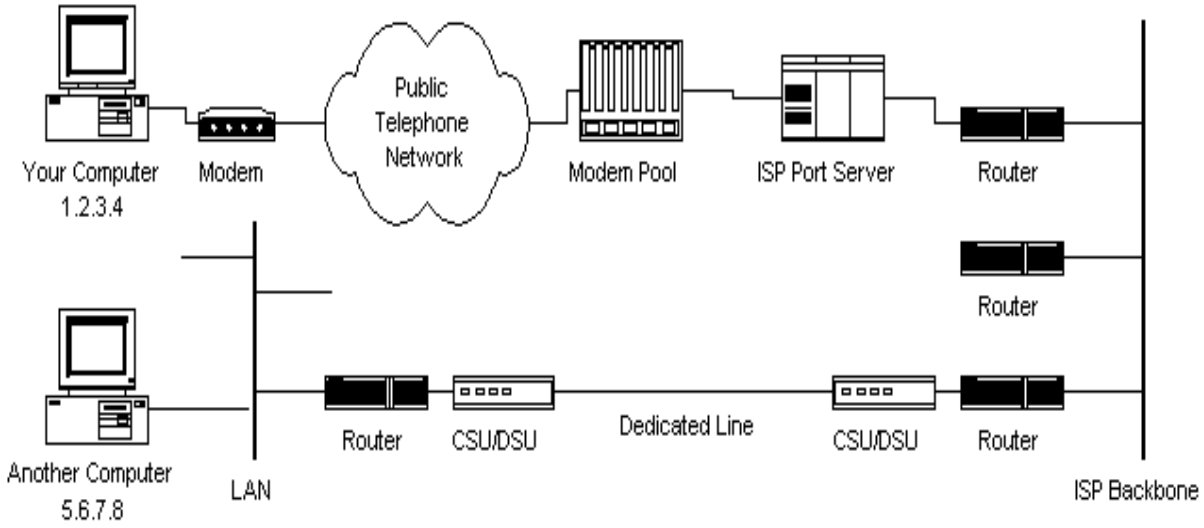
ASSIGNMENT 1:

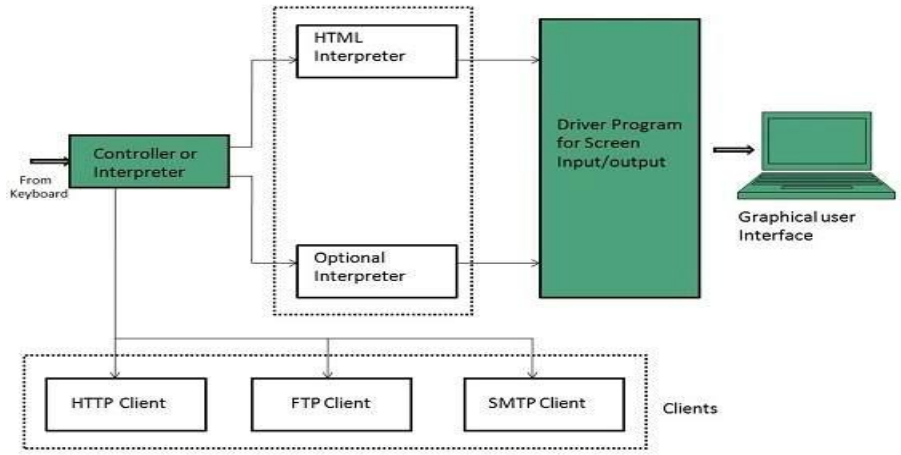
1.How internet works?

- The internet operates by breaking data into packets, which travel from the source server to your device through various network paths.
- Packets, containing parts of the data, are routed by internet service providers and domain name servers to find the most efficient path to their destination.
- Despite potential network congestion, the internet's design allows packets to route around disruptions, ensuring data still reaches its end point.



2.How browser works?

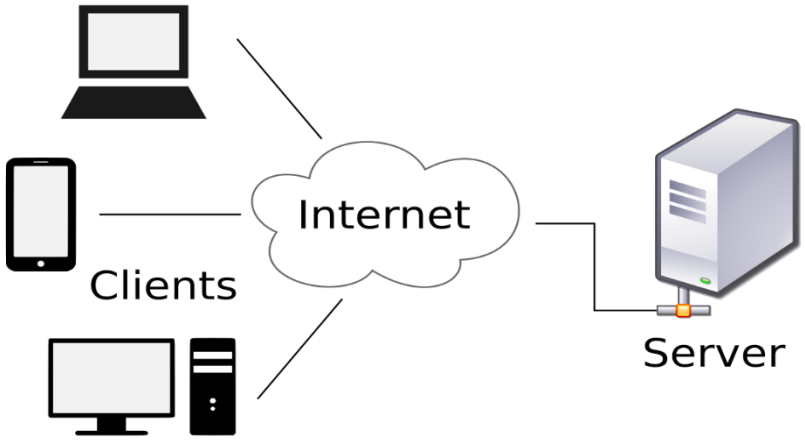
A web browser helps us find information anywhere on the internet. It is installed on the client computer and requests information from the web server such a type of working model is called a client-server model.



The browser receives information through HTTP protocol. In which transmission of data is defined. When the browser received data from the server, it is rendered in HTML to user-readable form and, information is displayed on the device screen.

3.What is server?

A server commonly refers to a computer program that receives and responds to requests made over a network. It receives the request for a web document from the client and sends the requested information to the client computer on the Internet. A device can be both a client and a server at the same time, as an individual system has the ability to provide resources and use them from another system in one go. There are different types of servers, including mail servers, virtual servers, and web servers.
Minicomputers and mainframe computers were some of the first servers. As compared to mainframe computers, minicomputers were much smaller; therefore, they were known as the name of Minicomputers. For instance, a web server may run Microsoft IIS or Apache HTTP Server, which offers users access to the information from web pages or websites over the internet. A mail server is able to run a program like iMail or Exim that provides services of SMTP (Simple Mail Transfer Protocol) for sending and receiving email.



4.what are the types of server available?

The most widely used types of servers are as follows:

- Web Server.
- Database Server.
- Email Server.
- Web Proxy Server.
- DNS Server.
- FTP Server.
- File Server.
- DHCP Server

5.what is SEO?Importance of SEO?

SEO stands for “search engine optimization.” In simple terms, SEO means the process of improving your website to increase its visibility in Google, Microsoft Bing, and other search engines whenever people search for:

- Products you sell.
- Services you provide.

- Information on topics in which you have deep expertise and/or experience.

The better visibility your pages have in search results, the more likely you are to be found and clicked on. Ultimately, the goal of search engine optimization is to help attract website visitors who will become customers, clients or an audience that keeps coming back.
SEO is important for brands as it's a highly effective way to improve your brand's visibility through search, drive more traffic to your website, establish your brand as a trusted authority in your industry, sustainably and reliably grow your business, and much more.

6.What are accessibility?

Accessibility features are designed to help people with disabilities use technology more easily. For example, a text-to-speech feature may read text out loud for people with limited vision, while a speech-recognition feature allows users with limited mobility to control the computer with their voice. In this lesson, we'll introduce you to some common accessibility features. We'll also discuss assistive technology that you can attach to your computer for greater accessibility.

Common accessibility features

Although some accessibility features require special software downloads, many are built into the operating system of your computer or mobile device. Here are just a few types of accessibility features you may already have on your device.

- **Features for blind or low-vision computer users:** Features such as text-to-speech allow users to hear what's on the screen instead of reading it. Other features, like high-contrast themes and enlarged cursors, make it easier for users with limited vision to see the screen.
- **Features for deaf or low-hearing computer users:** Closed-captioning helps to convey audio information to deaf users in visual form. Mono audio systems transmit right and left audio signals through both earbuds and headphones so users with limited hearing in one ear will not miss part of what they are listening to.

7.What is markup language?

A markup language is a set of rules that defines how the layout and presentation of text and images should appear in a digital document. It allows structuring documents, adding formatting, and specifying how different elements should be displayed (or “rendered”) on webpages.
Markup languages are computer languages that are used to structure, format, or define relationships between different parts of text documents with the help of symbols or tags inserted in the document. These languages are more readable than usual programming languages with strict syntax. There are several markup languages available but the most popular among them are as follows.

- **HTML**
- **XML**

8.What is HTML?

HTML is an acronym which stands for Hyper Text Markup Language which is used for creating web pages and web applications.

Hyper Text: HyperText simply means "Text within Text." A text has a link within it, is a hypertext. Whenever you click on a link which brings you to a new webpage, you have clicked on a hypertext. HyperText is a way to link two or more web pages (HTML documents) with each other.

Markup language: A markup language is a computer language that is used to apply layout and formatting conventions to a text document. Markup language makes text more interactive and dynamic. It can turn text into images, tables, links, etc.

For example, to make a word appear bold, we put that word between the following tags bold. The first tag indicates the start of the word(s) that we want to bold, and the closing tag(/) indicates where we want the bold to stop. It's the basis for pretty much every page on the web. If you are learning to code, this is the place to start.

9.WHAT IS BROWSER ENGINE?

Think of a browser engine as the heart of your web browser. It is the essential software that acts as a bridge between the web page's code (HTML, CSS, JavaScript) and the visual experience you see on your screen. Here's what it does:

- **Starts the Process:** The browser engine handles the initial request to load a web page and coordinates the resources needed.
- **Navigation:** It manages your browsing actions – things like going back, forward, or reloading.
- **Error Handling:** The browser engine gracefully displays error messages if something goes wrong.
- **Visual Layout:** It works behind the scenes, using HTML and CSS to calculate the precise position and appearance of every element on the page.

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

It's responsible for displaying the requested web resources by parsing the contents. By default it can parse html, xml, and images. It uses different plugins and/or extensions to display other type of data such as flash, PDF, etc.
There are different rendering engines such as Gecko, WebKit, and Trident. Most widely used rendering engine is WebKit or its variant version. Gecko and WebKit are open source rendering engines while Trident is not. Firefox uses Gecko, Safari uses WebKit, Internet Explorer uses Trident, Chrome and Opera uses Blink, which is a variant of WebKit. Different rendering engines use different algorithms and also have their different approaches to parse a particular request. The best example to support this statement is that you might have encountered some website which work with a particular browser because that website is designed compatible to that browser's rendering engine so in other browsers they don't work well.

11.What is javascript engine?share the available js engine ?purpose of js engine?

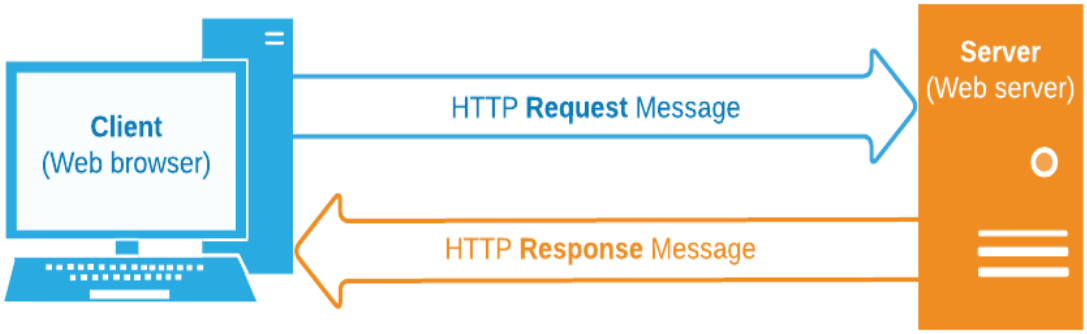
A JavaScript engine is a software component that executes JavaScript code. The first JavaScript engines were mere interpreters, but all relevant modern engines use just-in-time compilation for improved performance. JavaScript engines are typically developed by web browser vendors, and every major browser has one.
Every browser has its own JS engine, but the most well known one is Google's v8 Engine. This v8 Engine powers Google Chrome and also Node.
A JavaScript engine is a software component that executes JavaScript code. The first JavaScript engines were mere interpreters, but all relevant modern engines use just-in-time compilation for improved performance. JavaScript engines are typically developed by web browser vendors, and every major browser has one.

Browser	Name of Javascript Engine
Google Chrome	V8
Edge (Internet Explorer)	Chakra
Mozilla Firefox	Spider Monkey
Safari	Javascript Core Webkit

12.how website works?

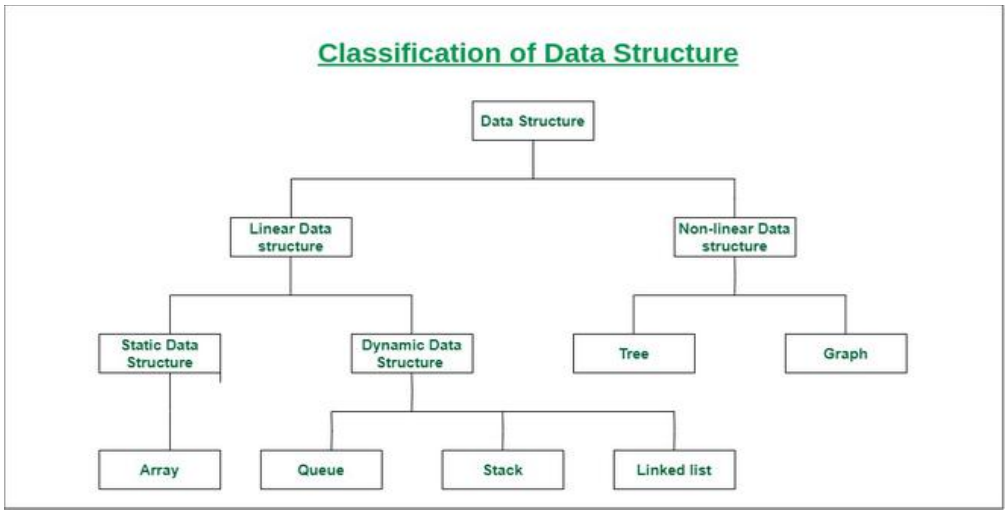
Websites are collections of web pages that are hosted on a web server and can be accessed through the internet using a web browser. Each web page has a unique URL (Uniform Resource Locator) that can be inputted into the browser's address bar or clicked on through a link. When the URL is requested by the browser, the web server sends the HTML (Hypertext Markup Language) and other files that make up the web page to the browser,

which then renders the page for the user to view.In addition to HTML, web pages often include other languages such as CSS (Cascading Style Sheets) for styling and JavaScript for interactive elements. These pages can also include images, videos, and other media files.Web developers use various programming languages, frameworks, and libraries to create websites. Some popular choices include JavaScript, Python, Ruby, and PHP.Overall, websites can be used for a variety of purposes, such as providing information, selling products, and enabling communication and collaboration.



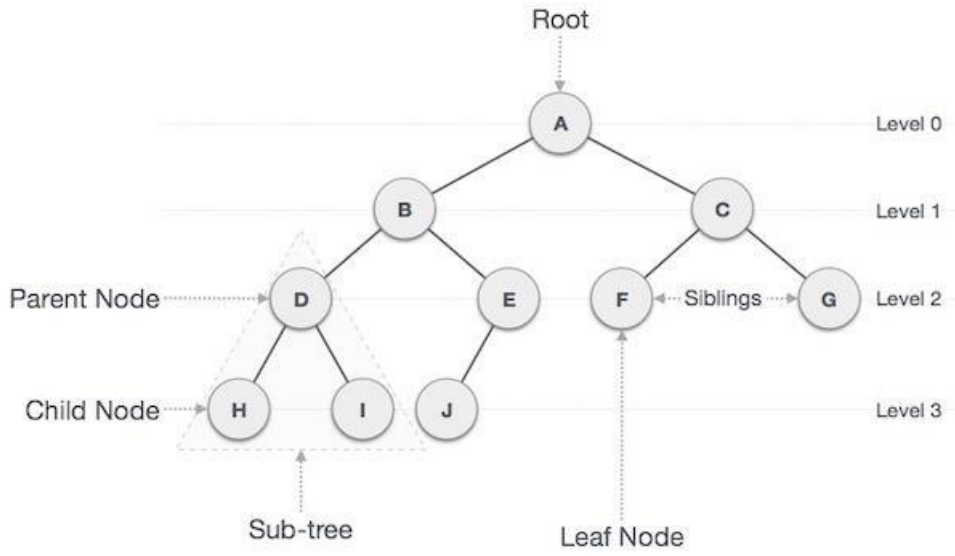
13.what is data structure?

A data structure a particular way of organising data in a computer so that it can be used effectively. The idea is to reduce the space and time complexities of different tasks.



14.Explain tree data structure?

A tree is a non-linear abstract data type with a hierarchy-based structure. It consists of nodes (where the data is stored) that are connected via links. The tree data structure stems from a single node called a root node and has subtrees connected to the root.



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

A user agent is a string that a web browser or other client software sends to a web server along with each request to identify itself and its capabilities. The user agent string contains information about the browser version, operating system, device type, and other details that can be used to identify the client.
user agents are an essential component of the web ecosystem, enabling users to access and interact with online content and services in a convenient and secure manner.

16.What is hypertext?

Hypertext is a method of organizing information in a digital format that uses traditional text structures (words, sentences, pages, articles or chapters, books, and libraries) as enhanced by the numerous linkages (words to words, words to sentences, sentences to pages, pages to pages, pages to chapters, and so on) that are possible in cyberspace.
The prefix “hyper” indicates that the text contains additional information than what the reader sees.
When hypertexts are supplemented with graphics, images, audio, and video, they are referred to as hypermedia or multimedia.

17.What is HTML tags?

HTML tags are like keywords which defines that how web browser will format and display the content. With the help of tags, a web browser can distinguish between an HTML content and a simple content. HTML tags contain three main parts: opening tag, content and closing tag. But some HTML tags are unclosed tags.
When a web browser reads an HTML document, browser reads it from top to bottom and left to right. HTML tags are used to create HTML documents and render their properties. Each HTML tags have different properties.

Basic HTML Tags:

- **Head Tag :**The head tag <head> contains all the elements describing the document.
- **Title Tag :**The title tag <title> specifies the HTML page title, which is shown in the browser's title bar.
- **Body Tag :**The body tag <body> is where you insert your web page's content.
- **Paragraph Tag :**A paragraph tag is used to define a paragraph on a web page.
- **Heading Tag :**The HTML heading tag is used to define the heading of the HTML document. The <h1> tag defines the most important tag, and <h6> defines the least.

18. What is HTML Attributes?

- All HTML elements can have attributes
- Attributes provide additional information about elements
- Attributes are always specified in the start tag
- Attributes usually come in name/value pairs like: name="value"

19. What is HTML elements?

In HTML, an element is a section of an HTML document. Some HTML elements represent visible components on a web page, such as text, images, or buttons, while others denote different sections of the page or provide meta-information about the document.

Most HTML elements consist of three parts:

- The opening tag (or start tag) marks where the element's content begins (in the example above).
- The closing tag (or end tag) marks the end of the element's content (above). The closing tag is identical to the opening tag with the addition of a forward slash (/) after the first angle bracket.
- The content is placed between the element's opening and closing tags (This is paragraph text. above).

20. how to convert elements to tree?

Tree data structure is a specialized data structure to store data in hierarchical manner. It is used to organise and store data in the computer to be used more effectively. It consists of a central node, structural nodes, and sub-nodes, which are connected via edges.
Converting elements to trees is a fundamental concept in data structures. And hierarachial relationships where elements are organised into parent child structure

1. start with root node
2. html elements becomes a node

3. map elements to nodes
4. establish parent-child relation
5. choose a representation
6. implement conversation

21. What is DOCTYPE?

The purpose of the doctype declaration in HTML5 is to specify the version of HTML being used in the document and to ensure that the browser renders the webpage in standards mode. The doctype declaration is placed at the very beginning of an HTML document, before the `` tag.

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

The extension used for saving HTML documents is . html or . htm. HTML stands for Hypertext Markup Language, which is the standard language used for creating web pages.

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

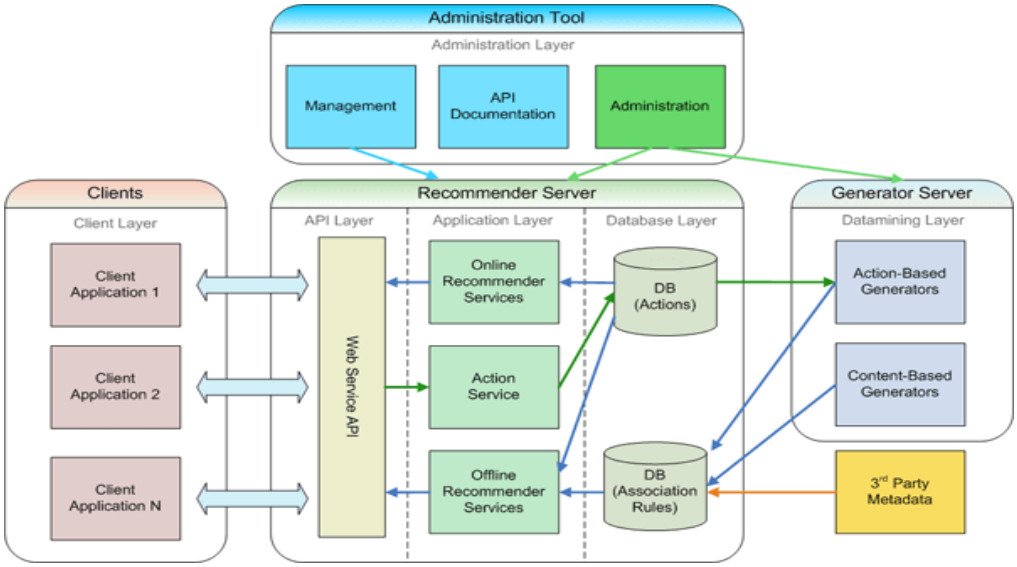
A character set is a collection of characters used to represent text in a computer system. It includes letters, numbers, symbols, and other characters that a computer can display or process.

- The charset attribute specifies the character encoding for the HTML document. The HTML5 specification encourages web developers to use the UTF-8 character set, which covers almost all of the characters and symbols in the world.
- A character set is an encoding system to let computers know how to recognize Character, including letters, numbers, punctuation marks, and whitespace.

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

Metadata means "data about data". Metadata is defined as the data providing information about one or more aspects of the data; it is used to summarize basic information about data that can make tracking and working with specific data easier. Some examples include: Means of creation of the data. Purpose of the data.
metadata can be used to trace who accessed or modified a specific data set. It also helps to keep track of the various versions of data and classify data to set up data access controls.

25.Explain web application architecture?



Web application architecture can be defined as the glue that holds a web application together. It's the framework of a website app and is responsible for the interactions between various application components., including user interfaces, middleware systems, and databases.
In technical terms, when a user makes a request on a website, various components of the applications, user interfaces, middleware systems, databases, servers, and the browser interact with each other. Web Application Architecture is a framework that ties up this relation together and maintains the interaction between these components.

The most common architectures for interactive web applications include:

- Client-Server Architecture. ...
- Presentation Layer. ...
- Application layer. ...
- Data Layer.