1.1 Concepts on basic web development:

Internet:
The internet is like a vast network of interconnected roads where information travels. It's like a massive library where you can find almost anything, from cute cat videos to scholarly articles. It's what allows you to send emails, stream movies, shop online, and connect with people around the world. It's the backbone of modern communication and information exchange.

Network:
A network consists of two or more computers that are linked in order to share resources (such as printers and CDs), exchange files, or allow electronic communications. The computers on a network may be linked through cables, telephone lines, radio waves, satellites, or infrared light beams.

Web:
The Web acts as an information resource that provides or serves and/or accesses and views information to all those computers connected to the Internet using the Hypertext Transfer Protocol (HTTP). HTTP is the communication protocol used by the computers to send and/or retrieve Web documents. (https://facebook.com) Browsers are used to view Web pages, which are located through their Uniform Resource Locators (URL). Web pages are created using a coding language called Hypertext Markup Language (HTML).

WWW:
The World Wide Web (WWW) is like a spider's web of interconnected pages on the internet. It's what you use to browse websites, search for information, and access various online services. Think of it as the interactive part of the internet where you can click on links to navigate between different web pages. It's made up of websites hosted on servers worldwide, accessible through web browsers like Chrome, Firefox, or Safari.

Website:
https://www.w3schools.com which is a collection of various pages written in HTML markup language. This is a location on the web where people can find tutorials on latest technologies. Similarly, there are millions of websites available on the web. Each page available on the website is called a web page and first page of any website is called home page for that site.

Client and server computer:
A client computer is typically used by individuals or organizations to access services or resources from servers. It often has a user-friendly interface and software tailored for personal or business tasks. Examples include personal computers, laptops, smartphones, and tablets. Client computers rely on servers for data, applications, or processing power.

On the other hand, a server computer is designed to provide services or resources to client computers. It often operates without a graphical user interface (GUI) and is optimized for performance and reliability. Examples of server computers include web servers, database servers, email servers, and file servers. They handle requests from multiple clients, manage data, and perform computations.

Web server:

A web server is like a waiter in a restaurant, serving up web pages instead of food. It's a specialized computer that stores and delivers web content upon request from client computers, like your browser. When you type a website address into your browser, the web server fetches the requested web page and sends it back to your browser, allowing you to view and interact with it. It's the backbone of the World Wide Web, enabling the distribution of websites, files, and other resources across the internet.

Web Browser:

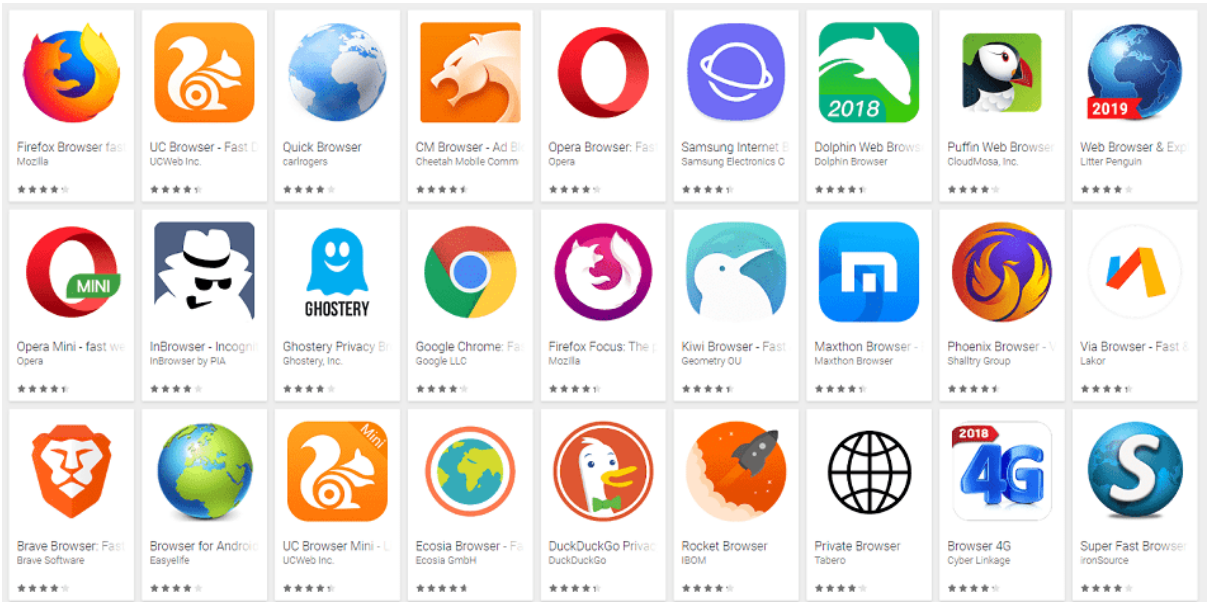

Figure 1.1: Web browsers

A web browser is a software application that allows users to access and navigate the World Wide Web. It retrieves and displays content from web pages and enables users to interact with various online resources, including websites, images, videos, and other multimedia content. Browsers use protocols such as HTTP and HTTPS to communicate with web servers and render web pages using languages like HTML, CSS, and JavaScript. Popular web browsers include Google Chrome, Mozilla Firefox, Microsoft Edge, and Apple Safari. They often provide features such as tabbed browsing, bookmarking, and extensions to enhance the browsing experience.

ISP:

ISP stands for Internet Service Provider. They are the companies who provide you service in terms of internet connection to connect to the internet. You will buy space on a Web Server from any Internet Service Provider. This space will be used to host your Website.

How the Web works:

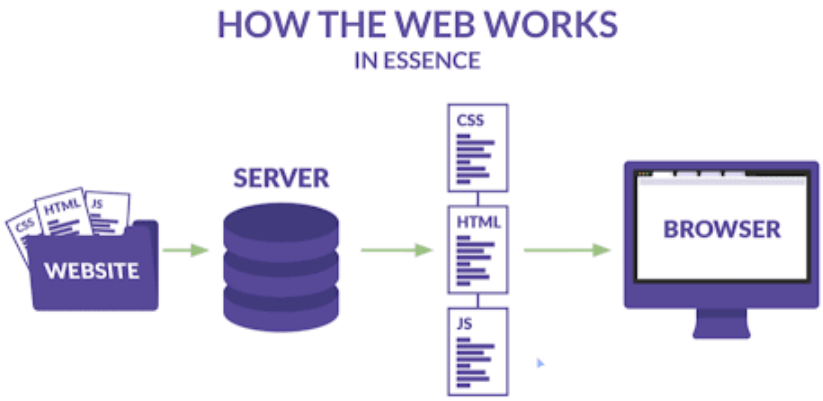

Figure 1.2: How web works

1. **Your personal computer** -This is the PC at which you sit to see the web.
2. **A Web browser -** A software installed on your PC which helps you to browse the Web.
3. **An internet connection –** This is provided by an ISP and connects you to the internet to reach to any Website.
4. **A Web server –** This is the computer on which a website is hosted.
5. **Routers & Switches –** They are the combination of software and hardware who take your request and pass to appropriate Web server.

Hyperlink:

A hyperlink or simply a link is a selectable element in an electronic document that serves as an access point to other electronic resources. Typically, you click the hyperlink to access the linked resource. Familiar hyperlinks include buttons, icons, image maps, and clickable text links.

Hypertext Transfer Protocol (HTTP):

HTTP is a protocol used for transferring hypertext (text displayed on a computer or other device that provides access to the World Wide Web) over the internet. It defines how messages are formatted and transmitted, as well as how web servers and browsers should respond to various commands.

Uniform Resource Locator

URL stands for Uniform Resource Locator. It's like a web address that tells your browser where to find a particular resource on the internet. For example, in the URL "https://www.example.com/index.html", "https://" specifies the protocol, "www.example.com" is the domain name, and "/index.html" is the path to the specific resource (in this case, a webpage). It's how your browser knows where to go when you click a link or enter a website address.

Web page and home page:

Web page:

- A web page is a single document or resource on the internet. It can contain various types of content such as text, images, videos, forms, and more.
- Web pages are accessed through web browsers and can be viewed by entering their specific URL or by following links from other web pages.
- Each web page typically serves a specific purpose, such as providing information, offering services, or facilitating communication.

Home page:

- The home page, also known as the main page or front page, is the starting point or entry point of a website.
- It is the first page users see when they visit a website by typing its domain name or clicking on a link.
- Home pages often contain navigation menus, introductory content about the website or organization, featured content, and links to other sections of the website.

IP:

"IP" can refer to different things in the context of technology, but most commonly it stands for "Internet Protocol." An Internet Protocol (IP) address is a unique numerical identifier for every device or network that connects to the internet. Typically assigned by an internet service provider (ISP), an IP address is an online device address used for communicating across the internet.

- Internet Protocol (IP): A set of rules that governs the format of data sent over the internet or a network. It provides a unique address for each device connected to a network, known as an IP address.

- IP Address: An identifier assigned to each device connected to a network using the Internet Protocol for communication. It allows devices to communicate with each other and enables data routing across the internet.

DNS:

DNS, or Domain Name System, is like the internet's phone book. It translates human-readable domain names like "example.com" into IP addresses computers use to communicate. Think of it as converting a name into a phone number so you can connect to a website or service. It's crucial for browsing the web, sending emails, and other internet activities.

W3C:

W3C stands for World Wide Web Consortium which is an international consortium of companies involved with the Internet and the Web. The W3C was founded in 1994 by Tim Berners-Lee, the original architect of the World Wide Web. The organization's purpose is to develop open standards so that the Web evolves in a single direction rather than being splintered among competing factions. The W3C is the chief standards body for HTTP and HTML.

1.2 Web Development Technologies:

Web development is a process of building and maintaining websites and web applications. It contains building, designing and deploying content for WWW. Technical skills, creative design, and problem-solving skills require to develop functional and visually appealing applications that meet the demand of users.
It includes:

- Web Design
- Web Programming
- Database Management
- Web Publishing

Classification

- Front End Development (Details in Figure 1.3)
- Back End Development (Details in Figure 1.4)

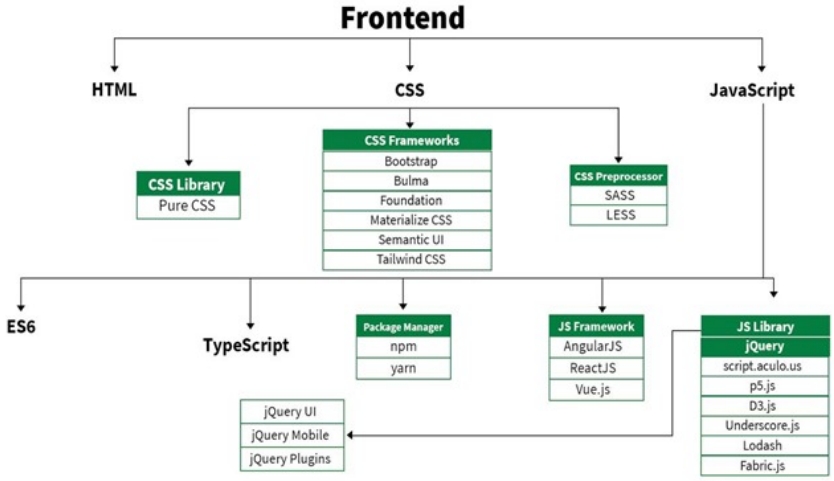

Figure 1.3: Front End Technologies

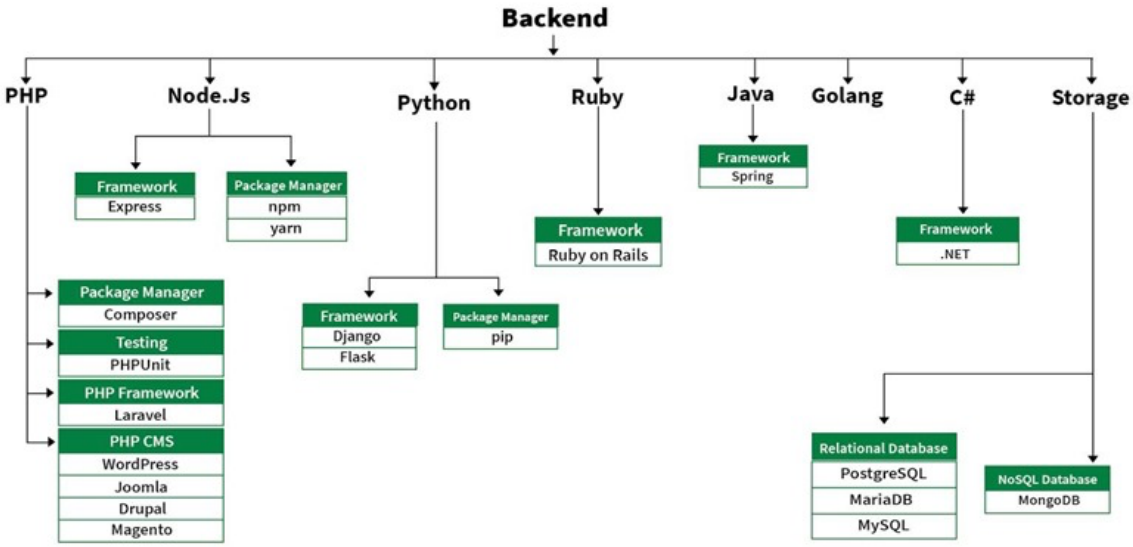

Figure 1.4: Back End Technologies

1.3 Introduction to basic HTML:

HTML Introduction:

HTML stands for HyperText Markup Language. It is the standard markup language used to create web pages. HTML is a combination of Hypertext and Markup language. Hypertext defines the link between web pages. A markup language is used to define the text document within the tag to define the structure of web pages. This language is used to annotate (make notes for the computer) text so that a machine can understand it and manipulate text accordingly. Most markup languages (e.g. HTML) are human-readable. The language uses tags to define what manipulation has to be done on the text.

Basic tools need for projects include:

1. Text Editor/IDE (Integrated Development Environment): Software for writing and editing code. Examples include Visual Studio Code, Sublime Text, Atom, or IntelliJ IDEA.

2. Web Browser: Used to preview and test web pages and applications. Popular choices are Google Chrome, Mozilla Firefox, Safari, and Microsoft Edge.

Create a new web page, follow these basic steps:

1. Set Up Your Environment: Ensure you have a text editor or IDE installed on your computer. If you're using version control, initialize a new Git repository in your project folder.

2. Create a New HTML File: Open your text editor/IDE and create a new file with a `.html` extension. This file will contain the HTML code for your webpage.

3. Write HTML Code: Start writing the HTML code to structure your webpage. Include elements such as `<html>`, `<head>`, `<title>`, `<body>`, headings (`<h1>`, `<h2>`, etc.), paragraphs (`<p>`), images (`<img>`), links (`<a>`), and other necessary elements based on your design.

4. Save Your File: Save the HTML file with an appropriate name, such as `index.html`, in your project folder.

5. Preview Your Webpage: Open the HTML file in a web browser to preview how it looks. You can do this by double-clicking the file or using the browser's "Open File" option.

Understanding HTML syntax:

Elements: HTML documents are made up of elements, which are defined by tags enclosed in angle brackets (< and >). Elements can be either empty (e.g., <img>) or contain content (e.g., <p>).
Tags: Tags mark the beginning and end of an element. They come in pairs, with the opening tag (<tag>) at the start of the element and the closing tag (</tag>) at the end. Some elements, like line breaks
 or images <img>, don't need a closing tag.
Attributes: Attributes provide additional information about an element. They are placed within the opening tag and consist of a name and a value. For example, in <img src="image.jpg" alt="Description">, src and alt are attributes, and "image.jpg" and "Description" are their values.
Nesting: Elements can be nested inside one another, creating a hierarchical structure. For example, elements can contain <p> elements, and <p> elements can contain elements.
Document Structure: The basic structure of an HTML document includes the <!DOCTYPE html> declaration, followed by the <html> element containing two main sections: <head> and <body>. The <head> section typically includes metadata like the document's title, character set, and links to stylesheets or scripts. The <body> section contains the visible content of the webpage.
Comments: Comments in HTML are denoted by <!-- to start and --> to end. They are used to add notes or explanations within the code without affecting the rendered output.
Extension: You must save your HTML file .html extension.

HTML Page Structure
The basic structure of an HTML page is shown below. It contains the essential building-block elements (i.e. doctype declaration, HTML, head, title, and body elements) upon which all web pages are created.