Assignment 1:

1.How does the internet work ?
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 within a single network. This enables computers to communicate with each other and access content stored on remote servers.

2.How browser works ?
The main function of a browser is to present the web resource you choose, by requesting it from the server and displaying it in the browser window. The resource is usually an HTML document, but may also be a PDF, image, or some other type of content. The location of the resource is specified by the user using a URI (Uniform Resource Identifier).

3.What is the server ?
A server is a specialised computer or software system designed to provide services, data, or resources to other computers, known as clients, over a network. These services can range from delivering web pages and email to storing and managing files or running applications. These machines run on a client-server model, where clients request specific services or resources, and the server fulfils these requests.

4.What are the types of server available ?

1. Web Server
2. Database Server
3. Email Server
4. Web Proxy Server
5. DNS Server
6. FTP Server
7. File Server
8. DHCP Server
9. Cloud Server
10. Application Server
11. Print Server
12. NTP Server
13. Radius Server
14. Syslog Server
15. Physical Server

5.What is SEO ? Importance of SEO ?
SEO stands for search engine optimization. SEO practitioners optimise websites, web pages and content for the purposes of ranking higher in search engines, like Google. SEO is a set of practices designed to improve the appearance, positioning, and usefulness of multiple types of content in the organic search results.
SEO is important because it can improve your organic visibility in search engine results pages. Which can translate to more brand awareness and website traffic. Which ultimately leads to more sales.

6.What is Accessibility ?
Accessibility is the concept of whether a product or service can be used by everyone,however they encounter it. Accessibility laws exist to aid people with disabilities, but designers should try to accommodate all potential users in many contexts of use anyway. To do so has firm benefits notably better designs for all.

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 on webpages.

8.What is HTML ?
HTML which stands for Hyper Text Markup Language which is used for creating web pages and web applications. Let's see what is meant by Hypertext Markup Language, and Web page.

HyperText: 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.

9.What is the browser engine ?

A browser engine, also known as a layout engine or rendering engine is a core software component of every major web browser that is responsible for transforming HTML documents and other resources of a web page into an interactive visual representation on a user's device. Common browser engines include Blink, Trident, Gecko, and WebKit.

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

A rendering engine is software that draws text and images on the screen. The engine draws structured text from a document , and formats it properly based on the given style declarations .

Browser	Rendering Engine
Google Chrome	Blink
Mozilla Firefox	Gecko
Microsoft Edge	Blink
Opera	Blink
Internet Explorer 11	Trident
Android WebView	WebRender
Samsung Internet	WebKit

11.What is the 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.

Browser	**Javascript Engine**
Google Chrome	V8
Edge (Internet Explorer)	Chakra
Mozilla Firefox	Spider Monkey
Safari	Javascriptcore Webkit

These engines help to convert our JavaScript program into computer-understandable language. A JavaScript engine is a computer program that executes JavaScript code and converts it into computer understandable language.

12.How does the website work ?

A user requests a website by entering the URL or clicking a link.

A server processes the request and retrieves the necessary files and data.

The server sends the data back to the user's browser.

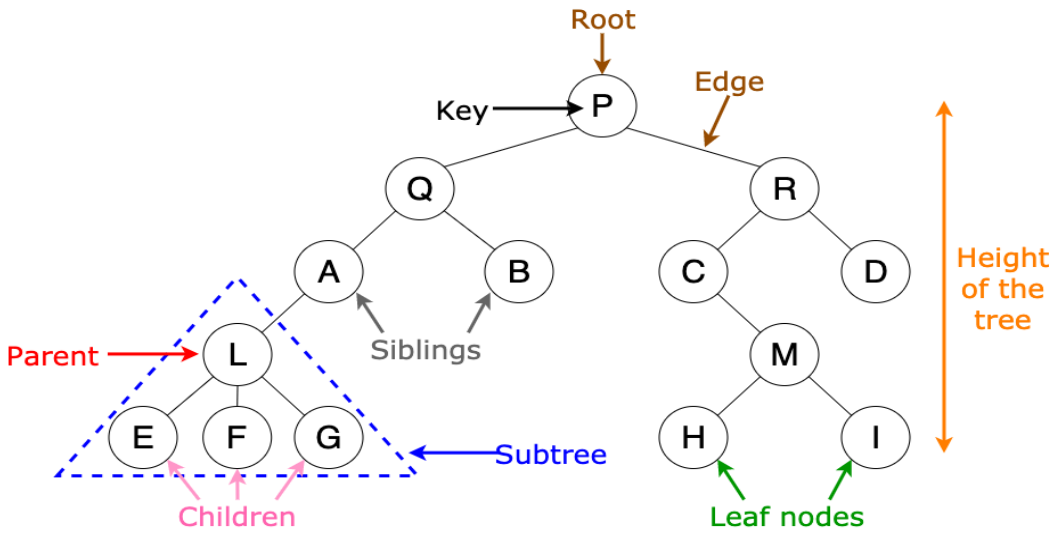
The browser interprets the data and displays the website.

13.What is Data Structure ?

Data Structure is a particular way of storing and organising data in the memory of the computer so that this data can easily be retrieved and efficiently utilised in the future when required. The data can be managed in various ways, like the logical or mathematical model for a specific organisation of data is known as a data structure.

14.Explain Tree Data Structure ?

A tree data structure is a collection of nodes connected by edges. Each node contains a value or data which may or may not have a child node. The first node of the tree is called the root. If this root node is connected with another node, then this root is called the parent node, and the node connected to it is the child node.The tree data structure provides much quicker access to the data, which is non-linear..



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

A user agent acts as an intermediary between a user and the internet, or more precisely, between the user application and the web servers. In its core function, the user agent sends requests to servers and receives responses, which it presents to the user. These software agents can appear in various formats, including as web browsers, which are widely known and used, search engine crawlers, which crawl the Internet for search indexes, and specialised applications such as API-clients and e-mail clients.

1. Web Browsers:
   >Google Chrome: A popular web browser developed by Google.
   >Mozilla Firefox: An open-source web browser developed by Mozilla Foundation.
   >Microsoft Edge: A web browser developed by Microsoft.
   >Safari: A web browser developed by Apple.
   >Opera: A web browser developed by Opera Software.
2. Mobile Browsers:
   >Mobile Safari (iOS): A mobile web browser developed by Apple for iOS devices.
   >Google Chrome for Android: A mobile web browser developed by Google for Android devices.
   >Samsung Internet: A mobile web browser developed by Samsung for Android devices.
3. Desktop Applications:
   >Microsoft Office: A suite of productivity applications developed by Microsoft.
   >Adobe Acrobat: A software application for viewing and editing PDF files developed by Adobe.
   >Skype: A video conferencing application developed by Microsoft.
4. Scripts and Bots:
   >Web scraping scripts: Scripts that extract data from websites, often used for data mining or automation.
   >Chatbots: Computer programs that simulate human-like conversations, often used in customer service or tech support.
   >Crawlers: Programs that automatically browse the web to index web pages for search engines.

16.What is hypertext ?

Hypertext is a method of structuring and linking digital documents, allowing users to quickly and easily navigate between related pieces of information.It acts as a backbone of WWW (World Wide Web) and allows users to jump from one piece of information to another related piece of information. The jump can be within the same document or to a completely different document that the user wants to know about.

17.What are HTML Tags ?

HTML tags are composed of an opening tag, content, and a closing tag. The opening tag marks the beginning of an element, and the closing tag marks the end. The content is the information or structure that falls between the opening and closing tags. Here’s the basic structure of an HTML tag :

<tagname>Content </tagname>

18.What are HTML Attributes ?

HTML attributes are special words used inside the opening tag to control the element's behaviour. HTML attributes are a modifier of a HTML element type. An attribute either modifies the default functionality of an element type or provides functionality to certain element types unable to function correctly without them.

19.What are HTML Elements ?

An HTML Element is a collection of start and end tags with the content inserted between them. HTML elements are building blocks of web pages, representing different types of content such as headings, paragraphs, links, and images.

20.How do you convert elements to trees ?

Converting elements to trees is a fundamental concept in data structures, and it's a crucial step in various algorithms and applications. It involves transforming a linear sequence of elements into a hierarchical tree-like structure, where each element becomes a node, and the relationships between elements are represented by edges.

Methods used are:

Recursive Function

Tree Construction Algorithms.

Graph-Based Methods

21.What is DOCTYPE ?

The HTML document type declaration or Doctype is an instruction used by web browsers to fetch what version of HTML the website is written in. It helps browsers in understanding how the document should be interpreted thus eases the rendering process.

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

We can save html files by using .html or .htm extensions.

23.What is charset ?Why do we need to use this ?

HTML Charset is also called HTML Character Sets or HTML Encoding. It is used to display an HTML page properly and correctly because for displaying anything correctly, a web browser must know which character set character encoding to use.

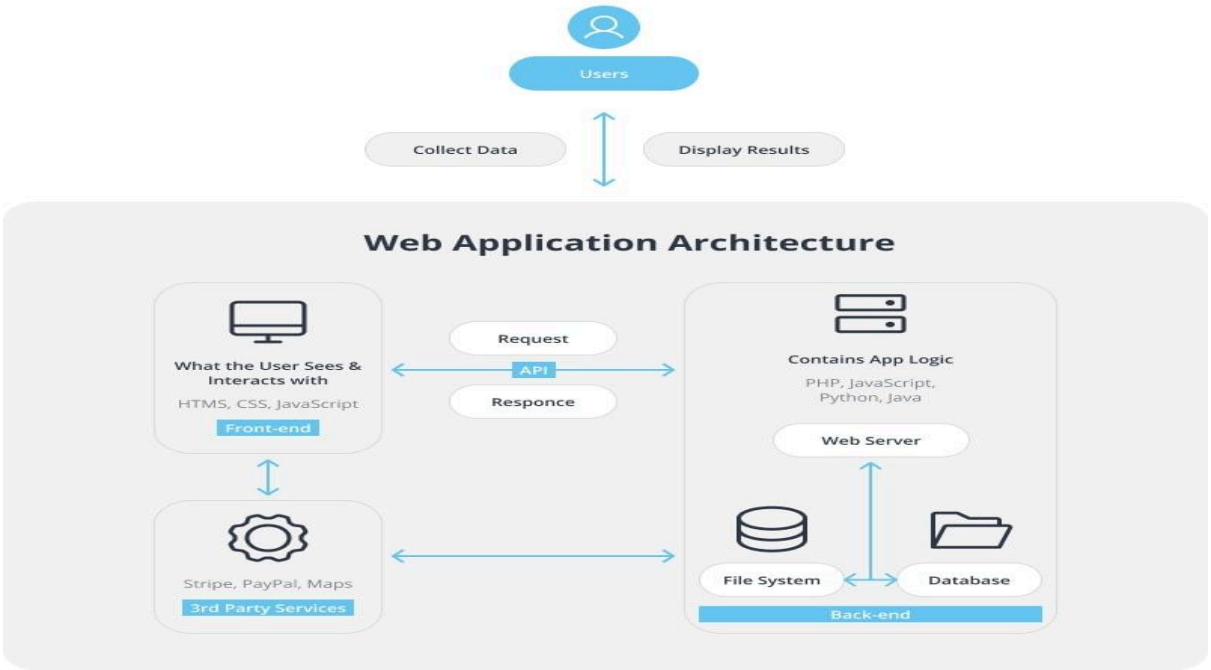
The charset attribute specifies the character encoding for the HTML document.

24.What is metadata ?What is the purpose of it ?

Metadata is defined as the information that describes and explains data. It provides context with details such as the source, type, owner, and relationships to other data sets. So, it can help you understand the relevance of a particular data set and guide you on how to use it. In a nutshell: Metadata is a cornerstone of a modern enterprise data stack.

The use of metadata on web pages can be very important. The metadata contains descriptions of the page's contents, as well as keywords linked to the content. This metadata is often displayed in search results by search engines, meaning its accuracy and details could influence whether or not a user decides to visit a site. This information is usually expressed in the form of meta tags.

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. The general rundown of this web application framework looks like this:

- A user types in the URL into a browser or searches for it through a search engine such as Google.
- The browser locates the URL and requests access by sending data from the server to the browser. The requested page is displayed by the browser's execution.
- The user views the website and interacts with the webpage.

Website application development must include all the sub-components and be able to perform all of the external application communications for the entire website for it to communicate correctly. It has to deal not only with making sure the process runs smoothly but also in making sure it stays reliable, stable, and secure.