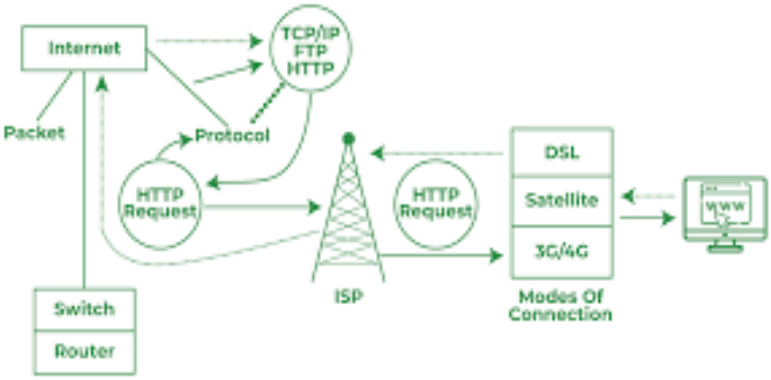
Assignment 1:

1. How internet works?

Ans: Computers connect to each other and to the Internet via wires, cables, radio waves and other types of networking infrastructure.

All data sent over the internet is translated into bits. The Internet works by connecting networks together through a series of routers and switches. A router forwards packets of data between different networks while a switch links devices with a single network.

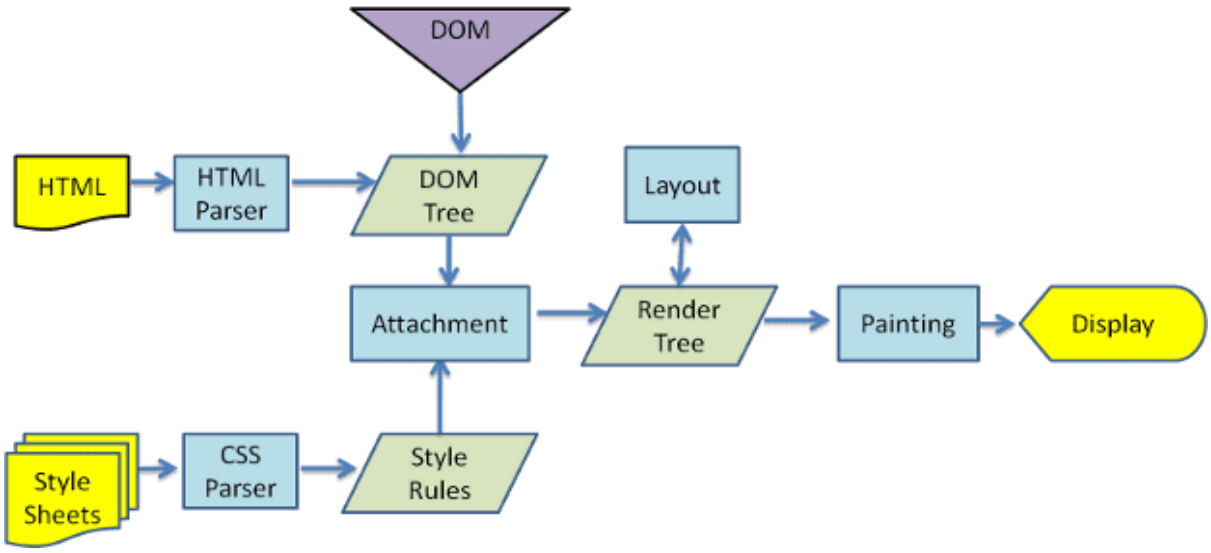
This enables computers to communicate with each other and access content stored on remote servers.



2. How browser works?

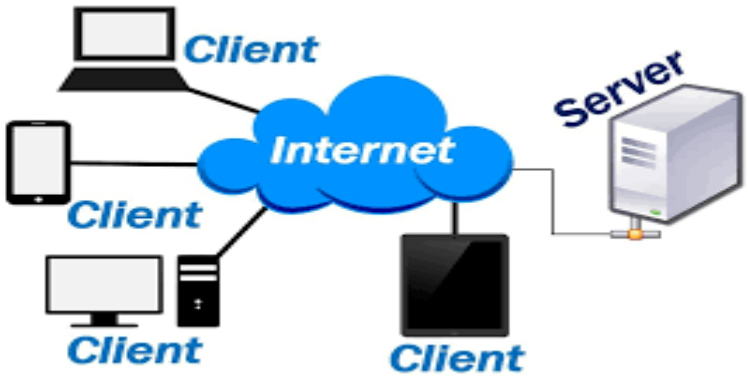
Ans: The process begin with domain name system(DNS),where the browser translates the domain name into IP address to locate the server where the web page is stored. The browser then sends an HTTP request to the server, specifying the path and parameters of the requested resource.

A web browser is a software that enables users to access and view content on the world wide web.



3. What is Server?

Ans: A server is computer that provides a service to another computer program and its user which also known as client. Server is a hardware or software device that processes the request sent over a network and replies to them. In data center, the physical computer that a server program runs on is also frequently referred to as a server.



4. what are the types of server available?

Ans: The types of server available are:

*Web server

*Database server

*Email server

*DNS server

*File server

*FTP server

*DHCP server

*NTP server

5. What is SEO? Importance of SEO?

Ans: SEO refers to the process of improving the visibility of a website or a web page in search engine results pages (SERPs) through organic (non-paid) methods. It involves optimizing various factors such as content quality, keywords, backlinks, and technical aspects of a website to increase its ranking in search engines like Google, Bing, etc.

Importance of SEO: SEO is important because it helps businesses and individuals:

- Increase organic (non-paid) traffic to their websites.
- Reach potential customers who are actively searching for their products or services.
- Build credibility and trust with users.
- Improve user experience and usability of the website.
- Stay competitive in their industry.

6. What is Accessibility?

Ans: Accessibility in web development refers to the practice of designing and developing websites and applications that can be used by people of all abilities and disabilities. This includes visual, auditory, physical, speech, cognitive, and neurological disabilities. Accessibility ensures that all users, including those with disabilities, can perceive, understand, navigate, and interact with websites effectively.

7. What is Markup Language?

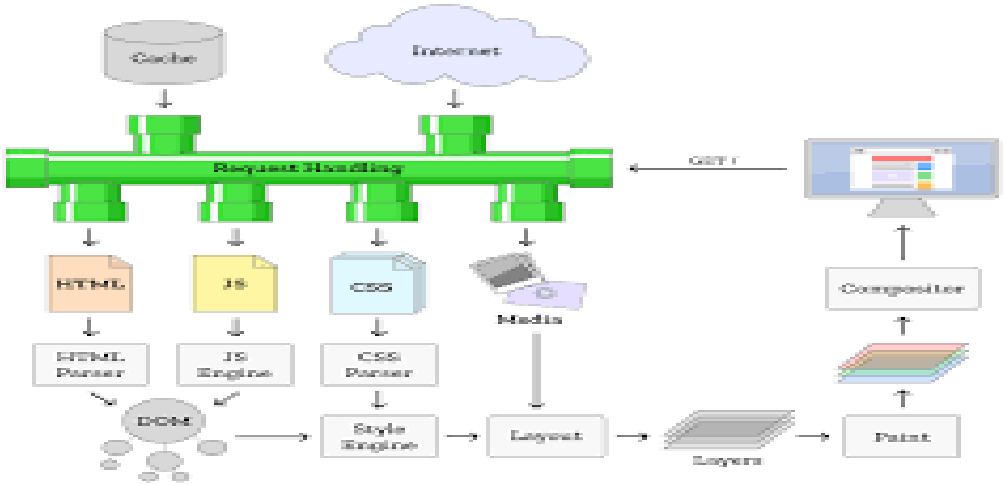
Ans: A markup language is a system for annotating text in a way that is syntactically distinguishable from the text itself. It is used to define the structure and presentation of content within a document. Markup languages are used extensively in web development to create web pages and specify how text should be rendered.

8. What is HTML?

Ans: HTML is the standard markup language used for creating and structuring web pages and web applications. It defines the structure and layout of content on the web, including text, images, videos, forms, and other elements. HTML uses a system of tags and attributes to mark up content and specify how it should be displayed in web browsers.

9. What is browser engine?

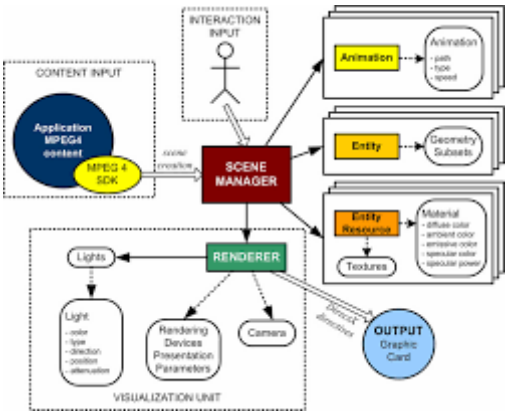
Ans: Browser Engine also known as a layout engine or rendering engine, a browser engine is a core software component that renders web pages. It takes HTML, CSS, and other resources from the web server and interprets them to display web pages on the user's device.



10. What is rendering engine? share the available rendering engine?

Ans: A rendering engine is responsible for rendering the content of a web page, which involves parsing HTML and CSS, laying out content, and painting pixels on the screen. Some popular rendering engines include:

- Blink (used in Google Chrome and Microsoft Edge)
- WebKit (used in Safari and older versions of Chrome)
- Gecko (used in Mozilla Firefox)
- Trident (used in older versions of Internet Explorer)



11. What is JavaScript Engine? share the available JS engine? Purpose of JS Engine?

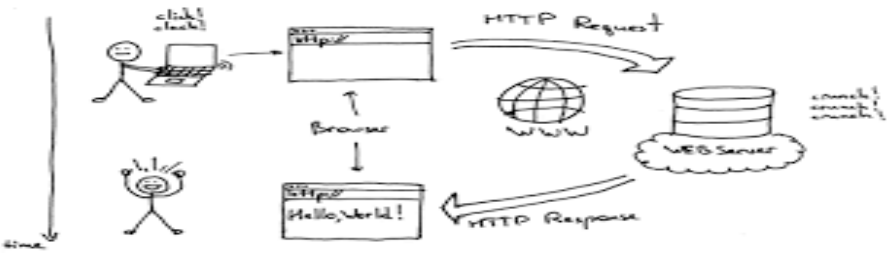
Ans: A JavaScript engine is a program or interpreter that executes JavaScript code. It takes JavaScript code, compiles it into machine code, and executes it within a web browser. Popular JavaScript engines include:

- V8 (used in Google Chrome and Node.js)
- SpiderMonkey (used in Mozilla Firefox)
- JavaScriptCore (used in Safari)

Purpose of JS Engine: The main purpose of a JavaScript engine is to interpret and execute JavaScript code so that web developers can create dynamic and interactive web pages and web applications.

12. How website works?

Ans: A website works by responding to requests from web browsers. When a user enters a URL or clicks on a link, their browser sends a request to a web server. The server processes the request, retrieves the requested resources (HTML, CSS, JavaScript, images, etc.), and sends them back to the browser, which then renders and displays the web page to the user.

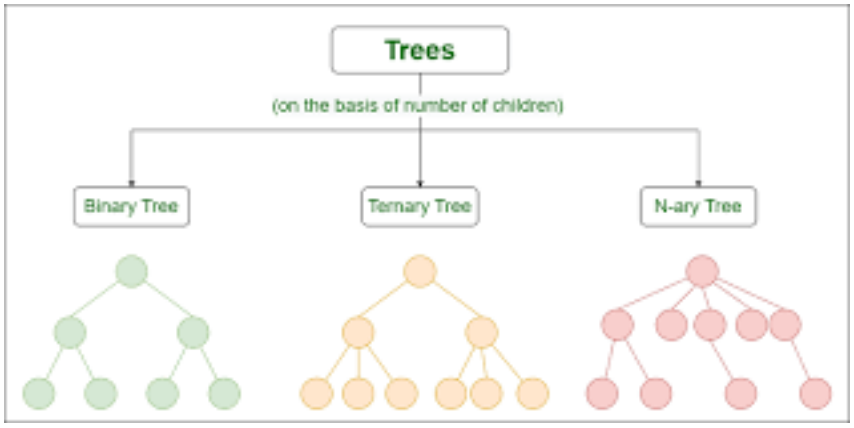


13. What is Data Structure?

Ans: In computer science, a data structure is a way of organizing and storing data so that it can be accessed and manipulated efficiently. Examples include arrays, linked lists, stacks, queues, trees, graphs, etc.

14. Explain Tree Data Structure?

Ans: A tree is a hierarchical data structure consisting of nodes, where each node can have zero or more child nodes. It is used to represent hierarchical relationships between elements. Trees are widely used in computer science for organizing data efficiently, such as in hierarchical file systems, XML/HTML document structures, and in database indexing.



15. What is user agent? share the list and its purpose?

Ans: A user agent is a software agent that acts on behalf of a user. In the context of web browsing, it refers to the web browser that a user is using to access a website. User agents identify themselves to web servers when making HTTP requests. Examples include:

- Chrome (User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/99.0.9999.99 Safari/537.36)

- Firefox (User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:99.0) Gecko/20100101 Firefox/99.0)

- Safari (User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 11_1_0) AppleWebKit/605.1.15 (KHTML, like Gecko) Version/14.0.2 Safari/605.1.15)

Purpose of User Agent: The user agent string helps web servers and websites tailor their responses and content based on the capabilities and preferences of the user's browser.

16. What is Hypertext?

Ans: Hypertext is text displayed on a computer or other electronic device with references (hyperlinks) to other text that the reader can immediately access. It allows non-linear navigation of information by linking related information together.

17. What is HTML Tags?

Ans: HTML tags are keywords (or elements) surrounded by angle brackets that define the structure and content of web pages. They are used to mark up HTML elements and tell web browsers how to display the content. For example, `<p>` tags define paragraphs, `<h1>` to `<h6>` tags define headings, `<a>` tags define hyperlinks, etc.

18. What is HTML Attributes?

Ans: HTML attributes provide additional information about HTML elements. They are always included in the opening tag and are used to modify the element's behavior or appearance. Examples include `src` attribute in `<img>` tags for specifying image source, `href` attribute in `<a>` tags for specifying link destinations, `class` attribute for specifying CSS classes, etc.

19. What is HTML Elements?

Ans: HTML elements are individual components of an HTML document that define its structure. Each element is represented by an opening tag, content, and a closing tag (except for void elements like `<img>`). Elements can contain text, other elements, or both.

20. How do convert elements to tree?

Ans: Converting HTML elements to a tree involves parsing the HTML document to identify tags, attributes, and their hierarchical relationships. Each HTML element becomes a node in the tree, with child elements as descendants of their parent nodes. This hierarchical structure represents the DOM (Document Object Model) tree, which browsers use to render web pages.

21. What is DOCTYPE?

Ans: DOCTYPE (Document Type Declaration) is an instruction to web browsers and validators about the version of HTML or XHTML used in a web document. It is placed at the beginning of an HTML

document before the `<html>` tag. DOCTYPE declarations help browsers render web pages correctly and validate code against the appropriate standards.

22. What are the ways we can save html file?

Ans: HTML files can be saved in various ways:

- Using a text editor (like Notepad, VS Code, Sublime Text) and saving with a `.html` extension.

- Exporting from web design software (like Adobe Dreamweaver, WordPress) to generate HTML files. Using a browser's "Save Page As" feature to save a web page locally.

23. What is charset? why we need to use this?

Ans: Charset (Character Set) defines the encoding standard used to represent characters in a web document. It specifies how characters are mapped to byte sequences. Common charsets include UTF-8, ISO-8859-1, and others. It is important to specify the correct charset in HTML documents to ensure that text displays correctly and special characters are rendered properly across different browsers and devices.

24. What is meta data? what is the purpose of it?

Ans: Metadata is data that describes other data. In the context of web development, metadata in HTML is information about a web page that is not displayed on the page itself but is used by browsers, search engines, and other web services. Examples include `<meta>` tags for specifying page description, keywords, author, viewport settings, etc. Metadata helps improve search engine visibility, social media sharing, and accessibility of web pages.

25. Explain Web Application Architecture?

Ans: Web application architecture refers to the framework or structure of a web application, including components, interactions, and the relationships between them. It typically consists of:

Client-side: Front-end components that run in the user's web browser (HTML, CSS, JavaScript).

Server-side: Back-end components that run on the web server (application logic, databases).

Communication: Protocols and APIs used for client