Frontend Assignment Set

Module 1 – Foundation

• What is a HTTP?

- **HTTP stands for Hyper Text Transfer Protocol. It is the foundation of data communication on the World Wide Web.**

  Definition:

- **HTTP is a protocol used by web browsers and servers to communicate and exchange data (such as HTML pages, images, videos, etc.) over the Internet.**

• What is a Browsers? How they works ?

Ans: What is a Browser?

- **A web browser is a software application used to access, retrieve, and view information on the World Wide Web. Examples include Google Chrome, Mozilla Firefox, Microsoft Edge, Safari, and Opera.**

🧠 **Main Functions of a Browser:**

1. **Send requests to web servers (using HTTP/HTTPS).**
2. **Receive and interpret responses (like HTML, CSS, JS).**
3. **Render web pages for users to see and interact with.**
4. **Provide user-friendly interfaces like address bars, bookmarks, history, etc.**

⚙️ **How Do Browsers Work? (Step-by-Step)**

1. User Input:

- **You type a URL (e.g., https://www.wikipedia.org) in the address bar.**

2. DNS Resolution:

- **The browser uses DNS to convert the domain (wikipedia.org) into an IP address.**

3. Send HTTP/HTTPS Request:

- **The browser sends an HTTP request to the web server using the IP address.**

4. Server Response:

- **The server responds with HTML, CSS, JavaScript, images, etc.**

5. Rendering the Page:

- **The browser parses the HTML and builds a DOM (Document Object Model).**
- **It also fetches and applies CSS styles and runs JavaScript code.**
- **The content is rendered visually on your screen.**

6. Display:

- **You see the web page with all its design, functionality, and content.**

📦 **Key Components of a Browser:**

Component	Role
UI (User Interface)	Where you enter URL, see tabs, bookmarks, etc.
Browser Engine	Communicates between UI and rendering engine
Rendering Engine	Parses and displays HTML/CSS (e.g., Blink, WebKit)
JavaScript Engine	Executes JavaScript (e.g., V8 in Chrome)
Networking Layer	Handles network requests (HTTP, HTTPS)
Data Storage	Stores cookies, cache, local storage

🖥️ **Simple Example:**

1. **You type: https://openai.com**
2. **Browser asks DNS: "What's the IP for openai.com?"**
3. **DNS responds: "It's 104.18.30.162"**
4. **Browser sends HTTP request to that IP**
5. **Server responds with the OpenAI homepage**

- **What is Domain Name?**
  - **A Domain Name is the human-readable address of a website on the Internet.**
  - **Instead of remembering a complex IP address like 172.217.160.46, you can simply type a domain name like:**

www.google.com

- **What is hosting?**
  - **Hosting (or Web Hosting) is a service that stores website files (HTML, images, videos, databases, etc.) on a server, and makes them accessible on the Internet.**
  - **When you visit a website like www.example.com, you're actually accessing files that are hosted on a server somewhere.**

Module 2 – Fundamentals of World Wide Web

- **Difference between Web Designer and Web Developer**

Aspect	Web Designer	Web Developer
Role	Focuses on visual design and user experience (UI/UX)	Focuses on coding and functionality of the website

➢ Aspect	➢ Web Designer	➢ Web Developer
Main Work	Creates layout, color scheme, typography, and visuals	Builds the website using programming languages
Skills Used	Graphic design, HTML/CSS, Adobe XD, Figma, UX/UI tools	HTML, CSS, JavaScript, PHP, Python, databases, frameworks
Tools	Photoshop, Figma, Sketch, Canva	VS Code, Git, Node.js, React, MySQL
Goal	Make the site look attractive and user-friendly	Make the site function correctly and smoothly
Coding Involvement	May know basic coding (HTML, CSS)	Deep coding knowledge required
Types	- UX Designer - UI Designer - Graphic Web Designer	- Front-End Developer - Back-End Developer - Full Stack Developer

• What is a W3C?

- W3C stands for World Wide Web Consortium.
- It is the main international organization that develops standards and guidelines for the World Wide Web to ensure its long-term growth and accessibility

• What is Domain?

- A domain is the unique name that identifies a website on the internet.
- It is what you type into a browser's address bar to visit a website.
- Example: google.com, youtube.com, gtu.ac.in

• What SEO

- **SEO stands for Search Engine Optimization.**
  It is the process of improving a website's visibility in search engine results like Google, Bing, or Yahoo, so that more people can find it organically (without paid ads).

• What is SDLC life cycle?

- **SDLC stands for Software Development Life Cycle.**
  It is a structured process used by software developers to design, develop, test, and deliver high-quality software efficiently and systematically.

Phase	Description
1. Requirement Analysis	Understand what the client/user wants. Gather functional and non-functional requirements.
2. Planning	Create a project plan, estimate cost, time, and resources.
3. Design	Create architecture, UI designs, database structure, etc.
4. Development	Write actual code based on the design.
5. Testing	Check the software for bugs and errors. Ensure it meets requirements.