DIGITAL MEDIA TECHNOLOGY

DOS (DISK OPERATING SYSTEM)

- A DOS, or disk operating system, is an operating system that runs from a disk drive. The term can also refer to a particular family of disk operating systems, most commonly MS-DOS, an acronym for Microsoft DOS.

- An operating system (OS) is the software that controls a computer's hardware and peripheral devices and allows other software programs to function. Early computers of the 1940s and 1950s did not have disk drives. Instead, they were hard-wired to carry out specific computations.

MAC OS

- What is macOS? MacOS is the computer operating system (OS) for Apple desktops and laptops. It is a proprietary...

- The Macintosh Operating System (Mac OS) is an operating system (OS) designed by Apple Inc. to be installed and operated on the Apple Macintosh series of computers. Introduced in 1984, it is a graphical user interface (GUI) based OS that has since been released as multiple different versions. Initially, Mac OS was known as System Software.

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LINUX OS

- Every Linux-based OS involves the Linux kernel —which manages hardware resources—and a set of software packages that make up the rest of the operating system. Organizations can also choose to run their Linux OS on a Linux server. The OS includes some common core components, like the GNU tools, among others. GNU/Linux operating systems are Unix-like and open source, and based on the Linux kernel. Among the long list of Linux distributions, there are a number of distros that clearly stand out among the others — in terms of number of users, community, features, etc. Discover some details about some of the top Linux distributions.

UNIX OPERATING SYSTEM

- UNIX can run on a wide variety of hardware platforms, from small embedded systems to large mainframe computers. Today, UNIX is widely used in enterprise-level computing, scientific research, and web servers. Many modern operating systems, including Linux and macOS, are based on UNIX or its variants.

COMPUTER NETWWORKS

- A computer network is a system that connects numerous independent computers in order to share information (data) and resources. The integration of computers and other different devices allows users to communicate more easily.

- A computer network is a collection of two or more computer systems that are linked together. A network connection can be established using either cable or wireless media. Hardware and software are used to connect computers and tools in any network.

- A computer network consists of various kinds of nodes. Servers, networking hardware, personal computers, and other specialized or general-purpose hosts can all be nodes in a computer network. Host names and network addresses are used to identify them.

COMPUTER NETWWORKS

- Computer Networks simply work using nodes and links. Data Communication Equipment is simply termed as Nodes. For example, Modems, Hubs, Switches, etc. whereas links in Computer networks can be referred to as a connection between two nodes. We have several types of links like cable wires, optical fibers, etc.

- Computer Networks help in operating virtually.

- Computer Networks integrate on a large scale.

- Computer Networks respond very quickly in case of conditions change.

- Computer Networks help in providing data security.

- **Types of Computer Networks**

- **Division Based on the Communication Medium**

- **Wired Network:** As we all know, "wired" refers to any physical medium made up of cables. Copper wire, twisted pair, or fiber optic cables are all options. A wired network employs wires to link devices to the Internet or another network, such as laptops or desktop PCs.

- **Wireless Network:** "Wireless" means without wire, media that is made up of electromagnetic waves (EM Waves) or infrared waves. Antennas or sensors will be present on all wireless devices. Cellular phones, wireless sensors, TV remotes, satellite dish receivers, and laptops with WLAN cards are all examples of wireless devices. For data or voice communication, a wireless network uses radio frequency waves rather than wires.

# TYPES OF ENTERPRISE COMPUTER NETWORKS

- There are three main types of Enterprise Computer Networks which are mentioned below.

- **1. Local Area Network (LAN):** Local Area Networks are small-scale networks used in small companies or as test networks. It has a limited size.

- **2. Wide Area Networks (WAN):** Wide Area Networks are networks that are used for a larger area than local area networks and are used for long-distance communication.

- **3. Service Provider Networks:** Service Provider Networks are the networks that help in wireless communication, high-speed internet access, etc.

NETWORK TOPOLOGY

BUS TOPOLOGY

- Every computer and network device is connected to a single cable in a bus topology network. Linear Bus topology is defined as having exactly two terminals.

- **Advantages**

- Installation is simple.

- Compared to mesh, star, and tree topologies, the bus utilizes less cabling.

- **Disadvantages**

- Difficulty in reconfiguring and isolating faults.

- A bus cable malfunction or break interrupts all communication.

BUS TOPOLOGY
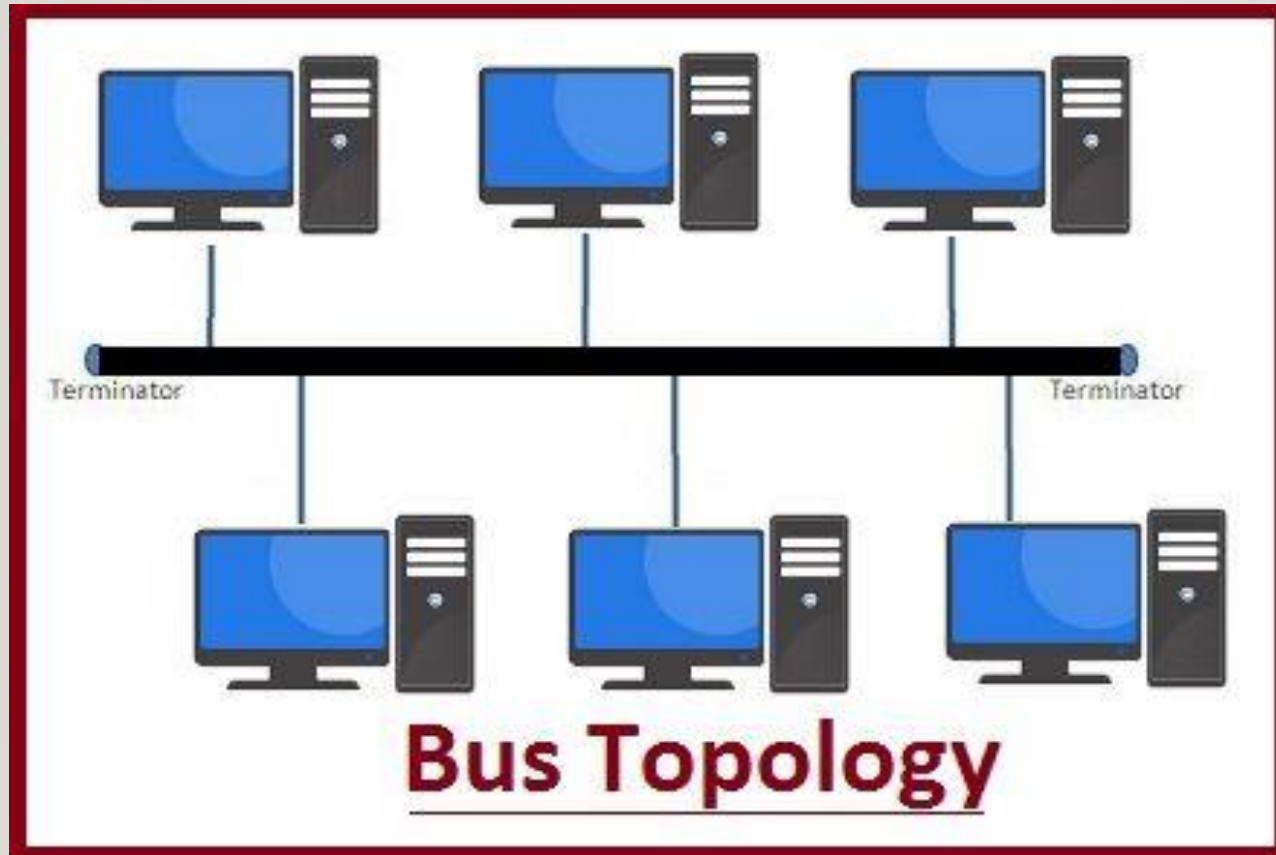
RING TOPOLOGY

- The topology is named ring topology because one computer is connected to another, with the final one being connected to the first. Exactly two neighbors for each device. A signal is passed along the ring in one direction. Each ring incorporates a repeater.

- **Advantages**

- Data transmission is relatively straightforward because packets only move in one direction.

- There is no requirement for a central controller to manage communication between nodes.

- Easy installation & Reconfiguration

- Simplified Faulty connections

- **Disadvantages**

- In a Unidirectional Ring, a data packet must traverse through all nodes.

- All computers must be turned on in order for them to connect with one another.

RING TOPOLOGY
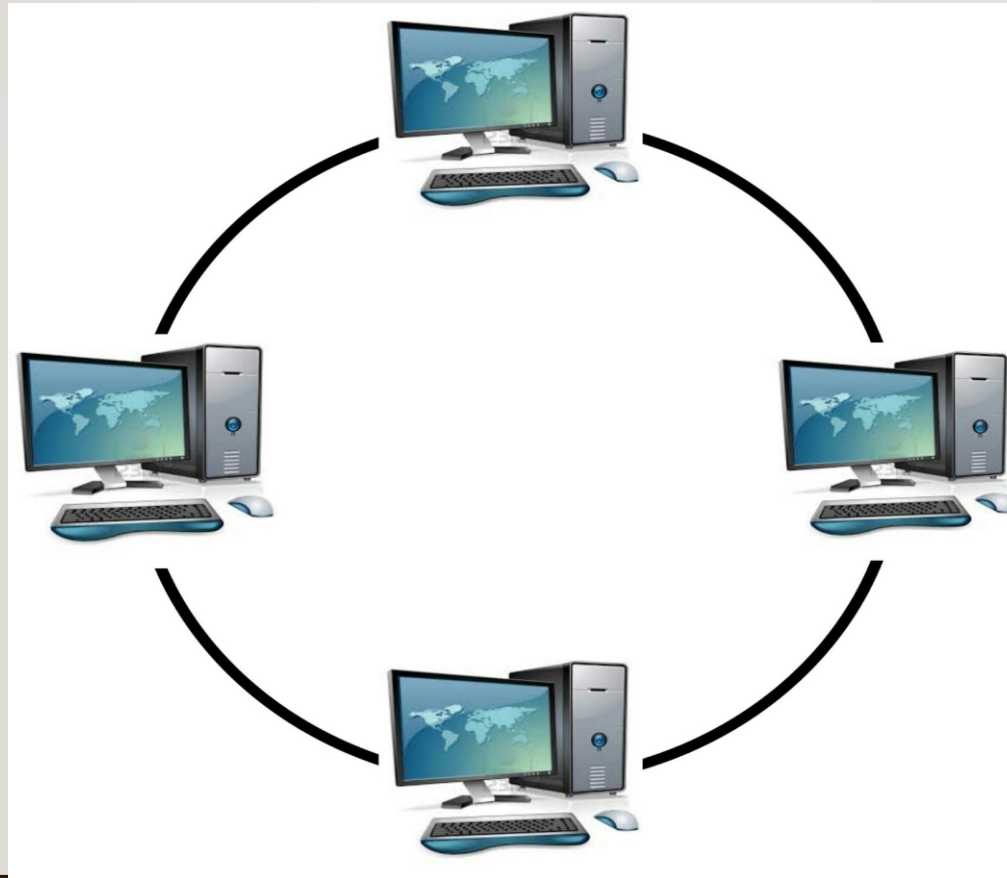
STAR TOPOLOGY

- Each device in a star topology has a dedicated point-to-point link to a central controller, which is commonly referred to as the HUB. There is no direct connection between the devices. Traffic between the devices is not allowed in this topology. As an exchange, the controller is used.

- **Advantages**

- When attaching or disconnecting devices, there are no network interruptions.

- It's simple to set up and configure.

- Identifying and isolating faults is simple.

- Less Expensive than mesh

- Easy to install & configure

- **Disadvantages**

- Nodes attached to the hub, switch, or concentrator is failed if they fail.

- Because of the expense of the hubs, it is more expensive than linear bus topologies.

- More cable is required compared to a bus or ring

- Too much dependency on Hub

STAR TOPOLOGY

Star toplogy
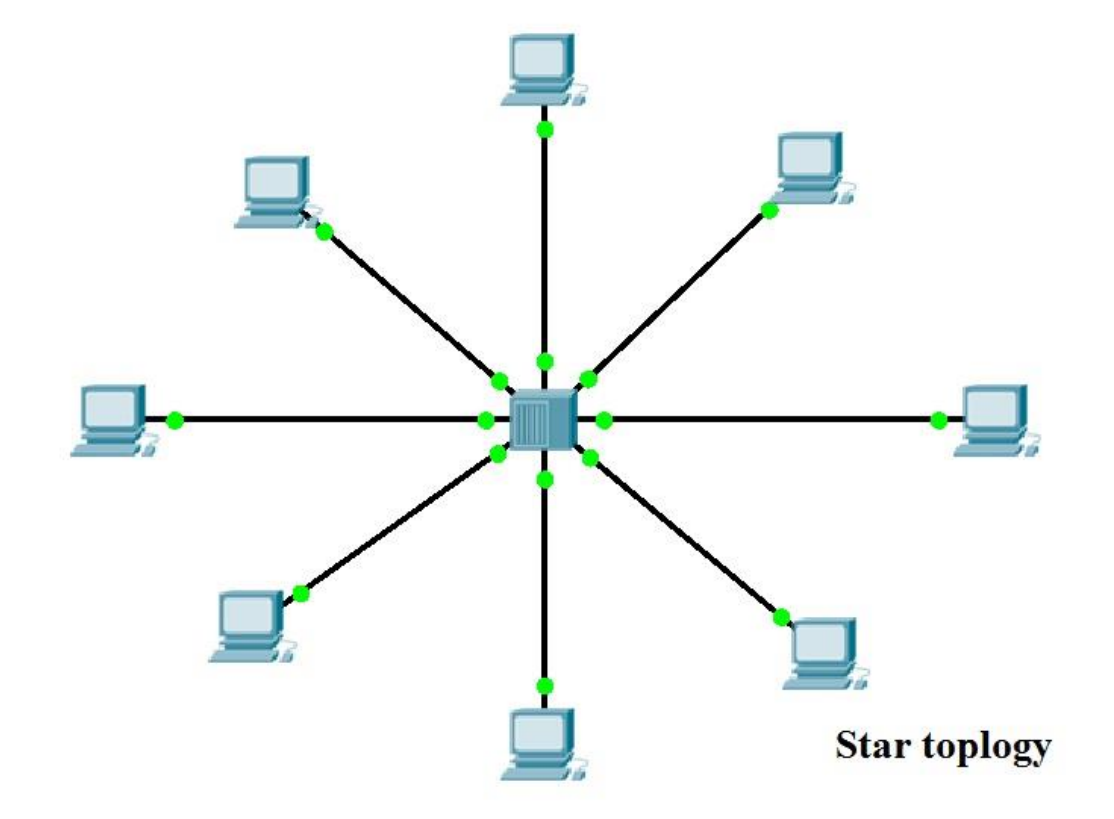
MESH TOPOLOGY

- Every device in a mesh topology has dedicated point-to-point connectivity to every other device. The term "dedicated" refers to the fact that the link exclusively transports data between the two devices it links. To connect n devices, a fully connected mesh network contains n *(n-1)/2 physical channels.

- **Advantages**

- Data can be sent from multiple devices at the same time. This topology can handle a lot of traffic.

- Even if one of the connections fails, a backup is always available. As a result, data transit is unaffected.

- Physical boundaries prevent other users from gaining access to messages

- Point to Point links make fault transmission & fault isolation easy

- **Disadvantages**

- The amount of cabling and the number of I/O ports that are necessary.

- The sheer bulk of wiring can be greater than the available space can accommodate.

- It is difficult to install and reconfigure.

MESH TOPOLOGY
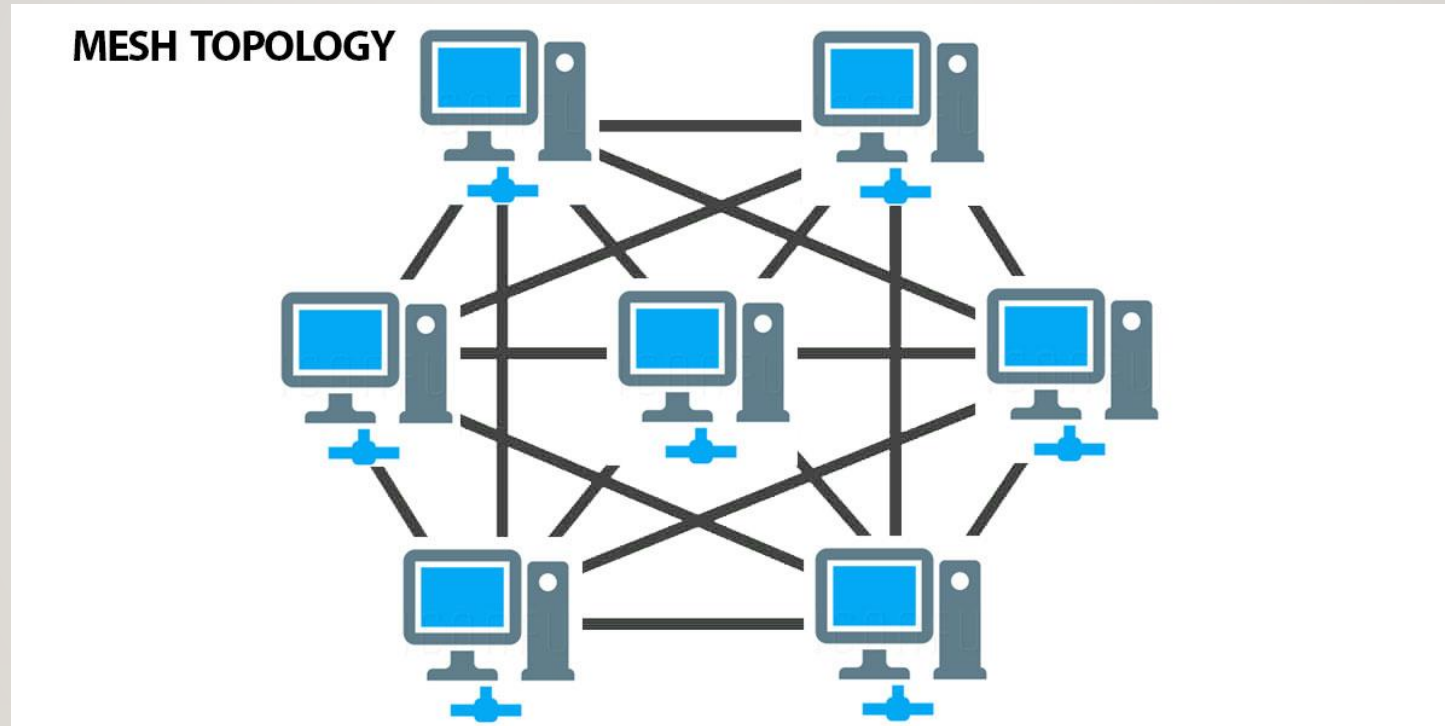
TREE TOPOLOGY

- The topology of a tree is similar to that of a star. Nodes in a tree, like those in a star, are connected to a central hub that manages network traffic. It has a root node, which is connected to all other nodes, producing a hierarchy. Hierarchical topology is another name for it. The number of Star networks is connected via Bus in Tree Topology.

- **Advantages**

- Network expansion is both possible and simple.

- We partition the entire network into pieces (star networks) that are easier to manage and maintain.

- Other segments are unaffected if one segment is damaged.

- **Disadvantages**

- Tree topology relies largely on the main bus cable because of its basic structure, and if it fails, the entire network is handicapped.

- Maintenance becomes more challenging when more nodes and segments are added.

TREE TOPOLOGY
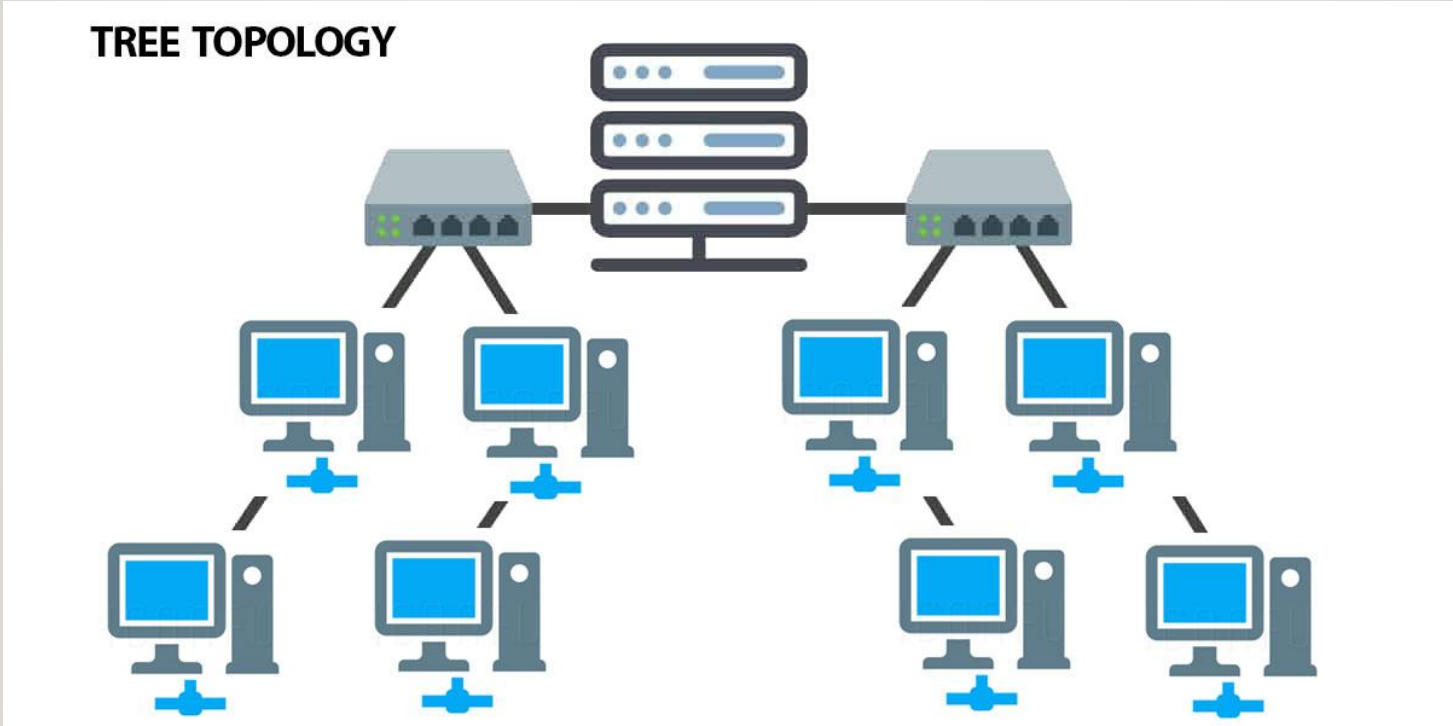
INTERNET

- The Internet is a larger network that allows computer networks controlled by enterprises, governments, colleges, and other organizations all over the world to communicate with one another. As a result, there is a tangle of cables, computers, data centers, routers, servers, repeaters, satellites, and Wi-Fi towers that allow digital data to go around the world.

- The Internet is a vast network of networks that functions as a networking infrastructure. It links millions of computers throughout the world, creating a network in which any computer can talk with any other computer as long as they are both linked to the Internet.

- The Internet is a global network of interconnected computers that communicate and share information using a standardized Internet Protocol Suite.

WEB BROWSERS

- A web browser is an application for accessing websites. When a user requests a web page from a particular website, the browser retrieves its files from a web server and then displays the page on the user's screen. Browsers are used on a range of devices, including desktops, laptops, tablets, and smartphones.

- What is Browser?

- A web browser is a software that enables users to access and view content on the World Wide Web. Its primary function is to locate and retrieve web pages, images, videos, documents, and other files from servers and display them on the user's device.

- For instance, imagine you want to visit a website. Here's where the browser comes in. When you type the website's URL into the browser's address bar and hit Enter, your browser sends a request to the server where the website's files are stored. This communication happens over protocols such as HTTPS (Hypertext Transfer Protocol Secure) or HTTP (Hypertext Transfer Protocol).

- On receiving your request, the server sends back the website's files. These files are often written in languages like HTML, CSS, and JavaScript. Your browser's job is to interpret this code and render it into the web page you see.

- In essence, the browser acts as a bridge between you and the website, sending your requests to the server and translating the server's response into a format you can easily interact with on your device. Without a browser, navigating the vast ocean of internet content would be nearly impossible.

EVOLUTION OF BROWSERS

- The first web browser – or browser editor – was called WorldWideWeb. It was invented by Sir Tim Berners-Lee in 1990.

- During the initial era of the browsers, names like Mosaic, Netscape Navigator, and Internet Explorer dominated the industry.

- But the industry has evolved in the past three decades because of improvements in performance, security aspects, and better user customization.

- Here is the list of modern browsers that rule the industry:

- Google Chrome

- Mozilla Firefox

- Apple Safari

- Microsoft Edge

- Opera

- Brave

FUNCTIONS OF A BROWSER

1. **Web Page Rendering:** When you visit a website, the browser retrieves the website's HTML, CSS, and JavaScript files from the server. It then interprets and processes this code to construct the web page you see on your device. The HTML defines the structure and content of the page, CSS styles the page's appearance, and JavaScript adds interactivity and dynamic elements.

2. **Navigation:** Browsers provide an intuitive interface for navigating the internet. You can enter a website's address (URL) directly into the address bar, and the browser will take you to that specific webpage. Additionally, you can click on hyperlinks within web pages to navigate to other related pages. Browsers also support bookmarks, which allow you to save and organize frequently visited websites for quick access.

3. **Tabbed Browsing:** Tabs revolutionized web browsing by allowing you to open multiple web pages within a single browser window. Instead of opening separate browser instances for each webpage, you can open new tabs, each representing a different webpage. This feature facilitates multitasking and makes it easy to switch between different websites without cluttering your screen**.**

FUNCTIONS OF A BROWSER

1. **Bookmarks and History:** Browsers enable you to save your favorite websites as bookmarks. Bookmarks act as shortcuts, allowing you to quickly revisit those websites without having to remember their URLs. Browsers also maintain a history of the websites you've visited, providing a chronological record that you can browse through to revisit previously viewed web pages.

2. **Search Functionality:** Browsers often include a search bar, typically located in the toolbar. This search bar is integrated with popular search engines like Google, Bing, or DuckDuckGo. Instead of navigating to a search engine's website, you can directly enter keywords or phrases into the search bar. The browser sends your search query to the chosen search engine, which then displays relevant search results.

TYPES OF BROWSERS

- There are several types of browsers available for users, including:

- **Desktop browsers:** These are the most common browsers that users install on their desktop computers or laptops. Examples include Google Chrome, Mozilla Firefox, Microsoft Edge, Apple Safari, and Opera.

- **Mobile browsers:** Browsers designed specifically for mobile devices such as smartphones and tablets are called mobile browsers. Examples include Google Chrome for Android and iOS, Safari for iOS, Firefox for Android, and Opera for Android and iOS.

- **Console browsers**: These are designed for game consoles such as Xbox and PlayStation, allowing users to browse the web from their consoles.

- **Text-based browsers**: Legacy browsers that only display websites as text, without graphics or images, are text-based. Examples include Lynx and Elinks.

SEARCH ENGINE

- A **search engine** is software accessed on the Internet that searches a database of information according to the user's query. The engine provides a list of results that best match what the user is trying to find. Today, there are many different search engines available on the Internet, each with its own abilities and features. The first search engine ever developed is considered Archie, which was used to search for FTP (file transfer protocol) files, and the first text-based search engine is considered Veronica. Currently, the most well-known and widely-used search engine is Google. Other popular search engines include AOL (America Online), Ask.com, Baidu, Bing, DuckDuckGo, and Yahoo.

SEARCH ENGINE

- Also known as a web or internet search engine, a search engine is a (usually web-based) computer program that collects and organizes content from all over the internet. The user enters a query composed of keywords or phrases, and the search engine responds by providing a list of results that best match the user's query. The results can take the form of links to websites, images, videos, or other online data.

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SERVER

- A given application in a computer might function as a client with requests for services from other programs and as a server of requests from other programs. The term server can refer to a physical machine, a virtual machine or to software that is performing server services.

- Servers are high-powered computers built to store, process, and manage network data, devices, and systems. Servers are the engines powering organizations by providing network devices and systems with adequate resources. For businesses, servers offer critical scalability, efficiency, and business continuity capabilities.

- Whether it's hosting a data-heavy website, setting up a shared drive for a department, or managing thousands of queries every minute, servers are the vehicles for hosting and processing-intensive workloads that go beyond the capabilities of a traditional computer.

SERVER

- Servers can do everything a standard desktop computer can do and more. Vice-versa, computers can run server processes, but do so far less productively. Generally, servers offer the following features to the networks they serve:

- **Scalability** to serve a growing or fluctuating number of devices, users, and workloads

- **High processing power** with rising CPU and RAM specs to handle network workloads

- **Reliability** to ensure critical systems remain online and available

- **Collaboration** between personnel with access to shared network resources

- **Cost savings** over time because servers can reduce stress on network devices

CLOUD COMPUTING

- cloud computing is the delivery of computing services—including servers, storage, databases, networking, software, analytics, and intelligence—over the Internet ("the cloud") to offer faster innovation, flexible resources, and economies of scale. You typically pay only for cloud services you use, helping you lower your operating costs, run your infrastructure more efficiently, and scale as your business needs change.

CLOUD COMPUTING

- **Types of cloud computing**

- Not all clouds are the same and no single type of cloud computing is right for everyone. Several different models, types, and services have evolved to help offer the right solution for your needs.

- There are three different ways to deploy cloud services: on a public cloud, private cloud, or hybrid cloud.

TYPES OF CLOUD COMPUTING

- **Public cloud**

- Public clouds are owned and operated by third-party cloud service providers, which deliver computing resources like servers and storage over the internet. Microsoft Azure is an example of a public cloud. With a public cloud, all hardware, software, and other supporting infrastructure is owned and managed by the cloud provider. You access these services and manage your account using a web browser.

TYPES OF CLOUD COMPUTING

- **Private cloud**

- A private cloud refers to cloud computing resources used exclusively by a single business or organization. A private cloud can be physically located on the company's onsite datacenter. Some companies also pay third-party service providers to host their private cloud. A private cloud is one in which the services and infrastructure are maintained on a private network.

TYPES OF CLOUD COMPUTING

- **Hybrid cloud**

- Hybrid clouds combine public and private clouds, bound together by technology that allows data and applications to be shared between them. By allowing data and applications to move between private and public clouds, a hybrid cloud gives your business greater flexibility and more deployment options and helps optimize your existing infrastructure, security, and compliance.

EMAIL

- Email, i.e., electronic mail, is a fast method of exchanging messages between the sender's and receiver's systems using the Internet. You can even send non-text files like images, videos, and audio files as attachments.

- An email is a communication that happens in real time and can get important data across to people in various geographies. An email is a record of the communications that have happened and is stored on the server of the organization. One has to be very cautious while typing out a mail.

TYPES OF EMAIL

- **Newsletters**

- It is a type of email sent by an individual or company to the subscriber. It contains an advertisement, product promotion, updates regarding the organization, and marketing content. It might be upcoming events, seminars, or webinars from the organization.

- **Onboarding emails**

- It is an email a user receives right after the subscription. These emails are sent to buyers to familiarize and tell them about using a product. It also contains details about the journey in the new organization.

TYPES OF EMAIL

- **Transactional**

- These types of emails might contain invoices for recent transactions and details about transactions. If transactions failed then details about when the amount will be reverted. We can say that transaction emails are confirmation of purchase.

- **Plain-Text Emails**

- These types of emails contain just simple text similar to other text message services. It does not include images, videos, documents, graphics, or any attachments. Plain-text emails are also used to send casual chatting like other text message services.