

Web Development Basics - Assignment

1. Difference between Frontend, Backend, and Full-Stack Development

Type	Description	Example
Frontend	Client-side, focuses on UI/UX using HTML, CSS, JS.	Instagram feed page
Backend	Server-side logic, database, and authentication.	Instagram login system
Full-Stack	Both frontend and backend handled by one developer.	Complete Instagram app

2. Simple Diagram: Client-Server Model

Below diagram shows how a browser (client) communicates with a web server:

```
+-----+ HTTP Request +-----+ | Browser | -----> | Web Server| (Client) |
<----- | (Response) | +-----+ HTML, CSS, JS +-----+
```

3. How a Browser Requests and Displays a Web Page

1. User enters a URL (like www.google.com) 2. DNS finds IP address of the server. 3. Browser sends an HTTP/HTTPS request. 4. Server sends back HTML, CSS, and JS. 5. Browser parses and renders the webpage.

4. Tools Required to Set Up a Web Development Environment

Tool	Purpose
VS Code	Code editor for HTML, CSS, and JavaScript.
Web Browser	To preview and test websites.
Node.js	For backend and dependency management.
Git & GitHub	Version control and collaboration.
Live Server	Auto-refreshes the browser on code changes.

5. What is a Web Server?

A web server delivers web pages to clients. Examples include Apache, Nginx, IIS, LiteSpeed, Node.js (Express).

6. Roles in a Web Project

Role	Responsibilities
Frontend Developer	Designs UI and handles user interactions.
Backend Developer	Implements server logic and connects databases.
Database Administrator	Maintains and secures data storage.

7. VS Code Setup for HTML, CSS, and JS

1. Install VS Code from official website. 2. Add extensions: Live Server, Prettier, HTML CSS Support, JavaScript (ES6) snippets. 3. Create files: index.html, style.css, script.js. 4. Run index.html using 'Open with Live Server'.

8. Static vs Dynamic Websites

Type	Description	Example
Static	Fixed content for all users using HTML/CSS only.	Portfolio site

Dynamic	Changes based on user interaction or database.	Facebook, YouTube
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9. Web Browsers and Rendering Engines

Browser	Rendering Engine	Notes
Google Chrome	Blink	Fast and widely used.
Mozilla Firefox	Gecko	Open-source and customizable.
Safari	WebKit	Optimized for Apple devices.
Microsoft Edge	Blink	Based on Chromium engine.
Opera	Blink	Includes VPN and ad-blocker.

10. Basic Web Architecture Flow

```
+-----+ | Client (User) || Browser / App | +-----+-----+ | | HTTP Request ↓ +-----+-----+ | Web
| Server || (e.g., Apache) | +-----+-----+ | | Interacts with ↓ +-----+-----+ | Application || Server (Logic) |
+-----+-----+ | | SQL Query ↓ +-----+-----+ | Database || (MySQL, MongoDB) | +-----+
```