Slower but used for permanent data storage. Includes HDD, SSD, and optical storage like CD/DVD.

MONITOR

- Display Technology: Monitors use different technologies like LCD, LED, OLED, and IPS for display.
- Resolution: Higher resolution (like Full HD, 4K) means sharper images.
- Refresh Rate: The number of screen updates per second (Hz). Higher refresh rates (e.g., 144Hz) are better for gaming.

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- Connectivity: Monitors have ports like HDMI, VGA, DisplayPort, and USB-C.
- Color Accuracy: Important for professionals in design or editing, supporting color spaces like sRGB.
- Curved vs. Flat: Curved monitors offer immersion, while flat monitors are traditional.
- Smart Features: Some monitors include built-in speakers, webcams, and even operating systems.

Q KEYBOARD

A keyboard is an essential input device for computers, allowing users to type text, execute commands, and interact with software. Here are some key points about keyboards:

1. **Types of Keyboards**:
    - **Mechanical Keyboards**: Use physical switches for each key, providing a satisfying feel and long-lasting durability.
    - **Membrane Keyboards**: Quieter and more affordable, they use a pressuresensitive pad for keypresses.
    - **Virtual Keyboards**: On-screen keyboards, often used on touchscreens.
2. **Key Layouts**:
    - **QWERTY**: The most common layout, with the letters arranged as Q-W-E-R-T-Y. o **Dvorak**: Designed for typing efficiency and speed.
    - **AZERTY**: Common in French-speaking countries.

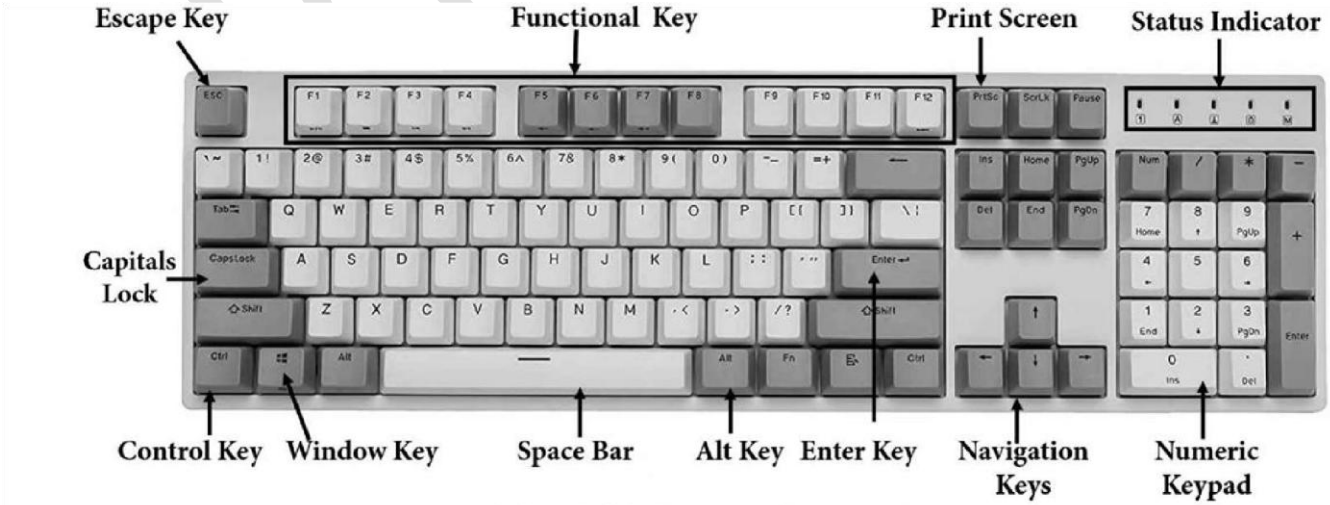

Fig. 1.23: Keys on Keyboard

3. **Key Groups**:

- **Function Keys (F1-F12)**: Perform specific actions in programs (like help or refresh). o **Character Keys**: Letters, numbers, and punctuation (A-Z, 0-9).
- **Modifier Keys**: Shift, Ctrl, and Alt keys, used with other keys for shortcuts.

4. **Special Keys**:
   - **Enter**: Used to confirm commands or create a new line. o **Spacebar**: Adds spaces between words while typing.
   - **Esc**: Used to cancel or exit from menus or pop-ups.
5. **Connectivity**:
   - **Wired**: Connects to the computer using USB or older PS/2 ports.
   - **Wireless**: Connects via Bluetooth or radio frequency (RF), providing freedom from cables.

Q Explore Mouse

1. **Functionality**: A mouse lets you control the cursor on the screen, enabling actions like pointing, clicking, dragging, and dropping, which are essential for navigating computers.
2. **Types of Mice**:
   - **Mechanical Mouse**: Older type using a ball for movement detection.
   - **Optical and Laser Mice**: Use light to detect movement, offering smoother and more precise control.
   - **Trackball Mouse**: Has a ball on top to move the cursor by rotating it.
   - **Touchpad**: A flat surface on laptops that works like a mouse by moving your finger.
3. **Connectivity**:
   - **Wired Mouse**: Connects directly to the computer using a USB or PS/2 port.
   - **Wireless Mouse**: Uses Bluetooth or radio frequency (RF) to connect without cables.
4. **Buttons and Scroll Wheel**: Most mice have at least two buttons (left and right) and a scroll wheel. Some have extra buttons for additional functions.
5. **DPI (Dots Per Inch)**: DPI measures how sensitive the mouse is. Higher DPI means the cursor moves faster and more precisely with less physical movement of the mouse.

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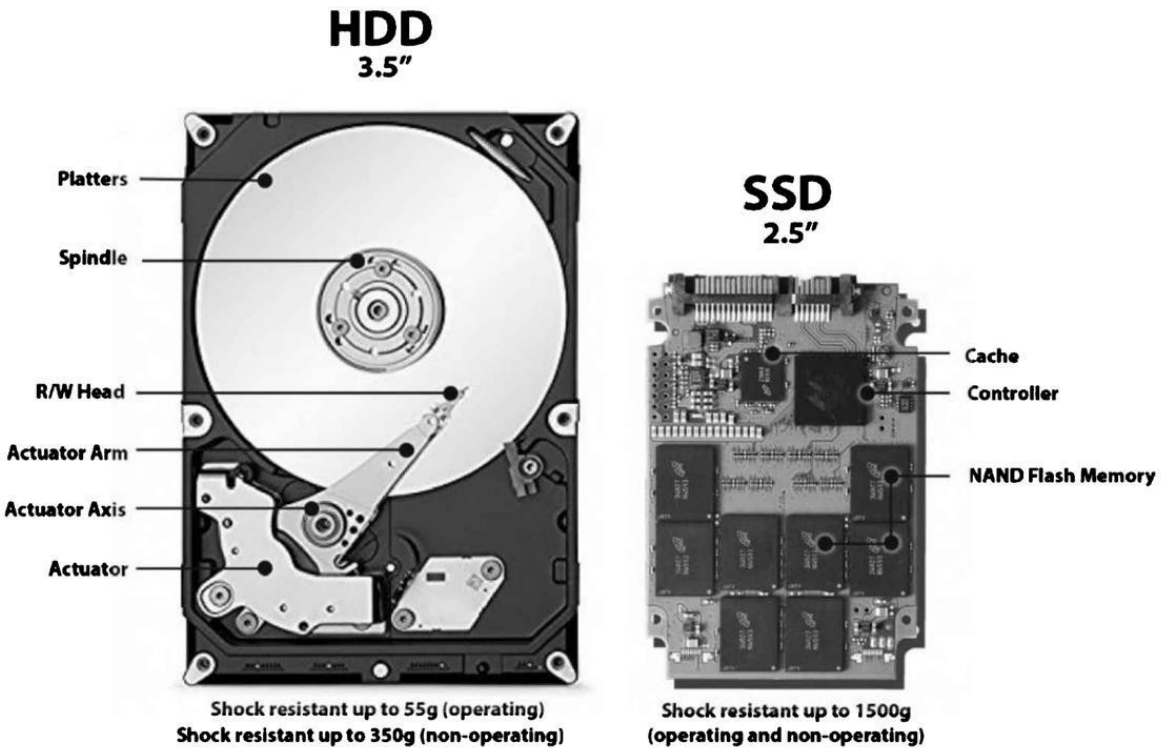

Fig. 1.25: Parts of HDDs and SSDs

Here's a side-by-side comparison of **HDD (Hard Disk Drive)** vs **SSD (Solid-State Drive)**:

Feature	**HDD (Hard Disk Drive)**	**SSD (Solid-State Drive)**
Technology	Uses spinning magnetic platters and read/write heads.	Uses flash memory chips with no moving parts.
Speed	Slower due to mechanical movement, lower data transfer rates.	Faster with quicker boot times and fil transfers.
Feature	**HDD (Hard Disk Drive)**	**SSD (Solid-State Drive)**
Durability	Prone to damage from impact or vibrations due to moving parts.	More durable, resistant to shock and physical damage.
Noise & Power Consumption	Generates noise and consumes more power.	Silent and consumes less power, idea for portable devices.
Cost	Cheaper per GB, cost-effective for large storage.	More expensive per GB, but prices ar decreasing.

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Summary:

- **HDDs** are **cheaper** and offer **larger storage**, but are **slower** and more vulnerable to physical damage.
- **SSDs** are **faster**, **more durable**, and **use less power**, but they tend to be **more expensive** per GB.

Q PERIPEHERAL DEVICE

Peripheral devices are auxiliary hardware components that connect to a computer to add functionality. They are not essential for the computer's primary operations but enhance its capabilities. Here are some common types of peripheral devices:

Input Devices

- **Keyboard**: Used for typing text and commands.
- **Mouse**: Controls the cursor and allows interaction with the computer.
- **Scanner**: Converts physical documents into digital format.
- **Microphone**: Captures audio input.
- **Webcam**: Captures video input.

Output Devices

- **Monitor**: Displays visual information to the user.
- **Printer**: Produces physical copies of digital documents.
- **Speakers**: Output sound.
- **Headphones**: Provide personal audio output.
- **Projector**: Displays visual information on a larger screen.

Storage Devices

- **External Hard Drives**: Provide additional storage capacity.
- **USB Flash Drives**: Portable storage devices.
- **CD/DVD Drives**: Read and write optical discs.

Input/Output Devices

- **Network Interface Cards (NICs)**: Enable network connectivity.
- **Modems**: Connect computers to the internet via telephone lines.
- **External Storage Devices**: Such as SSDs and HDDs, used for both input and output of data.

Other Peripheral Devices

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- **Game Controllers**: Used for gaming.
- **Docking Stations**: Expand connectivity options for laptops.
- **Card Readers**: Read memory cards from cameras and other devices.

Peripheral devices enhance the functionality of a computer by providing additional input, output, and storage options.

Q What is the Internet ?

The Internet:

- A **global network** of interconnected, diverse networks.
- Connects **devices, hardware, and software** worldwide.
- Uses **protocols and standards** for communication.
- Known as the **"network of networks"**.
- **Facilitates sharing of resources** like web pages, printers, and digital services.
- Operates through physical media like **telephone lines**, **fiber optics**, and **wireless technologies** (Wi-Fi, 3G/4G, satellites).

Common Applications of the Internet:

1. **Communication**:
    - **Email** exchanges for sending messages. o **Online messengers** for real-time chat.
    - **VoIP** (Voice over Internet Protocol) for voice and video calls.
2. **E-Commerce**:
    - **Online shopping** platforms for purchasing goods. o **24/7 access** to products and services globally.
3. **Storage & File Transfer**:
    - **Uploading and downloading** files.
    - **Cloud computing** for sharing and collaborating on files.
4. **Live Streaming & Podcasts**:
    - **Real-time broadcasting** of video/audio content.
    - **Distribution** of live and recorded content to audiences.

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Q GLOSSARY FOR THE INTERNET BASICS

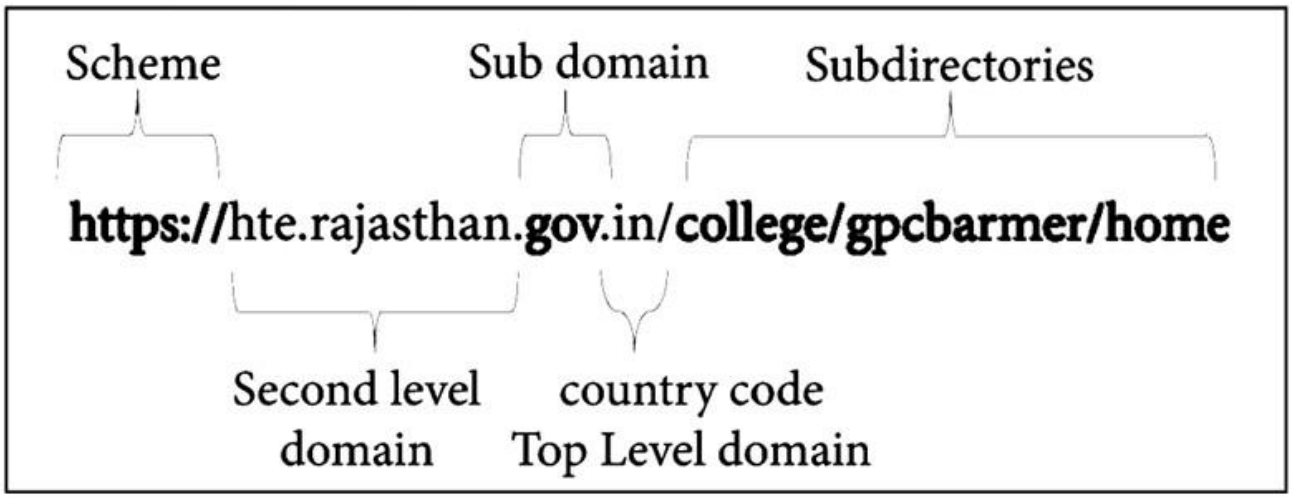

Fig. 1.1: Structure of a URL

World Wide Web (WWW):

- A popular use case of the Internet.
- An information system where files and resources are hosted and accessed via unique URLs.
- Resources are linked together through hyperlinks.
- Accessed using web browsers with protocols like HTTP or FTP.

Key Concepts:

1. Domain Name:
    - A human-readable name used to identify a computer or resource on the Internet.
2. URL (Uniform Resource Locator):
    - A web address that uniquely identifies a web resource and indicates how to access it.
    - Its structure includes protocol, domain, and path.
3. HTTP (Hypertext Transfer Protocol):
    - A protocol for transferring data over the web, mainly used for accessing websites.
4. HTTPS (Hypertext Transfer Protocol Secure):

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- The secure version of HTTP.
- Uses SSL encryption to secure data transfer.

5. FTP (File Transfer Protocol):
    - A protocol for transferring large files between computers over the Internet.
6. Hyperlink:
    - A clickable word, phrase, or image that links to another document or part of the same document.
7. Browser: o An application used to display and navigate web pages.
8. Webpage: o A hypertext document designed to be viewed in a web browser.
9. Website:
    - A collection of web pages and resources identified by a common domain name and hosted on a web server.
10. Search Engine:

• A web-based tool that searches its database to provide relevant results based on user queries.

Q Understanding Web Browsers

1. **Definition**: A web browser is a software application used to access and view websites.
2. **Common Browsers**: Examples include Google Chrome, Mozilla Firefox, Microsoft Edge, and Safari.
3. **Navigation**: Learn to enter URLs, use bookmarks, and navigate between tabs.
4. **Settings**: Familiarize yourself with browser settings to manage privacy, security, and appearance.
5. **Extensions**: Use browser extensions to add functionality, such as ad blockers or password managers.
6. **Incognito Mode**: Use private browsing modes to prevent the browser from saving your history.
7. **Updating**: Keep your browser updated to ensure security and access to the latest features.

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8. **Bookmarks**: Save frequently visited websites for quick access.
9. **History**: Use the browser history to revisit previously accessed websites.
10. **Downloads**: Manage and locate downloaded files through the browser's download manager.

- **ELEMENTYS OF CHROME BROSWER**

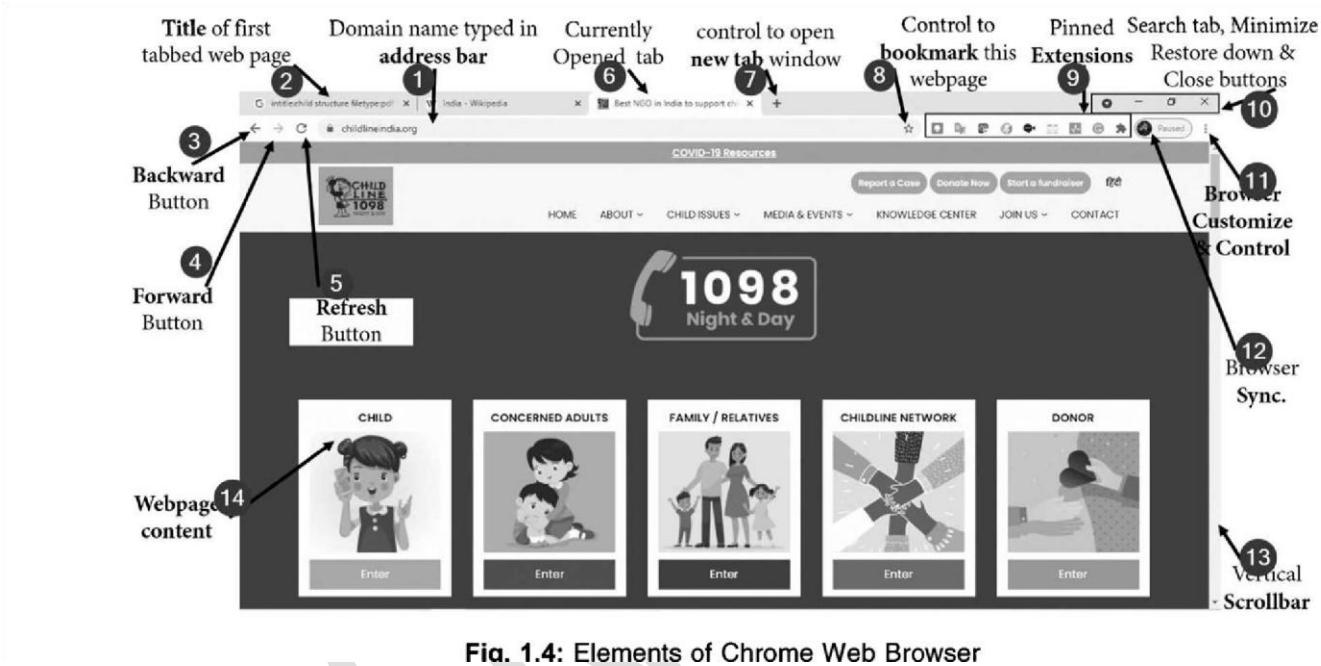

Fig. 1.4: Elements of Chrome Web Browser

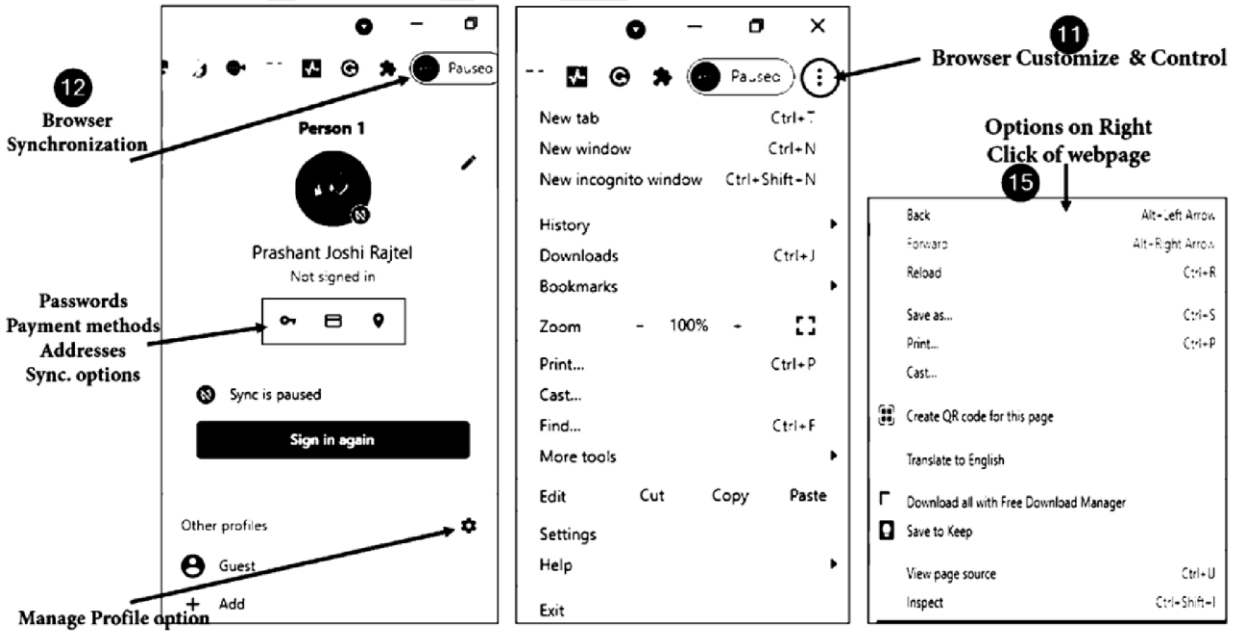

Fig. 1.6: Chrome Window (a) Synchronization (b) Customize & Control (c) Right-click Options

- **Common Browser Features:**

1. Bookmarking:
    - Saves and manages web addresses (URLs) for easy future access.
    - Known as "favorites" in browsers like Microsoft Edge.
2. Download Management:
    - Organizes downloaded files, showing them in chronological order. o Allows actions like 'show in folder' or 'open containing folder'.
    - Can be accessed through the browser menu or with shortcuts (e.g., CTRL + 1).
3. Password Management:
    - Stores usernames and passwords for websites.
    - Often protected by a master password to ensure security.
4. Tabbed Browsing:
    - Enables users to browse multiple websites in separate tabs within a single browser window.
5. Browser History:
    - Keeps a record of visited webpages, including page titles and visit times.
    - Allows users to revisit previously accessed pages.
6. Form Management:
    - Auto-fills form entries using saved data, reducing the need to re-enter information.
    - Also called auto-complete.
7. Spell Checking: o Provides suggestions and corrections for misspelled words in text fields.
8. Privacy Mode:
    - Enables private browsing without saving history, cookies, or form data. o Known as "Incognito" mode in Chrome and "InPrivate Browsing" in Microsoft Edge.
9. Auto Update:
    - Ensures the browser automatically updates to the latest version, providing security and new features.

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10. Ad Blocking:

- Blocks or modifies online advertisements, often using extensions or add-ons.

Q Search Engine Definition and How It Works:

: A search engine is a software system designed to help users find information stored on the internet or within a specific database.

How Does a Search Engine Work?

Search engines aim to provide users with the most relevant search results in the shortest time. Here's how they generally work:

1. Crawling:
   - Search engines use automated software like bots, spiders, or crawlers. o These bots traverse the World Wide Web, scanning webpages for publicly available information.
   - They collect data about pages, such as the title, content, and links.
2. Indexing:
   - After crawling, search engines organize and store the gathered information. o Only key details, like page titles, descriptions, creation dates, content type, and links, are stored—not the full content.
   - This index helps the search engine to retrieve and rank relevant results quickly.
3. Ranking:
   - Once the search engine has indexed the data, it uses a ranking algorithm to order the results by relevance.
   - The most relevant pages are shown first.
   - Ranking factors include:
     - Links referring to the page.
     - Keywords used in the content.
     - Website age and authority.
     - Page load speed and other performance metrics.
     - Time spent on a page, etc.

The goal is to deliver the most relevant and useful content to users based on their search queries.

Efficient Use of Search Engines

The internet is vast, constantly evolving, and filled with an overwhelming amount of information. Efficiently using search engines helps you quickly find the most relevant information. Here's how to make the best use of search engines:

1. **Definition:**

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Search engines are tools that help you find information on the internet.

2. **Popular Engines:**
   Some of the widely used search engines are **Google**, **Bing**, and **Yahoo**.

3. **Keywords:**
   Use specific keywords to improve your search results and narrow down the information.

4. **Phrases:**
   Place quotes around words to search for **exact phrases**, improving the accuracy of your results.

5. **Operators:**
   Use operators like **AND**, **OR**, and **NOT** to refine your search and exclude unnecessary results.

6. **Advanced Search:**
   Use the **advanced search** options for more precise and specific results, such as filtering by date or content type.

7. **Evaluating Sources:**
   Always check the **credibility** of websites and authors to ensure the accuracy of the information you find.

8. **Search Filters:**
   Utilize **filters** to narrow results by **date**, **type**, or **region** for more targeted results.

9. **Images and Videos:**
   You can use search engines to find not only text-based content but also **images** and **videos**.

10. **Local Search:**
    Use **location-based searches** to find local businesses and services.

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Some Popular Search Engine Variants:

1. **Google:**
   - **Created by:** Larry Page and Sergey Brin in 1996.
   - **Features:** Uses AI and ML to improve search results. It's the default search engine for most browsers.
   - **Programming Languages:** C, C++, Python.

2. **Microsoft Bing:**

- **Created by:** Microsoft in 2009 (successor to MSN Search).
- **Features:** Provides web, image, video, and map searches with additional features like news and weather.
- **Programming Language:** ASP.NET.

3. **Yahoo:**
   - **Created by:** Jerry Yang and David Filo in 1994.
   - **Features:** Initially a directory of websites, now includes search and various internet services.
   - **Programming Language:** PHP.
4. **Baidu:**
   - **Created by:** Robin Li and Eric Xu in 2000.
   - **Features:** Dominates the Chinese market with services like maps, images, and video search.
   - **Market Share:** Holds over 72% of the Chinese search engine market.
5. **Yandex:**
   - **Created by:** Yandex N.V., launched in 1997. o **Features:** Popular in Russia, with features like translation, maps, and email.
   - **Languages:** Russian and others.
6. **DuckDuckGo:**
   - **Created by:** Gabriel Weinberg in 2008.
   - **Features:** Focuses on user privacy and anonymity. It does not track users or personalize search results.
   - **Programming Languages:** Perl, JavaScript, Python.

These search engines provide various features, from privacy-focused browsing to specialized regional services.

Types of Web Searches

1. **Navigational Search**:
   - **Purpose**: Users search to navigate to a specific website or page.
   - **Example**: Searching for "jimcorbett national park" to find the official website of the park.

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2. **Informational Search**:
    - **Purpose**: Users look for information about a topic, often from static pages or sources like articles, guides, or FAQs.
    - **Example**: Searching for "jimcorbett national park history" to learn about the history or geography of the park.
3. **Transactional Search**:
    - **Purpose**: Users intend to complete an online transaction, such as making a purchase or booking.
    - **Example**: Searching for "jimcorbett national park booking" to find a website where they can make a reservation for a visit or stay.

These search types help define the user's intent and guide them to the most relevant information, whether they are looking for a website, learning more about a topic, or performing an online action.

Basic Search Symbols		
-	Excludes search results that include this term.	best tablets -drawing
|	Returns search results that match terms on either side of the pipe. The same as writing "OR" between search terms.	computer | tablet
@	Returns search results that match a particular social media site.	aicte @facebook
#	Returns search results that include a specific hashtag.	#largestvaccinedrive
“”	Returns search results that include all terms within quotes in the **exact** given order.	“Gods own country”
*	Returns search results where **any** words can be matched in place of the asterisk.	best * in Haryana
..	When placed between two numbers, returns search results that match within the number **range**.	computer 30k..40k inr
()	Used to **group search** terms and control the search logic of the query.	(lata | mukesh) songs lyrics

What is Digital India ?

Digital India is a flagship program of the Government of India, with the aim of transforming India into a digitally empowered society and knowledge economy. It focuses on three key vision areas:

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1. Digital Infrastructure as a Utility to Every Citizen

This vision area focuses on providing the necessary digital infrastructure for all citizens.

- High-speed internet: Making high-speed internet available as a core utility for service delivery.
- Unique digital identity: Creation of Aadhaar (a unique identity system) that is lifelong, online, and verifiable for every citizen.
- Mobile phones and bank accounts: Empowering citizens with access to digital and financial services.
- Common Service Centres (CSCs): Ensuring access to government services in every location.
- Cloud storage: Providing citizens with shareable private spaces on the public cloud.
- Cybersecurity: Ensuring a safe and secure cyberspace for all.
- Examples: Aadhaar, Digi-locker, Direct Benefit Transfer (DBT), E-Sign.

---

2. Governance and Service on Demand

This vision area aims to provide citizens with timely and efficient services from the government.

- Integrated services: Seamless delivery of services across departments or jurisdictions.
- Real-time services: Availability of government services in real-time through online and mobile platforms.
- Portability of entitlements: Making citizen entitlements accessible and portable on the cloud.
- Business transformation: Using digital tools to improve ease of doing business.
- Cashless transactions: Promoting electronic and cashless financial transactions.
- Geospatial Information Systems (GIS): Using GIS for better decision-making and development.
- Examples: BHIM, e-Panchayat, e-Pathshala, Kisan Suvidha.

---

3. Digital Empowerment of Citizens

This area focuses on making citizens digitally literate and providing access to digital resources. • Digital literacy: Ensuring universal digital literacy for all citizens.

SPY NOTES

- Access to digital resources: Making digital resources and services available to everyone.
- Indian language accessibility: Offering digital services in multiple Indian languages.
- Collaborative platforms: Creating platforms for participatory governance and citizen engagement.
- Paperless transactions: Reducing the need for physical submission of government documents.
- Examples: MyGov, AEPS (Aadhaar-enabled Payment System), PMKVY (Pradhan Mantri Kaushal Vikas Yojana), Smart Cities initiative.

National and State Portals in India

National Portal of India

1. Centralized Access: One-stop platform for accessing services and information from all government departments.
2. Services: Access government services like birth certificates, driving licenses, PAN cards, etc.

Table 1.3: Digital India Portals (Infrastructure)

Digital India Initiative		Website	Description
AADHAAR	AADHAAR	https://uidai.gov.in	The largest biometrics based identification system in the world for effective service delivery to citizens.

3. Information Hub: Provides details about government policies, programs, and schemes.
4. Citizen Engagement: Allows citizens to give feedback, raise complaints, and participate in policy-making.
5. Transparency: Promotes transparency with initiatives like Right to Information (RTI) and open data.
6. Health ID: Supports digital healthcare through a Health ID system.
7. E-Governance: Makes government services and resources available online.
8. News and Updates: Offers the latest news, announcements, and press releases.
9. Educational Resources: Provides information on scholarships and educational programs.

10. Accessibility: Easy for everyone to use, including citizens, businesses, and the Indian diaspora.

SPY NOTES

	COE-IT	http://www.coe-iot.in	Center for excellence for Internet of Things to build industry capable talent, start-up community and an entrepreneurial ecosystem for IOT
	CERT-IN	http://www.cert-in.org.in	Computer emergency response team-India
	CSCS	https://csc.gov.in/	Common service centers portal
साइबर स्वच्छता केन्द्र CYBER SWACHHTA KENDRA Botnet Cleaning and Malware Analysis Centre	CYBER SWACHHTA KENDRA	http://www.cyberswachhtakendra.gov.in/	India initiative to create a secure cyber space by detecting botnet infections
DigiLocker Your documents anytime, anywhere	DIGILOCKER	https://digilocker.gov.in/	It's a secure cloud based platform for issuance, sharing and verification of critical lifelong documents.
NATIONAL DIGITAL LITERACY MISSION	(DISHA)	http://www.ndlm.in/	Digital Saksharta Abhiyan or National Digital Literacy Mission to impart IT training

State Portals

A **State Portal** is an online platform provided by a state government to give citizens easy access to government services and information.

Uses of State Portals:

1. **Access to Services**: Apply for licenses, pay taxes, and access public records online.
2. **Information Hub**: Get information on state policies, programs, and government initiatives.
3. **E-Governance**: Enable online transactions, reducing the need to visit government offices.
4. **Transparency**: Access government data, budgets, and reports for transparency.
5. **Citizen Engagement**: Share feedback, participate in surveys, and help shape government decisions.
6. **Educational Resources**: Find information on scholarships, programs, and educational institutions.

7. **Health Services**: Access health services like health IDs, vaccination records, and schemes.
8. **Business Support**: Learn about business regulations, permits, and incentives in the state.
9. **Emergency Information**: Get safety guidelines and updates during emergencies like natural disasters.
10. **Job Opportunities**: Find job listings and career resources in the state.

State portals aim to make government services more accessible, transparent, and efficient.

College Portals in India

College portals in India help students find information about colleges and courses.

Key Features of College Portals:

1. **Comprehensive Database**: Lists over 20,000 colleges in different fields of study.
2. **Course Information**: Provides details about courses, duration, and eligibility.
3. **Rankings**: Shows college rankings based on faculty, infrastructure, and placements.
4. **Admission Guidance**: Guides students through the admission process and entrance exams.
5. **Reviews and Ratings**: Includes student and alumni reviews to help choose the right college.
6. **Comparison Tool**: Compare colleges based on fees, rank, and other factors.
7. **Exam Information**: Provides details on entrance exams and tips for preparation.
8. **Scholarships**: Information on available scholarships and financial aid.
9. **Career Guidance**: Offers resources for career planning and job placements.
10. **User-Friendly Interface**: Makes it easy for students and parents to search for colleges.

RAM vs ROM

SPYNOTES

RAM (Random Access Memory)	ROM (Read-Only Memory)
Volatile – contents are erased when the power is turned off.	**Non-volatile** – contents are not erased when the power is turned off.
Read and write operations are possible.	**Only read operation** is possible.
RAM (Random Access Memory)	**ROM (Read-Only Memory)**
Holds **data and programs during execution**.	Contains **pre-programmed data** at the time of manufacturing.
Provides **runtime memory** to the computer.	Does not provide runtime memory.
Types include **SRAM** and **DRAM**.	Types include **PROM**, **EPROM**, and **EEPROM**.

SSD vs HDD

SSD (Solid-State Drive)	HDD (Hard Disk Drive)
Made of **electronic components**.	Made of **magnetic disks**.
Contains **no moving parts**.	Contains **moving parts** (spinning disks).
Faster than HDD.	**Slower** than SSD.
More **expensive** than HDD.	Less **expensive** than SSD.
Generates little or no noise.	**Generates noise**, often louder.
Consumes **less electricity**.	Consumes **more electricity**.

This format makes it easier to compare and understand the key differences between each pair of technologies.

2 MARK QUESTIONS & ANSWERS

Q1. What is the Internet? Name two common applications of the Internet.

SPY NOTES

- **Ans.** The Internet is a global network of interconnected computer networks that allows data exchange. It is also known as a network of networks.
- **Applications:** Communication, E-Commerce.

Q2. List four applications of the Internet.

- **Ans.** Communication, E-Commerce, Social Networking, Job-hunting.

Q3. Define WWW.

- **Ans.** WWW stands for World Wide Web. It is an information system where different kinds of files or resources are hosted and uniquely accessed via a Uniform Resource Locator (URL) address.

Q4. Define URL and TCP/IP.

- **Ans.**
  - **URL** stands for Uniform Resource Locator. It is a unique identifier for a web resource with specifications on how and where to access it.
  - **TCP/IP** refers to Transmission Control Protocol and Internet Protocol, which are a set of rules governing the linking of computer systems or devices to the Internet and other similar networks.

Q5. What are the uses of a Modem?

- **Ans.** A modem (Modulator-Demodulator) is used to convert digital data from a computer into analog signals for transmission over telephone lines and vice versa.

Q6. List four commonly used web browsers.

- **Ans.** Google Chrome, Microsoft Edge, Mozilla Firefox, Opera.

Q7. What is a web browser?

- **Ans.** A web browser is a client-side application program that searches and retrieves information from the World Wide Web, displaying it as web pages on the user's device.

Q8. Define a search engine. Give two examples of search engines.

- **Ans.** A search engine is a software program or system designed to help users find information stored on the internet or within a specific database.
- **Examples:** Google, Yahoo.

Q9. What do you mean by Digital India?

- **Ans.** Digital India is a flagship program of the Government of India aimed at transforming the country into a digitally empowered society and knowledge economy, with services being delivered electronically to reduce paperwork and enhance accountability.

SPYNOTES

Q10. Define CPU.

- **Ans.** The CPU (Central Processing Unit) is the primary component of a computer that performs arithmetic, logical, and other operations to process data and produce usable output.

Q11. Write the names of two input and output devices.

- **Ans.**
    - **Input devices:** Mouse, Keyboard. o **Output devices:** Monitor, Printer.

Q12. Compare between SSD and HDD.

- **Ans.**
    - SSD (Solid State Drive) has faster read/write performance, especially for random and sequential data retrieval, compared to HDD (Hard Disk Drive).
    - SSDs are becoming more popular in desktops and laptops due to their superior speed and performance.

Q13. Name two examples of impact and non-impact printers.

- **Ans.**
    - **Impact printers:** Dot-matrix, Daisywheel.
    - **Non-impact printers:** Inkjet, Laser.

Q14. Define ALU.

- **Ans.** ALU stands for Arithmetic and Logic Unit. It performs all arithmetic and logical operations for a computer system, such as addition, subtraction, comparison, complement, and shift operations.

Q15. What is Email? Name two email service providers.

- **Ans.** Email (Electronic Mail) is a method of exchanging digital messages between electronic devices over the internet.
- **Email service providers:** Google (Gmail), Yahoo.

Q16. Compare between EPROM and EEPROM.

- **Ans.**
    - **EPROM (Erasable Programmable Read-Only Memory):** Its contents are erased using ultraviolet light.
    - **EEPROM (Electrically Erasable Programmable Read-Only Memory):** Its contents are erased using electricity.

Q17. Classify the types of web search queries.

SPYNOTES

- **Ans.** There are three main types of web search queries:

    1. **Navigational:** The user intends to navigate to a website they have in mind or have visited before.
    2. **Informational:** The user seeks to find information related to the search term, typically from linked static web pages.
    3. **Transactional:** The user intends to perform an action, such as a transaction or further interaction on a website.

Q18. Compare Primary Memory and Secondary Memory.

- **Ans.**
    - **Primary Memory:**

        1. Data can be directly transferred from primary memory to the processor.
        2. It is faster than secondary memory.
        3. It is smaller in size. o **Secondary Memory:**

    1. Data cannot be directly transferred from secondary memory to the processor.
    2. It is slower than primary memory.
    3. It is larger in size.

LONG QUESTIONS

1. What is a web browser? Discuss common features of a web browser.
2. Define a search engine. How does a search engine work? Explain.
3. Explain different types of computer memory briefly.
4. Explain different components of a computer with a block diagram.
5. What is Digital India? Explain its key vision areas.

OS

INSTALLATION:- What is software?

SPY NOTES

Software is a set of instructions, data or programs used to operate computers and execute specific tasks.

It is the opposite of hardware, which describes the physical aspects of a computer.

Software is a generic term used to refer to applications, scripts and programs that run on a device.

It can be thought of as the variable part of a computer, while hardware is the invariable part.

The two main categories of software are application software and system software. An application is software that fulfills a specific need or performs tasks. System software is designed to run a computer's hardware and provides a platform for applications to run on top of.

Application software. The most frequently used software is application software, which is a computer software package that performs a specific function for a user or, in some cases, for another application. An application can be self-contained, or it can be a group of programs that run the application for the user. Examples of modern applications include office suites, graphics software, databases, database management programs, web browsers, word processors, software development tools, image editors and communication platforms.

System software. These software programs are designed to run a computer's application programs and hardware. System software coordinates the activities and functions of the hardware and software. In addition, it controls the operations of the computer hardware and provides an environment or platform for all the other types of software to work in. An operating system (OS) is the best example of system software; it manages all the other computer programs. Other examples of system software include firmware, computer language translators and system utilities.

SPYNOTES

1 What is OS ?

An os is a system software .

It works as interface between user and computer hardware.

It co- ordinate between different devices.

It schedule multiple tasks as per priroty .

It manages computer hardware and provide common service to run user programs.

Every computer have at least one os to run other programs like MS office , Chrome etc.

Without os a computer / mobile can’t be work .

2 linux

It is an operating system .

It was developed by Linux Torvalds in 1991 at AT & T bell Labaratories.

It is a open source operating system.

It is a multi user and multiple programming os.

It is also support multitasking features.

It is portable that is used

everywhere. **Features Of Linux**

- **Open Source:** Linux is developed collaboratively by a global community of developers and is freely available to use, modify, and distribute.
- **Stability and Reliability:** Linux is known for its stability and reliability, making it a popular choice for servers and mission-critical systems.
- **Security:** Linux is inherently more secure than some other operating systems due to its robust permissions system and the availability of frequent security updates.
- **Customizability and Flexibility:** Linux offers a high degree of customization, allowing users to tailor their operating system to their specific needs and preferences.Linux is highly customizable, which means that users can modify the system to suit their needs.
- **Performance:** Linux is often more efficient in terms of resource usage, making it suitable for running on older hardware or in resource-constrained environments.
- **Compatibility:** Linux supports a wide range of hardware architectures and file systems, making it versatile and adaptable to various use cases.

SPYNOTES

3 MS windows

It is a operating system developed by Microsoft .

It provides a way to store files run software, play games watch videos and connect to the internet.

The first version of windows released in 1985.

Windows 95 was a replacement of windows 3.1.

After that windows 98 , windows NT , Windows 2000, Windows XP , Windows Vista , Windows 2007 and Windows 2008.

Over a dozen version of windows were released after that including the current version , Windows 10 and 11.

Functions of the Windows Operating System

The functions of the Windows operating system are crucial in running various applications and programs on computers or laptops. Some of the functions of the Windows operating system include:

Managing Computer Resources: The primary function of the Windows operating system is to manage and organize computer resources such as CPU, RAM, and hard disk. The Windows operating system will complete various tasks such as opening applications, accessing the internet, and printing documents using these resources.

Providing an Interface: The Windows operating system provides a Graphical User Interface (GUI) that allows users to access and use various applications and programs easily. This interface allows users to select menus, click icons, and navigate various applications easily.

Providing Compatibility: The Windows operating system is designed to support various hardware and software devices, making it easier for users to install and use different applications and programs on their computers or laptops. Windows also provides the ability to run programs and applications designed for different versions of the Windows operating system.

Facilitating Network Setup: Windows operating system provides various tools to facilitate network setup, such as network configuration, firewall configuration, and network access configuration. This allows users to connect to networks and share data with other devices in the network easily

SPYNOTES

4 Unix

It is the most popular operating system.

It is a multiuser OS which means that more than one person can work on the same computer at the same time.

It also supports multi tasking

The first version of UNIX was introduced during 1970s.

It was designed by ken Thompson at AT & T Bell laboratories and its code is written by Denis Ritche

The source code of UNIX Os was written in C language

Unix is portable that is fit for any hardware and used everywhere.

Some of the Key Features of UNIX Include

1. **Multiuser support:** UNIX allows multiple users to simultaneously access the same system and share resources.
2. **Multitasking:** UNIX is capable of running multiple processes at the same time.
3. **Shell scripting:** UNIX provides a powerful scripting language that allows users to automate tasks.
4. **Security:** UNIX has a robust security model that includes file permissions, user accounts, and network security features.
5. **Portability:** UNIX can run on a wide variety of hardware platforms, from small embedded systems to large mainframe computers.

Step-by-step procedure to install Ubuntu OS on your system:

Step 1: Prepare Bootable Media

- Plug the bootable USB drive that contains the Ubuntu OS into your system. **Step 2:**

  Set Boot Priority in BIOS

- Restart the computer and access the BIOS settings. This can be done by pressing specific function keys (like **F1**, **F2**, **F10**, **F12**, or another key, depending on your computer's manufacturer).
- Once in the BIOS settings, set the USB drive as the primary boot device by adjusting the boot priority.
- Save and exit the BIOS settings. **Step 3: Boot from USB Drive**
- The system will now boot from the USB drive. The installer will check the disk and prepare to install the Ubuntu operating system. **Step 4: Ubuntu Welcome Screen**
- After the initial boot, you will see the Ubuntu 20.04 (or any other version) welcome page.
- Select **Install Ubuntu** and click on it to proceed.

Step 5: Select Language

- Choose your preferred language from the list and click **Continue**.

Step 6: Select Keyboard Layout

- Select your desired keyboard layout and click **Continue**.

Step 7: Choose Installation Type

- You will be prompted to choose which apps to install. You can select **Normal installation** (which includes most apps) or **Minimal installation** (which includes only basic utilities).

SP NOTES

- You can also choose to **Download updates while installing Ubuntu** by checking the corresponding box.

Step 8: Select Installation Type for OS

- You will be asked how you want to install Ubuntu:
    - **Erase disk and install Ubuntu** (this will remove all data on the disk and install Ubuntu).
    - **Something else** (to create custom partitions).
- After selecting an option, confirm your choice and proceed.

Step 9: Select Timezone

- Choose your timezone, for example, **Kolkata**, and click **Continue**. **Step 10: Create User Credentials**
- Enter your **name**, **computer name**, and set up your **username** and **password**. This will be used to log into your system. **Step 11: Complete Installation**
- The installation will begin. This process may take some time, depending on your system and selected options.
- Once the installation is complete, you will be prompted to **Restart** the system.

Step 12: Final Restart

- After restarting, the system will boot into Ubuntu, and you can begin using your new OS.

Five basic features of Unix/Linux shell:

1. Prompt:

- The shell displays a prompt (e.g., $ or #) indicating that it is ready to accept a new command.

2. Command Interpretation:

- When a user enters a command, the shell interprets it and determines which program to run in order to perform the requested task.

3. Multitasking:

- The shell allows users to run multiple commands at the same time, enabling multitasking. It manages jobs and lets users work on more than one task concurrently.

4. Command History:

SPY NOTES

- The shell keeps a history of all previously entered commands. This allows users to quickly repeat or modify commands they've entered before.

5. Wildcards and Aliases:

- Wildcards (e.g., *, ?) allow users to match patterns in filenames or pathnames. Aliases let users define shortcuts for long commands to save time and effort.

Text editor:-

It is a type of computer program that edits plain text.

Such programs are sometimes known as Notepad Or Wordpad software.

Very essential for system administration.

Does not required graphical capability.

It is lightweight , fast, and always available.

The extension of text editior is .txt.

Vi editors

Vi is an old but popular text editor for Linux and other Unix systems. It works differently than most modern text editors. Instead of just typing directly, Vi has different “modes” for different tasks.

One mode is Command mode for moving the cursor around and making edits. Another mode is Insert mode for inserting new text.

There are also modes for running commands. While Vi can be tricky to learn at first with all its modes and keyboard shortcuts, many experienced programmers love using Vi because it allows them to edit files very quickly and efficiently without using a mouse or menus once they get the hang of it. Vi is extremely lightweight and available on virtually every Unix system, making it a reliable choice.

It is a editing tool to create and modify files.

Editing files using the screen oriented text editor Vi is one of the best ways.

It is a standard editior in Linux distribution.

Vim is a popular text editor program used on Linux and other Unix operating systems. It is an improved and updated version of the old vi editor. While vim looks basic, it is actually a very powerful tool for editing files efficiently.

SPY NOTES

It looks like you're describing various Unix shell commands and their functionalities. Here's a summary and correction of what you've provided:

Shell Commands:

Shell commands consist of one or more words separated by whitespace. The first word is the command, and subsequent words are options or arguments. **Syntax:** Command <options> <arguments> There are two types of internal commands in Unix:

1. Directory and File Manipulation Commands:

These commands are used to manipulate files and directories. Some common commands include pwd, cd, ls, etc.

i. pwd (Print Working Directory):

This command prints the complete path of the current working

directory. **Syntax:** $ pwd **ii. cd (Change Directory):**

This command changes the current working
directory. **Syntax:**

$ cd <directory-name>

- cd → moves to the home directory.
- cd .. → moves to the parent directory.
- cd ~ → moves to the home directory. **iii. ls (List Directory Contents):**

This command lists the contents of a
directory. **Syntax:**

$ ls <directory-name>

---

2. Terminal, Information & Utility Commands:

These commands are related to terminal management.

i. clear (Clear the Terminal):

This command clears the terminal screen.
Syntax:

$ clear **ii. echo (Write**

to Standard Output):

This command writes a string to the standard output device (typically the terminal).
Syntax:

SPYNOTES

$ echo "Hello,

world" **iii. repeat**

(Repeat a

Command):

This command repeats a command a specified number of times.

Syntax:

$ repeat <number> <command>

I hope this helps! Let me know if you need further clarification.

Open Source Software VS Closed Source Software

S.No.	OPEN SOURCE SOFTWARE	CLOSED SOURCE SOFTWARE
01.	Open source software refers to the computer software which source is open means the general public can access and use.	Closed source software refers to the computer software which source code is closes means public i not given access to the source code.
02.	Open Source Software in short also referred as OSS.	Closed Source Software in short also referred as CSS
03.	The source code of open source software is public.	In closed source software the source code is protected.

	This code can be modified by other users and organizations means that the source code is available for anyone to look at.	The only individual or organization who has created the software can only modify the code.
04.		
05.	The price of open source software is very less.	The price of closed source software is high.
S.No.	**OPEN SOURCE SOFTWARE**	**CLOSED SOURCE SOFTWARE**
06.	There is no so much restrictions on users based on usability and modification of software.	There is so much restrictions on users based on usability and modification of software.
07.	Programmers compete with each other for recognition.	Programmers do not compete with each other for recognition.
08	It is purchased with its source code.	It is not purchased with its source code.

SYNOTES

09	Open software can be installed into any computer.	Closed software needs have a valid license before installation into any computer.
10.	Open source software fails fast and fix faster.	Closed source software has no room for failure.
11.	In open source software no one is responsible for the software.	In closed source software the vendor is responsible anything happened to software.
12.	Examples are Firefox, OpenOffice, Gimp, Alfresco, Android, Zimbra, Thunderbird, MySQL,	Examples are Skype, Google earth, Adobe Flash, Virtual Box, Adobe Reader, Microsoft office, Micros Windows, WinRAR, mac OS, Adobe Flash Player etc

SPY NOTES

Linux vs windows

S.NO	Linux	Windows
1.	Linux is a open source operating system.	While windows are the not the open source operating system.
2.	Linux is free of cost.	While it is costly.

S.NO	Linux	Windows
3.	It’s file name case-sensitive.	While it’s file name is case-insensitive.
4.	In linux, monolithic kernel is used.	While in this, hybrid kernel is used.
5.	Linux is more efficient in comparison of windows.	While windows are less efficient.
6.	There is forward slash is used for Separating the directories.	While there is back slash is used for Separating th directories.
7.	Linux provides more security than windows.	While it provides less security than linux.
8.	Linux is widely used in hacking purpose based systems.	While windows does not provide much efficiency hacking.

SPY NOTES

HTML 4 (UNIT 3)

3.1 Hypertext Markup Language 4 (HTML4)

HTML (Hypertext Markup Language) is a fundamental tool for building web pages and rendering them in web browsers. The World Wide Web (WWW) is composed of countless interconnected web pages, and when these pages are organized for a specific purpose, they form what we call websites.

Importance of HTML-

HTML has been instrumental in the development of the WWW. Over time, various versions of HTML have emerged, each adding new features and improving functionality. HTML4 is a significant version that remains widely supported across web browsers today. **Features of HTML4**

- Markup Language: HTML4 is designed to be easily interpretable by almost all web browsers.
- Scripting and Style Sheets: In addition to text and multimedia support, HTML4 allows for the integration of scripting languages (like JavaScript) and style sheets (CSS), enhancing the presentation and interactivity of web pages.
- Multimedia Support: HTML4 introduces improved support for multimedia content, enabling richer user experiences.
- Frames and Objects: This version supports frames and the embedding of objects, allowing for more complex layouts.
- Text Direction and Accessibility: HTML4 provides better support for right-to-left text and mixed-direction text, as well as enhancements to forms and tables, improving accessibility for users with disabilities.

Core Functionalities of HTML Documents

1. Hypertext: This refers to regular text that can link to other documents, allowing for seamless navigation across the web. Hyperlinks can be stored, read, searched, and edited just like any other text.
2. Markup: Markup is the system used to annotate a document, enabling the intended text to be visually distinct from other content. This includes using tags to format text, create lists, and define headings, among other elements.

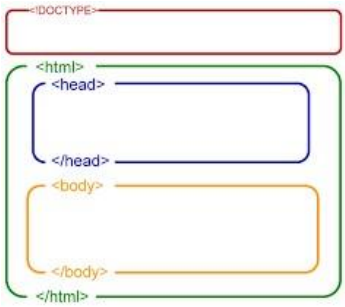
Overall, HTML4 played a crucial role in shaping the web as we know it today, setting the foundation for more advanced versions like HTML5, which introduces additional features and capabilities.

Requirements for HTML Development

1. **Browser**: A web browser is essential for viewing and interacting with web pages created using HTML. Some popular web browsers include: o **Internet Explorer** o **Netscape Navigator** o **Mozilla Firefox**
   - o Google Chrome
   - o Opera
   - o **Safari** (not mentioned but also widely used)

2. **Editor**: To write HTML code, you'll need a text editor. A simple text editor like Notepad can be used, but there are many specialized code editors that provide features like syntax highlighting, code suggestions, and more. Some popular options include:
    - **Notepad++**
    - **Sublime Text** o **Visual Studio Code**
    - **Atom**
    - o Brackets

Structure of an HTML Document



An HTML document typically consists of two main sections: the **Head** and the **Body**. Here's a breakdown of each section:

1. Head Section

The Head section contains meta-information about the document, including its title, character set, links to stylesheets, scripts, and other metadata that doesn't display directly on the webpage.

2. Body Section

The Body section contains the content that will be displayed on the webpage, including text, images, links, and other elements.

3.1.2 How to Create a Webpage

Creating an HTML document is a straightforward process that can be done using any text editor. You can use basic editors like Notepad or advanced options like Notepad++. WYSIWYG (What You See Is What You Get) editors, such as Dreamweaver, are also popular because they allow for coding and provide a live preview of the webpage.

Here are the steps to create a simple webpage:

Step-by-Step Guide 1.

Open a Text Editor:

o Start by opening any text editor of your choice (e.g., Notepad, Notepad++, or a WYSIWYG editor).

2. **Write Your HTML Code**:
    - Type your HTML code. For example:

```
<!DOCTYPE html>

<html>
```

```
<head>
  <title>Welcome Page</title>
</head>
<body>
  <h1>Welcome to My Webpage!</h1>
  <p>This is my first webpage created using HTML  .</p>
</body>
</html>
```

3. **Save the File**:
   - Save your document with a .htm or .html extension:
     - Click on the "File" menu and select "Save As."
     - In the "Save as type" dropdown, choose "All Files (*)".
     - Change the name from Untitled.txt to welcome.html and click "Save".
4. **Open Your HTML File in a Web Browser**:
   - You can open the saved file using one of the following methods:
     - **Double-click** the saved welcome.html file.
     - Press **Ctrl + O** in the web browser, then select the file.
     - **Drag and Drop** the HTML file into the browser window.

Viewing Your Webpage

Once opened, your HTML document will be displayed in your default web browser (e.g., Mozilla Firefox). You should see your formatted webpage as per the HTML code you wrote.

3.1.3 Basic HTML Tags

HTML tags are the fundamental components used to structure and format content on web pages. Each tag serves a specific purpose, informing the browser how to display the content.

Common HTML Formatting Tags

Tag	Description	
<CENTER>...</CENTER>	Center-aligns text.	
<P>...</P>	Defines a paragraph.	
** **	Inserts a line break. The text following appears on the next line.	
<B>...</B>	Bolds the text.	
<U>...</U>	Underlines the text.	
<I>...</I>	Italicizes the text.	

<BLOCKQUOTE>...</BLOCKQUOTE>	Indents the text from both sides.	
<FONT>...</FONT>	Formats text with specific font properties (face, color, size).	
<Hn>...</Hn>	Formats headings, where n can be any number from 1 to 6 (e.g., <H1>, <H2>).	
<HR>	Draws a horizontal line (horizontal rule).	
^{...}	Superscripts text (e.g., $e=mc^2$).	
_{...}	Subscripts text (e.g., H_2O).	

Attributes of <P> and <FONT> Tags

Tag	Attribute	Possible Values
<P>	ALIGN	LEFT, RIGHT, CENTER, JUSTIFY
<FONT>	FACE	Any valid font name
	SIZE	Any integer from 1 to 7
	COLOR	Any valid color name or color code (e.g., RED or #FF0000)

Nesting of Tags

Nesting refers to placing one tag inside another. This allows for multiple formatting styles to be applied to a single piece of text. For example:

html

Copy code

```
<B><U><I>Fit India</I></U></B>
```

This nested tag will display "Fit India" as bold, underlined, and italicized in the browser.

Example of Basic HTML Usage

Here's how you can use some of these tags in a simple HTML document:

html

Copy code

```
<!DOCTYPE html>
<html>
<head>
  <title>Basic HTML Tags Example</title>
</head>
<body>
  <h1>Welcome to My Webpage</h1>
```

```
  <p>This is a <b>bold</b> paragraph.</p>
  <p>This is an <u>underlined</u> paragraph.</p>
  <p>This is an <i>italicized</i> paragraph.</p>
  <p><center>This text is centered.</center></p>
  <p>Here is a superscript example: e = mc<sup>2</sup></p>
  <p>And a subscript example: H<sub>2</sub>O</p>
  <hr>
  <p align="center">This paragraph is centered.</p>
  <font face="Arial" color="#FF0000" size="3">This text is red and uses Arial font.</font>
</body>
</html>
```

3.1.4 Page Setting Tags

Page setting tags in HTML are used to define the title of the webpage, its background color, text color, and other display properties. The title of the webpage appears in the title bar of the web browser window. If a title tag is missing, the browser defaults to showing the document's name.

Title Tag

The title tag is placed within the head section of an HTML document. For example:

```
html
Copy code
<head>
  <title>India at the Olympics - Wikipedia</title>
</head>
```

Attributes of the <BODY> Tag

The <BODY> tag has various attributes that allow you to customize the appearance of your webpage. Here are some of the key attributes:

Attribute	Description
BACKGROUND	Used to display an image as the background of the webpage.
BGCOLOR	Specifies the background color of the webpage. You can use color names or RGB values.
TEXT	Sets the color of the normal text in the document. Color names or RGB values can be used.

3.1.5 Listing Tags

HTML provides three primary ways to specify a list of information: unordered lists, ordered lists, and definition lists. Each type contains one or more list elements.

Types of Lists

1. **Unordered List**:
    - Defined with <UL> and </UL> tags. Each list item starts with <LI>, and the closing </LI> is optional. You can use the TYPE attribute to specify the bullet type:
        - DISC (default, hollow round bullet)
        - CIRCLE (hollow circle) ▪ SQUARE (solid square bullet)

Example:

html

Copy code

```
<ul>
  <li>Item 1</li>
  <li>Item 2</li>  <li>Item 3</li>
</ul>
```

2. **Ordered List**:
    - Enclosed within <OL> and </OL> tags. Each list item also starts with <LI>. The TYPE attribute can specify the numbering style:
        - 1 (default, decimal numbers)
        - A (uppercase letters)
        - a (lowercase letters)
        - I (uppercase Roman numerals)
        - i (lowercase Roman numerals)

Example:

html

Copy code

```
<ol>
  <li>First item</li>
  <li>Second item</li>
  <li>Third item</li>
```

```
</ol>
```

3. **Definition List**:

   - Used to describe a list of items. The <DL> tag defines the description list, the <DT> tag defines the term (name), and the <DD> tag describes each term.

Example:

html

Copy code

```
<dl>
  <dt>HTML</dt>
  <dd>A markup language for creating web pages.</dd>
  <dt>CSS</dt>
  <dd>A stylesheet language for describing the presentation of a document.</dd>
</dl>
```

Summary of Listing Tags

Tag	Description
<UL>	Defines an unordered list.
<OL>	Defines an ordered list.
<LI>	Defines a list item.
<DL>	Defines a description list.
<DT>	Defines a term in a description list.
<DD>	Describes each term in a description list.

These tags and attributes are essential for structuring and formatting your webpage content effectively.

3.1.8 Linking Webpages

Linking HTML documents together is a foundational feature of the World Wide Web, allowing users to navigate between various resources. This capability is known as hyperlinking. Hyperlinks can be created using text or images, and they are displayed differently from normal content. Here's a brief overview of how hyperlinks work in HTML.

Hyperlink Characteristics

- Hyperlinks typically appear in blue.
- They are often underlined.
- When hovering over a hyperlink, the cursor changes to a hand icon, indicating that it is clickable.

Creating Hyperlinks

The HTML anchor tag <A> is used to create hyperlinks. The syntax is as follows:

html

Copy code

```
<A HREF="URL">link text</A>
```

Example:

html

Copy code

```
<A HREF="https://www.aicte-india.org/">Link to website of AICTE</A>
```

Internal Document References

In addition to linking to external resources, HTML allows for linking within the same webpage. This is done by naming specific locations on the page, which can then be referenced:

Syntax:

html

Copy code

```
<A NAME="LocationName"></A>

<A HREF="#LocationName">Link Text</A>
```

Images as Hyperlinks

Images can also serve as hyperlinks by embedding an <IMG> tag within the anchor tags. The syntax is:

html

Copy code

```
<A HREF="URL"><IMG SRC="image_name.jpg" ALT="Description"></A>
```

Example Code

Here’s an example HTML document demonstrating linking:

html

Copy code

```
<html>
<head>
   <title>Education - India</title>
</head>
<body>

   <A HREF="#about_aicte">About AICTE</A>
      <A HREF="#about_ugc">About
UGC</A><br><HR>

   <A HREF="https://www.aicte-india.org/">
      <img src="AICTE_LOGO.jpg" width="90" height="90" align="right" alt="Logo AICTE">
   </A>
   <A HREF="https://www.aicte-india.org/">Link to website of AICTE</A><br><br>

   <A NAME="about_aicte"></A>
   All India Council for Technical Education (AICTE) was set up in November 1945 as a national-level apex advisory body to conduct a survey on the facilities available for technical education and to promote development in the country in a coordinated manner.
   <br><HR>

   <A HREF="https://www.ugc.ac.in/">
      <img src="ugc_logo.png" alt="Logo UGC">
   </A>
   <A HREF="https://www.ugc.ac.in/">Link to website of UGC</A><br><br>

   <A NAME="about_ugc"></A>
   The University Grants Commission (UGC) came into existence on December 28, 1953, and became a statutory organization of the Government of India by an Act of Parliament in 1956, for the coordination, determination, and maintenance of standards of teaching, examination, and research in university education.

</body>
</html>
```

Summary

- **Hyperlinks** allow users to navigate between webpages and resources.
- **Anchor Tags** (<A>) are used for creating hyperlinks, both to external sites and internal sections of a webpage.

- **Images** can also be hyperlinks, enhancing the interactivity of a webpage.

3.1.9 HTML Forms

HTML forms facilitate user interaction, enabling users to submit information like registration details or feedback. Forms consist of various components such as text boxes, radio buttons, and command buttons. The data from forms can be sent to a server for processing using either the POST or GET method. **Form Syntax** html

Copy code

```
<FORM METHOD="GET | POST" ACTION="URL">
  <INPUT>
  <INPUT>
</FORM>
```

- **Action**: Specifies the URL to which the form data will be submitted.
- **Method**: Indicates how the form data will be sent (GET or POST).

Summary of Form Components

- **Text Boxes**: Allow users to input text.
- **Radio Buttons**: Enable users to select one option from a set.
- **Check Boxes**: Allow users to select multiple options.
- **Submit Buttons**: Send the form data to the specified URL.

Understanding these elements is crucial for creating interactive and user-friendly web applications.

Input Tag in HTML

The <input> tag is essential for collecting information from users in web forms. Various attributes can be applied to the <input> tag, and different types of input fields can be created. Below are the commonly used types and their attributes:

Input Types and Attributes 1. Textbox Field

- Used for single-line input.
- **Syntax**: <input type="text" name="field_name" size="value" maxlength="value"> o

  Attributes:

  - name: Assigns an internal name for the field.
  - size: Defines the width of the field (integer value).
  - maxlength: Defines the maximum number of characters.

2. Radio Buttons

- Used to select one option from multiple choices. o **Syntax**: <input type="radio" name="group_name" value="option_value">

3. Checkboxes

- Used for selecting multiple options. o **Syntax**: <input type="checkbox" name="option_name" value="option_value">

4. Command Button

- Used for submitting or resetting a form.
- **Syntax**:
  - Submit: <input type="submit" value="Submit">
  - Reset: <input type="reset" value="Reset">

5. **Text Area** o Used for multi-line input.
   - **Syntax**:

html

Copy code

```
<textarea name="textarea_name" rows="number" cols="number"></textarea>
```

- **Attributes**:
  - rows: Number of visible text lines.
  - cols: Width of the text area.

6. Drop Down Box

- Allows users to select from a list of options.
- **Syntax**:

html

Copy code

```
<select name="dropdown_name">
  <option value="value1">Option 1</option>  <option value="value2">Option 2</option>
</select>
```

- **Attributes**:
  - name: Internal name for programming.
  - multiple: Allows multiple selections (optional).

Example of a Simple Web Form

Here's an example of a web form designed for students to participate in an annual day function:

html

Copy code

```
<html>
<head>
  <title>Web Form and its Components</title>
</head>
<body>
  <form action="local_server" method="post" name="form1">
    <h3>Participation Form for Annual Day Function</h3>

    Your Name: <input type="text" name="student_name"><br><br>

    I am a:
    <input name="gender" type="radio" value="Girl"> Girl
    <input name="gender" type="radio" value="Boy"> Boy <br><br>

    Branch:
    <select name="branch">
      <option selected>Computer Science</option>
      <option>Civil</option>
      <option>Mechanical</option>
      <option>Electrical</option>
    </select>
       Year:
    <select name="year">
      <option>First</option>
      <option>Second</option>
      <option>Third</option>
    </select><br><br>

    Address: <textarea name="address" cols="20" rows="3"></textarea> <br><br>

    Choose your participation:<br>
    <input type="checkbox" name="participation" value="song"> Song
```

```
    <input type="checkbox" name="participation" value="instrument"> Instrument Play
    <input type="checkbox" name="participation" value="poem"> Poem
    <input type="checkbox" name="participation" value="debate"> Debate<br><br>

    <input type="reset" name="Reset" value="Reset">
    <input type="submit" name="Submit" value="Submit">
  </form>
</body>
</html>
```

Summary

- The <input> tag is versatile and supports multiple input types, allowing for various data collection methods in forms.
- Textboxes, radio buttons, checkboxes, text areas, and dropdowns are essential components for gathering user input.
- The example provided demonstrates a functional web form, showcasing how different input types can be used effectively to gather student information for an event.

Ex - Participation Form for Annual Day Function

Your Name: Uddhav
Pareek **I am a:**

- Girl
- Boy

Branch: Computer Science
Year:

- First
- Second
- Third

Address: Funarvasu Apartment, Flat No 121, Hanuman Nagar, Nagpur, MH
PIN: 490009
Mail ID: udhhav@gmail.com
Mobile No: 1234567890

Choose your participation:

- Song
- Instrument Play
- Poem

- Debate

Form Output Example

Here's a simple representation of how you might write the HTML for this form:

html

Copy code

```
<html>
<head>
  <title>Participation Form for Annual Day Function</title>
</head>
<body>
  <h3>Participation Form for Annual Day Function</h3>

  Your Name: <input type="text" name="student_name" value="Uddhav Pareek"><br><br>

  I am a:
  <input name="gender" type="radio" value="Girl"> Girl
  <input name="gender" type="radio" value="Boy" checked> Boy <br><br>

  Branch: <select name="branch">
    <option selected>Computer Science</option>
  </select><br><br>

  Year: <select name="year">
    <option selected>First</option>
```

```
    <option>Second</option>
    <option>Third</option>
  </select><br><br>

  Address: <textarea name="address" cols="30" rows="3">Funarvasu Apartment, Flat No 121, Hanuman Nagar, Nagpur, MH</textarea><br><br>

  PIN: <input type="text" name="pin" value="490009"><br><br>

  Mail ID: <input type="email" name="email" value="udhhav@gmail.com"><br><br>

  Mobile No: <input type="text" name="mobile" value="1234567890"><br><br>

  Choose your participation:<br>
  <input type="checkbox" name="participation" value="song" checked> Song<br>
  <input type="checkbox" name="participation" value="instrument"> Instrument Play<br>
  <input type="checkbox" name="participation" value="poem" checked> Poem<br>
  <input type="checkbox" name="participation" value="debate"> Debate<br><br>

  <input type="reset" value="Reset">
  <input type="submit" value="Submit">
</body>
</html>
```

3.2 Cascaded Style Sheets (CSS)

CSS, or Cascading Style Sheets, is a stylesheet language designed for styling the content of web pages. Its primary purpose is to separate content from presentation, allowing HTML to focus solely on the structure and semantics of the content while CSS handles the visual styling. This separation not only enhances website performance but also simplifies maintenance and improves consistency across multiple pages.

While CSS offers numerous advantages, such as faster page loading times and ease of use, it also faces challenges, notably with browser compatibility, as styles may render differently across various web browsers.

3.2.1 Ways to Apply CSS to an HTML Document

There are three primary methods to apply CSS:

1. **Inline CSS**: This method uses the style attribute directly within an HTML element. For example, to change the background color of a webpage to blue:

html

Copy code

```
<body style="background-color: #0000FF;">
```

2. **Internal CSS**: This method involves defining styles within a <style> tag in the <head> section of the HTML document:

html

Copy code

```
<head>
  <style type="text/css">       h3 { background-color: #0000FF; color: #FFFFFF; }
  </style>
</head>
```

3. **External CSS**: This approach links an external CSS file to the HTML document using the <link> element:

html

Copy code

```
<head>
  <link rel="stylesheet" type="text/css" href="mystyle.css" />
</head>
```

The external CSS file (e.g., mystyle.css) may contain styles

like: css

Copy code

```
body { background-color: #808080; }
```

3.2.2 CSS Selectors

Selectors are used to target HTML elements for styling. The main types include:

1. **Element Selector**: Styles all instances of a specified HTML element.

css

Copy code

```
h1 { color: red; }
```

2. **Class Selector**: Styles all elements that belong to a specific class.

css

Copy code

```
.fitness { color: white; background-color: green; }
```

3. **ID Selector**: Styles a specific element identified by its ID.

css

Copy code

```
#shooting { color: blue; font-size: 18px; }
```

3.2.3 CSS Properties

CSS offers a wide range of properties for detailed styling. Here are some commonly used properties:

- **Font Properties**:
  - font-family: Specifies the font type.
  - font-size: Sets the font size (e.g., pixels, points). o font-style: Defines font style (normal, italic, oblique).
  - font-weight: Controls the font's boldness.
- **Text Properties**:
  - text-align: Aligns text (left, right, center).
  - text-decoration: Adds decorations like underline or line-through.
  - text-indent: Indents the first line of text.
- **Color and Background Properties**:
  - color: Sets text color. o background-color: Defines background color.
  - background-image: Sets a background image.

Example of Combining Properties

You can combine multiple properties for a single selector. For example:

css

Copy code

```
p {  font-style: italic;  font-weight: bold;  font-size: 40px;  font-
family: Arial, sans-serif;  text-align: center;  letter-spacing: 3px;
text-transform: capitalize;  color: white;  background-color:
IndianRed;
}
```

Practical Application

To gain hands-on experience with CSS, you can follow these steps:

1. **Create an HTML File**: Create a file (content.html) with various elements (headings, paragraphs, images).

2. **Create a CSS File**: In a separate file (style.css), write CSS rules for your HTML elements.
3. **Link the CSS File**: Use the external CSS method to link the CSS file in your HTML file.
4. **View Changes**: Open the HTML file in a web browser to see the applied styles.

Conclusion

CSS is an essential tool in web development, enabling developers to create visually appealing and well-structured web pages. By mastering CSS, you can enhance the presentation and user experience of your web projects. In the next section, we will explore how to create a basic personal webpage using the concepts learned in this section.

Office Tool

- Application software that assist users inregular office jobs like creating , updating,and maintaning documents handling large amounts of data , creating presentation , scheduling etc.
- Using office tools saves time and effort and lots of repetitive tasks can be done easily.
- Some of the software that do this are :- • Word Processor
  - Spreadsheet
  - Database System
  - Presentation

Ms Office

- Ms office is an office suite of application developed by Microsystem.
- It was first announced by Bill gates on 1 Aug 1988.
- It is proprietary software.
- It is a collection of office related application.

For Ex: Ms Word is used to create document o MS powerpoinet is used to create Presentation o Outlook is used to manage email and calendors

What is openoffice

- The office productivity software suite is available in many languages and is compatiable with all major operating systems , including Apple Mac OS , Microsoft Windows and linux.
- It includes Four main applications writer ,calc , Impress Drawing database And Formula.
- This cost can be an unwanted expense of your business is on a tight budget.

Open office writer

- It is an application software
- It is a word processor package that process textual matter and creats edit , organize and manage document
- It is mentioned in top word processing tools in 2021 for windows
- The most popular version among Open office writer users are 4.1 and 4.0
- The extension for files created in ooo writer files is .ODT(open document text)

Open office Spreadsheet (calc)

- Calc works with documents called spreadsheet.
- It consist of a number of individual Sheets , each containg cells arranged in rows and columns.
- A particular cell is identified by its Column letter and row number.

- These cells hold the individual elements :- Text ,Number and Formula
- Each Spreadsheet can have many sheets and each sheet can have many individual cells.
- In Calc, each sheet can have a maximum of 65636 rows and maximum of 1024 columns for a total of over 67 million cells.
- Extension of an openoffice calc file is .Ods (open document spreadsheet)

Impress

- It is a open office tool to create presentation.
- It is very similar to Microsoft's powerpoint.
- Impress can handle both Microsoft's PowerPoint format (ppt) as well as its own open standard format called open document presenation format (odp).
- You can create slides that contain many different elements including text , bulleted and numberlist.
- The extension for files created in OOo impress files is ODP.

Interpret how to download and install OpenOffice Software.

Answer:

a. To download the current version of Apache OpenOffice Software, visit its official website at https://www.openoffice.org/download/index.html.

b. Next, choose the appropriate options for the operating system, language, and version of the OpenOffice package to be downloaded. Click on the 'Download full installation' button. A full installation file, approximately 135MB in size, will be downloaded.

c. Start the installation by double-clicking the downloaded file. By clicking 'Next', you will be shown a window to choose the installation location.

d. Click the installation button. The installation process will begin, and progress information will be displayed.

e. Then click 'Next'. A 'Customer Information' form will appear to collect your details.

f. After filling in the form, click 'Next'. Another window will appear to choose the setup type.

g. Choose the setup type as "Typical" and click 'Next'.

h. Click the installation button to begin the installation process. After some time, the OpenOffice installation completion wizard will appear. Click 'Finish'. i. Now, a shortcut link will be available on the desktop. You can open OpenOffice by double-clicking the link.

Q1: Explain the features of openoffice .

a. **No licensing fees**: It's free software. Anyone can use and distribute it without any charges.

b. **Open source**: The source code is openly available. Users can distribute, copy, and modify the software according to AOO's open-source licenses. c. **Cross-platform**: The software can be installed on several hardware architectures and multiple operating systems.

d. **Extensive language support**: Its user interface is available in more than 40 languages, including Hindi, Tamil, etc. It also supports spelling, hyphenation, and thesaurus dictionaries in over 70 languages.

e. **Consistent interface**: Provides user interfaces with a similar look and feel for better usability.

f. **No vendor lock-in**: Supports the OpenDocument format (XML), which can be opened in any text editor.

g. **File compatibility**: In addition to its native OpenDocument formats, AOO includes PDF and Flash export capabilities, as well as support for opening and saving files in many common formats including Microsoft Office, HTML, XML, etc. It also includes the ability to import and edit some PDF files.

h. **Community support**: A worldwide community to address software issues and enhance the software.

Q2: Explain the different parts of the Writer interface ?

Answer:

The Writer interface has several parts, such as:

(i) **Title Bar**

(ii) **Menu Bar**

(iii) **Toolbars**

(iv) **Right-click Menus**

(v) **Ruler**

(vi) **Status Bar**

(i) **Title Bar**: It is located at the top of the Writer window and shows the filename of the current document.

(ii) **Menu Bar**: The Menu Bar is located just below the Title Bar and contains various menus. When a menu is clicked, it drops down and displays several commands. These are some of the menus:

- **File**: Apply commands to the current document, such as opening or closing a document.
- **Edit**: For editing the current document (e.g., cut, copy, paste).
- **View**: To control the display of the document on the screen.
- **Insert**: For inserting new elements into the document, such as comments, special characters, graphics, and objects.
- **Format**: For formatting the layout and content of the document.
- **Tools**: Includes spelling checks, object galleries, and configuration options.
- **Table**: To insert, edit, or delete tables in a text document.
- **Windows**: For managing and displaying document windows.
- **Help**: Contains a link to open the AOO help file, check for updates, and provides version and license information.

(iii) **Toolbars**: Writer supports several types of toolbars:

- **Docked Toolbar**: This is the default toolbar that is fixed but can be moved to different locations.

- **Floating Toolbars**: These are context-sensitive and appear depending on the current cursor position or selection.
- **Tear-off Toolbars**: These can be opened via a triangle on the toolbar icons.

(iv) **Right-click Menus**: Users can right-click on a paragraph, graphic, or other objects to open a context menu. This is the fastest and easiest way to access functions for the right-clicked object.

(v) **Ruler**:

- The rulers are used to control and view page margins, paragraph indents, and various alignments of Writer objects.
- It can be shown or hidden via the ruler checkmark in the View menu.

(vi) **Status Bar**:

- The status bar is located at the bottom of the workspace.
- It provides information about the document and convenient ways to quickly change some document features.
- It contains details like the page number, page style, language, Writer mode, file save status, digital signature, and page zooming control, among others.

Q3: Main Parts of the Calc Interface

1. **Menu Bar**: Similar to Writer, it includes menus for data operations, formulas, and tools.
2. **Toolbar**: Contains icons for quick access to common functions like saving, printing, and formatting.
3. **Spreadsheet Area**: The grid where data is entered and manipulated in cells.
4. **Formula Bar**: Displays the content of the selected cell and allows for formula input.
5. **Status Bar**: Shows information about the current selection, such as the average, sum, and count of selected cells.
6. **Sheet Tabs**: Allows navigation between different sheets within the workbook.

Q4: Describe the different parts of the IMPRESS Interface in OpenOffice IMPRESS?

Answer:

The main Impress window has three parts:

1. **Slides Pane**:
   - Displays slide thumbnails. o Select a slide to edit or perform actions like adding, deleting, renaming, or moving slides.
2. **Tasks Pane**:
   - Contains sections such as:
     - **Master Page**: Define page style.
     - **Layout**: Choose or modify slide layouts.
     - **Custom Animation**: Add or modify animations.
     - **Slide Transition**: Set transition types, speed, and timing.
3. **Workspace**:
   - Contains five views:
     - **Normal View**: Main view for slide editing.

- **Outline View**: Shows slides in outline format.
- **Notes View**: Add notes to slides.
- **Handout View**: Set layout for printed handouts.
- **Slide Sorter View**: View and organize slide thumbnails.

Identify the process of Find & Replace text in OpenOffice Writer.

Answer:

To Find Text:

1. Go to **Edit** > **Find & Replace**.
2. Enter the text in the **Find** box.
3. Click **Find Next** to locate the next match or **Find All** to highlight all matches.

To Replace Text:

1. Go to **Edit** > **Find & Replace**.
2. Enter the text to find and the replacement text.
3. Click **Replace** to replace the current match, or **Replace All** to replace all matches.

Information itself refers to meaningful data that has been processed and organized. For example, when data such as a face photo, name, address, bank details, and other personal identifiers are combined, they create information about a specific person or organization.

According to the IT Act 2000, information includes various types such as data, text, images, audio, codes, software, and video.

Additionally, information can be categorized based on its sensitivity and the impact of its disclosure. Organizations often implement security measures such as encryption, access controls, and regular audits to safeguard this information. Protecting information is crucial for maintaining trust, ensuring compliance with regulations, and preventing data breaches that could lead to significant consequences.

In information security, **information** refers to valuable data that needs protection from unauthorized access or changes. This includes:

- **Personal Information**: Details like names, addresses, and social security numbers.
- **Corporate Data**: Trade secrets, business plans, and intellectual property. •

  Healthcare Information: Medical records that must remain confidential.
- **Financial Information**: Banking and credit card details.
- **Government Data**: Classified information that impacts national security

What is Information Security?

- **Definition**: Information Security (InfoSec) refers to the processes and methodologies used to protect confidential, private, and sensitive information in various forms (print, electronic, etc.).
- **Purpose**: To prevent unauthorized access, use, misuse, disclosure, destruction, modification, or disruption of information.
- **Scope**: Applies to all types of data, ensuring its confidentiality, integrity, and availability.
- **Importance**: Essential for safeguarding personal, corporate, and governmental data against threats and breaches.

Information Security Goals (CIA Triad)

The core goals of information security are often summarized as the CIA triad:

1. **Confidentiality**: Ensures that only authorized users have access to sensitive data. This is maintained through access control mechanisms, which prevent unauthorized disclosure. Breaches can occur due to human error, theft, or intentional sharing.
2. **Integrity**: Focuses on the accuracy and authenticity of information. Data should not be altered without proper authorization, and controls are put in place to ensure that only permitted users can make changes.

3. **Availability**: Guarantees that information is accessible to authorized users whenever needed. This involves preventing disruptions from hardware failures, power outages, or other issues through backups, maintenance, and robust system design.

Additional Principles

Beyond the CIA triad, two other important principles enhance information security:

- **Authenticity**: Verifies that users are who they claim to be. This is achieved through methods like usernames, passwords, biometrics, and other identity confirmation processes.
- **Non-repudiation**: Provides assurance that data senders cannot deny their actions, and recipients can verify the sender's identity. This involves proof of delivery and identity validation to ensure accountability in communications.

5.2 THREATS TO INFORMATION SECURITY

This section provides an overview of common information security attacks and vulnerabilities.

5.2.1 Malware

Malware refers to software created with malicious intent. Below are several types of malware:

- **Ransomware**: This type of malware encrypts a user's data, making it inaccessible until a ransom is paid. Notable examples include **CryptoLocker**, **Conti**, and **WannaCry**.
- **Trojan**: Trojans masquerade as legitimate software but create backdoors that allow unauthorized access to the system. Examples include **Flame**, **Banker**, **Downloader**, **Zeus**, and **Beast**.
- **Worm**: Worms exploit vulnerabilities to replicate themselves and spread rapidly across networks. Notable instances include **ILOVEYOU**, **Code Red**, and **W32.Stuxnet**.
- **Spyware**: This type of malware monitors user activity, often to steal sensitive information. Examples include cookies and keyloggers, which record keystrokes to capture credentials.
- **Adware**: Designed to generate revenue through advertising, adware tracks user behavior and sells that information to third parties. Using ad blockers can help mitigate adware's impact.
- **Keyloggers**: A form of spyware specifically aimed at capturing keystrokes. They can record user input in real time or save it for later retrieval. Examples include **ComputerSpy**, **Kidlogger**, and **Syprix**.
- **Virus**: A virus attaches itself to legitimate programs and replicates to infect systems. They can disrupt normal operations and corrupt files. Famous viruses include **MyDoom**, **ILOVEYOU**, and **Slammer**.

- **Sweepers**: These programs are designed to delete data from targeted machines, often used for malicious purposes.
- **Backdoor**: A backdoor allows attackers to bypass normal authentication methods to gain unauthorized access to a system. Examples include **Deep Throat**, **Portal of Doom**, and **NetBus**.

Social Engineering Attacks

The people can be tricked or psychologically manipulated with help of technology to take some actions or divulge confidential information.

Some popular attack is as under:

Phishing: It is one of the common types of social engineering scams. The hacker typically sends an email or text to the target, seeking information that might help with a more significant crime. For example, a hacker might send emails that appear to come from a source trusted by the victim. That source might be a bank, for instance, asking email recipients to click on a link to log in to their accounts. Those who click on the link, though, are taken to a fake website that, like the email, appears to be legitimate. If they log in at that fake site, they are essentially handing over their login credentials and giving the crook access to their bank accounts .

Vishing: It is the voice version of phishing. "V" stands for voice, but otherwise, the scam attempt is the same. The hacker uses the phone to trick a victim into handing over valuable information. For example, a hacker might call an officer, posing as a government officer. The hacker might prevail upon the victim to provide login credentials or other information that could be used to target the Organization.

Smishing: It is the text version of phishing which is an acronym for SMS phishing.

Baiting: In such a scam a USB drive or other electronic media is preloaded with malware and supplied to users. When a user plugs this device into their system, malware will enable hackers to hack your computer.

Quid pro quo scam: It is another type of social engineering attack that involves an exchange as I give you this, and you give me that. Hackers make the victim believe as a fair exchange, but that's far from the case, as the cheat always comes out on top.

For example, a hacker may call a target, pretending to be an IT support technician. The victim might hand over the login credentials to their computer, thinking they are receiving technical support in return. Instead, the hacker can now take control of the victim's computer, loading it with malware or, perhaps, stealing personal information from the computer to commit identity theft.

Network Threats

Sniffers: Sniffers are programs to monitor network traffic via tracing network packets. These can be used to gather important information which will be helpful in the attack. Windump, tcpdum, wireshark are some examples of sniffers.

Botnet: A infected device is termed as the compromised device. When a group of such compromised devices (zombies) are under the control of some malicious user then the user can use this network of zombies to attack other systems. Such a zombie network is termed a botnet.

Pharming: Pharming is a process of illegal installation of malware on a computer or a network.

Man-in-the-middle (MitM) attack: Such an attack happens due to insecure communication. In such a cyberattack an attacker relay or possibly alter the ongoing communication between sender and receiver without their knowledge. An attacker can intercept requests and responses and hence become able to read the contents between the sender and receiver. There are various types of MitM attacks as under:

IP spoofing: IP spoofing is the creation of Internet Protocol (IP) packets that have a modified source address to either hide the identity of the sender, impersonate another computer

system or both. It is a technique often used by bad actors to invoke DDoS attacks against a target device or the surrounding infrastructure.

Session hijacking: A session between the user and the server can be hijacked by the attacker. Some of the methods used in this regard are session fixing and session prediction. Here, usually, a valid session between the user and server is taken over by the attacker.

Distributed denial of service (DDoS): DDoS attacks occur when attackers overload servers or resources with requests. Attackers can perform these attacks manually or through botnets, networks of compromised devices used to distribute request sources. The purpose of a DDoS attack is to prevent users from accessing services or to distract security teams while other attacks occur.

COMBATING INFORMATION SECURITY THREATS

We will learn various information security technologies to protect our information from fraudulent users. It is considered that security is an art, not science. It is a continuous process. In case of a security breach, an incident reporting process should be followed to safeguard others.

Firewall

A firewall is a dedicated device, or a computer, that monitors network traffic passing through it and allows routes to be rejected or approved based on rules. It is software or hardware that is usually placed between a secure network and an unsecured network, and it acts as a gateway that ensures that nothing private and malicious things can go out. is not coming in.

Based on protection intension & their location in the network firewalls are classified into the host and network firewalls. A firewall can be an excellent way to stop a denial of service (Dos) attack. It can be used to prevent a hacker from scanning the internal details of your network. The firewall is not a panacea for security as it cannot block every attack. The firewall also won't stop you from downloading a Trojan horse. It also cannot stop internal attacks.

Data Backup

Data backup is the process of creating copies or duplicating the data. Data backup strategy is very common and useful in case of loss, deletion, or corruption of our data. It restores us work till last taken backup. Data backup keeps us capable of maintaining the integrity and

availability goal of information security. Backup can be taken in three ways: incremental backup, differential backup, and full back up.

Virtual Private Network (VPN)

The virtual private network is a network that is constructed by using public wires (usually the Internet) to connect to a private network, such as a company's internal network. Many systems enable the creation of networks using the Internet as the medium for transporting data. These systems use encryption and other security mechanisms to ensure that only authorized users can access the network and that the data cannot be intercepted.

Encryption

Plain data can be converted into a nonreadable format by applying some techniques. Encryption is such technique that disguises plain text to hide the actual data for the sake of achieving security. Cryptographic encryption techniques are used to protect the data and enforce confidentiality during its transmission and storage.

Anti-Virus Software

Anti-virus software not only protects & clean user from malware infection but it provides safety from several other attacks and keeps our information safe. Effective Anti-Virus Software is expected to provide the following features:

- Anti-Virus Features. Anti-Worm Features
  Anti-Rootkit Features.
- Anti-Trojan Features Anti-Spyware Features
  Anti-Phishing Features
- Scan even compressed files
  Scan e-mails
- Automatically detect USB Quarantine infected files.
- Automatically clean infected files
- Instant Messaging Protection
  Registry Protection
- Some popular anti-virus software are Symantec Norton Anti-Virus, MacAfee Anti-Virus, Kaspersky Anti-Virus, Bitdefender Anti-Virus Plus, Avg Anti-Virus, Quick Heal, etc.

Intrusion Detection System (IDS)

IDS contains various tools for real-time monitoring of inbound and outbound traffic in suspect of threats. IDS system alerts the user in case of any fraudulent traffic approaches to our system.

Intrusion Prevention System (IPS)

IPS security solutions are advanced systems, these not only detect the fraudulent traffic source but prevent our system from their attack by blocking requests or ending user sessions. Mostly IDS and IPS are often used together. In IPS various rules and policies are created for incoming and outgoing packets. Policies check the packet information and depending on the traffic rule action to allow or deny is issued.

Information Security Best Practices

In today's digital landscape, the importance of information security cannot be overstated. To protect both personal and organizational data, it's crucial to implement best practices that mitigate potential risks. Below are detailed best practices organized into various categories.

5.4.1 General Computer Usage

1. **Isolated Systems**: Conduct all classified work on a standalone computer without internet connectivity.
2. **Strong Passwords**: Use passwords with at least 10 characters, including letters, numbers, and special characters.
3. **Antivirus Protection**: Install and maintain antivirus software approved by your organization.
4. **Regular Updates**: Ensure that your operating system and applications are regularly updated.
5. **Screen Privacy**: Never leave sensitive information visible on unattended screens.
6. **Lock Workstations**: Use "Ctrl+Alt+Del" and select "Lock this Computer" before stepping away.
7. **Password-Protected Screensaver**: Set screensavers to activate after 2 minutes of inactivity.
8. **Cautious Hardware Use**: Avoid using unverified USB drives or external devices to prevent malware.
9. **Limited Privileges**: Use a non-administrator account for everyday tasks.
10. **Data Encryption**: Encrypt sensitive data before storing or transmitting it.
11. **Regular Backups**: Schedule regular backups of important files.
12. **Remove Unused Software**: Delete unnecessary applications to reduce vulnerabilities.
13. **Restrict Remote Access**: Disable remote access and file-sharing options.
14. **Avoid File Sharing Software**: Steer clear of peer-to-peer file sharing to minimize risks.
15. **Public Computer Caution**: Avoid entering sensitive data on public or shared computers.
16. **Secure Deletion**: Use file shredders to permanently delete sensitive information.

5.4.2 General Internet Browsing

1. **Cautious Clicking**: Avoid clicking on suspicious links or downloading unexpected files.
2. **Source Verification**: Only download software from trusted sources.
3. **Updated Browsers**: Always use the latest version of approved web browsers.
4. **Sensitive Data Precautions**: Do not store sensitive information on internet-connected devices.
5. **Password Management**: Avoid saving passwords in your browser.
6. **Secure Connections**: Look for "https" and a padlock symbol in the browser's address bar.
7. **Enable MFA**: Use multi-factor authentication for all accounts where possible.
8. **Clear Browser History**: Regularly clear your browsing history and cookies.
9. **Classified Data Restrictions**: Do not store government information on private cloud services.
10. **Beware of Pop-Ups**: Avoid clicking on pop-up ads or suspicious prompts.
11. **Popup Blockers**: Use browser settings to block pop-ups.
12. **Free Offers**: Be wary of "free" downloads as they may contain malware.

5.4.3 Password Management

1. **Strong Password Creation**: Use at least 10 characters, mixing letters, numbers, and special characters.
2. **Regular Password Changes**: Change passwords every three months.
3. **No Password Reuse**: Avoid using old passwords.
4. **Secure Storage**: Do not store passwords in plain text.
5. **Confidentiality**: Treat passwords as sensitive information; do not share them.
6. **Unique Passwords**: Use different passwords for each account to minimize risk.
7. **Secure Communication**: Use different channels for sending sensitive passwords.
8. **Disable "Remember Password"**: Avoid using this feature in browsers.
9. **Recognize Weak Passwords**: Avoid common words, patterns, and personal information in passwords.
10. **Password Creation Techniques**: Use phrases or special character substitutions to create strong passwords.
11. **Enforce Password History**: Implement rules that require users to select new passwords.
12. **Set Password Expiration**: Configure systems to enforce maximum password age.
13. **No Password Disclosure**: Avoid revealing passwords in emails or conversations.
14. **No Hints**: Don’t give hints about your password's format.
15. **Privacy in Forms**: Avoid revealing passwords on forms or questionnaires.

5.4.4 Removable Information Storage Media

1. **Disable Auto-Run**: Turn off auto-run features for all removable media.

2. **Encrypt Sensitive Data**: Encrypt classified data before transferring it to removable media.
3. **Use Approved Media**: Store classified information only on organization-designated devices.
4. **Show Hidden Files**: Enable options to view hidden files to detect malicious content.
5. **Scan for Malware**: Always scan removable media with antivirus software before use.
6. **No Unattended Devices**: Never leave removable media unattended.
7. **Restrict Usage**: Implement technical controls to limit the use of portable storage devices.
8. **Office Policy Compliance**: Do not take removable media outside the office without permission.
9. **Secure Storage**: Store removable media securely to prevent theft or damage.
10. **Return Malfunctioning Devices**: Report damaged media to the appropriate authority for handling.
11. **Erase Contents**: Remove data from removable media after use.
12. **Avoid Baiting**: Do not use unknown USB drives to avoid malware infections.

5.4.5 Email Communication

1. **Suspicious Attachments**: Avoid downloading attachments or clicking links from unknown sources.
2. **Classified Information Restrictions**: Do not send classified information via email without proper approval.
3. **Secure Access**: Avoid accessing email accounts over public Wi-Fi.
4. **Disable Password Auto-Save**: Do not enable auto-save for email passwords.
5. **Logout After Use**: Always log out from email accounts after finishing.
6. **Direct URL Entry**: Type URLs directly into the browser instead of clicking on links in emails.
7. **Beware of Phishing**: Do not respond to suspicious emails or requests.
8. **Shortened URLs Caution**: Avoid clicking on tiny or shortened URLs.
9. **Avoid Risky Attachments**: Do not open attachments with risky file extensions.
10. **Enable MFA**: Use multi-factor authentication for email accounts.
11. **Check Login Details**: Verify the last login details of your email account.
12. **Consider Encryption**: Use encryption for sensitive emails when necessary.
13. **Strong Email Passwords**: Use strong passwords for email accounts.
14. **Regular Password Changes**: Change email passwords every 30 days.
15. **Scan Attachments**: Always scan attachments before opening.
16. **Delete Unnecessary Emails**: Regularly clean out your inbox and sent items.
17. **Verify SSL Certificates**: Always check the authenticity of SSL certificates.
18. **Caution with Email URLs**: Avoid clicking on links in emails unless verified.
19. **Disable Preview Pane**: Turn off the preview pane in email clients to reduce risk.
20. **Unsolicited Attachments**: Do not open unsolicited attachments.

5.4.6 Home Wi-Fi Network

1. **Use Strong Encryption**: Enable WPA2 or higher encryption for your Wi-Fi network.
2. **Change Default SSID**: Rename your network's SSID to something non-identifiable.
3. **Update Default Passwords**: Change the default passwords on your router.
4. **MAC Address Filtering**: Consider using MAC address filtering to control access.
5. **Router Shutdown**: Turn off your router when not in use.
6. **Firmware Updates**: Regularly update the firmware of your router.
7. **Disable Remote Management**: Turn off remote management features on your router.
8. **Data Encryption**: Ensure all data transmitted over Wi-Fi is encrypted.
9. **Avoid Direct Connections**: Do not connect the Wi-Fi access point directly to the wired network.
10. **Avoid Open Networks**: Do not auto-connect to unsecured networks.
11. **Avoid WEP Encryption**: Use WPA2 or higher encryption instead of WEP.
12. **Limit DHCP Service**: Disable DHCP when not needed to minimize risks.
13. **Secure All Routers**: Ensure all routers are adequately secured.
14. **Disable Unnecessary Services**: Turn off web and telnet services from external access.
15. **Update Passwords**: Regularly change all network device passwords.
16. **Network Shutdown**: Turn off the network during extended periods of inactivity.
17. **Disable DHCP**: Consider disabling DHCP to enhance security.
18. **Use ISP DNS**: Configure your devices to use ISP-provided DNS addresses.
19. **Manual DNS Configuration**: Manually set DNS on your devices to avoid automatic settings.
20. **Legitimate Firmware Updates**: Always update firmware from the official vendor's website.

5.4.7 Avoiding Social Engineering Attacks

1. **Verify Requests**: Be skeptical of unsolicited requests for information, whether by phone or email.
2. **Personal Information Protection**: Do not disclose personal information in response to email requests.
3. **Be Wary of Phone Scams**: Avoid revealing sensitive information over the phone.
4. **Caution with SMS**: Protect against SMS-based phishing (smishing).
5. **Limit Conversations with Strangers**: Avoid discussing sensitive topics with unknown individuals.
6. **Check URLs Carefully**: Inspect web addresses for subtle changes that may indicate fraud.
7. **Type URLs Directly**: Instead of clicking links, type them directly into the browser.
8. **Avoid Urgency Manipulation**: Be cautious of messages that create a sense of urgency.
9. **Identify Scams**: Delete emails that promise money or involve foreign lotteries.
10. **Change Compromised Passwords**: If you suspect a breach, immediately change your passwords.

11. **Avoid Sharing Sensitive Data**: Don’t provide sensitive information unless absolutely necessary.
12. **Trust Your Instincts**: If something seems off, it’s better to verify than to act quickly.

5.4.8 Smart Device Security Practices

1. **Sensitive Conversations**: Avoid using smart devices for sensitive calls; use basic phones without internet or cameras instead.
2. **Wi-Fi and Bluetooth**: Keep Wi-Fi and Bluetooth off unless needed. Set them to "non-discoverable" when in use.
3. **App Management**: Do not download free apps; they may contain malware.
4. **Repairs**: Do not leave devices unattended during repairs to prevent malware installation.
5. **Antivirus Protection**: Install and maintain antivirus software on smart devices.
6. **Deactivation Alerts**: Contact your service provider immediately if the device is deactivated unexpectedly.
7. **Battery and Heat**: Monitor for rapid battery discharge or overheating, which may indicate malicious activity.
8. **Public Wi-Fi**: Avoid using free Wi-Fi in public places like airports.
9. **Charging Precautions**: Do not connect compromised devices to computers, even for charging.
10. **App Management**: Disable unnecessary applications to minimize risks.
11. **Locking Mechanism**: Set devices to lock automatically after a short period of inactivity.
12. **SMS Caution**: Do not click links or respond to messages from unknown contacts.
13. **Avoid Jailbreaking**: Do not jailbreak devices, as it compromises built-in security.
14. **Monitor Data Connections**: Watch for unauthorized data connections when the device is idle.

5.4.9 Social Networking Security

1. **Protect Sensitive Information**: Avoid storing sensitive data on internet-connected devices.
2. **Privacy Settings**: Use high security settings and limit personal information shared. Monitor posts made by others about you.
3. **Software Security**: Keep antivirus and firewall software updated. Regularly update your browser and operating systems.
4. **Strong Passwords**: Use unique, strong passwords and change them periodically.
5. **Think Before Posting**: Avoid posting content that could be embarrassing or that you wouldn't want strangers to see.

6. **Be Cautious with Links**: Don't click links in unsolicited emails; access sites directly.
7. **Use Trusted Software**: Only install applications from well-known sources.
8. **Avoid Public Wi-Fi**: Do not access personal accounts on public computers or through public Wi-Fi.
9. **Disable GPS**: Turn off GPS encoding in photos to prevent location sharing.
10. **Encrypt Communications**: Use secure connections (HTTPS) whenever possible.
11. **Be Wary of Unsolicited Contacts**: Be cautious of unsolicited requests for information, whether in person or online.
12. **Monitor Financial Statements**: Regularly check bank and credit card statements for unusual activity.

5.4.10 Instant Messaging (IM) Security

1. **Choose Screen Names Wisely**: Avoid using personal information in screen names.
2. **Protect Personal Information**: Never share sensitive info like passwords or credit card numbers over IM.
3. **Limit Communication**: Only chat with known contacts and take safety precautions if meeting someone from IM.
4. **Avoid Unknown Links**: Never open files or links from unknown sources.
5. **Use Public Computers Carefully**: Do not use the auto-login feature on public machines.

5.4.11 Online Transactions / ATM Security

1. **Research Vendors**: Verify the reputation of online sellers before making purchases.
2. **Beware of Phishing**: Be cautious of unsolicited emails asking for personal information.
3. **Monitor Accounts**: Regularly check financial statements for unauthorized transactions.
4. **Use Strong Security**: Avoid writing down PINs and passwords, and use phishing filters in browsers.
5. **Consider Multi-Factor Authentication**: Use MFA for additional security in online banking.
6. **Be Cautious with QR Codes**: Treat QR codes similarly to suspicious links.

ATM Security

ATM(Automated Teller Machine)

1. **Protect Your PIN**: Never share your PIN and cover the keypad while entering it.
2. **Stay Aware**: Use ATMs in well-lit, busy areas and be cautious of suspicious devices.
3. **Regular Account Checks**: Check accounts for unusual transactions.

5.4.12 Public Computer Safety

1. **Delete Personal Information**: Remove any stored data after using public computers.
2. **Check Security Features**: Ensure the browser has necessary security features enabled.
3. **Beware of Keyloggers**: Be cautious of potential keyloggers on public computers.
4. **Log Out**: Always log out of accounts and avoid leaving sensitive information displayed.