Web Development Basics – Questions and Answers

1. Explain the difference between frontend, backend, and full-stack development with suitable real-world examples.

Frontend development deals with the visible part of a website that users interact with — including layout, colors, and navigation. Example: The YouTube homepage layout and video thumbnails.

Backend development manages the server, database, and application logic. It ensures the frontend works smoothly by handling data and user requests. Example: When you upload a video to YouTube, the backend saves and manages that data.

Full-stack development involves both frontend and backend tasks. A full-stack developer can design the interface and manage how data flows behind it.

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2. Create a simple diagram showing how the client-server model works in web architecture.

Client (Browser) → sends request → Server → processes the request → sends response → Client displays web page.

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3. Describe how a browser requests and displays a web page from a web server.

When a user enters a URL, the browser sends an HTTP request to the web server. The server locates the requested file (HTML, CSS, JS), sends it back to the browser, and the browser renders it for display.

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4. Identify and list the tools required to set up a web development environment. Explain the purpose of each.

1. **VS Code** – A code editor used for writing and testing code.
2. **Web Browser (e.g., Chrome)** – Used to view and test web pages.
3. **Git** – A version control system for tracking changes.
4. **Node.js** – Enables JavaScript to run on the server side.

5. **Live Server Extension** – Allows real-time preview of your web pages.

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5. Explain what a web server is and give examples of commonly used servers.

A web server is software that delivers web content to browsers upon request. It processes incoming requests, fetches the correct web pages, and sends them back to clients.

Examples: Apache, Nginx, Microsoft IIS, LiteSpeed.

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6. Define the roles of a frontend developer, backend developer, and database administrator in a project.

Frontend Developer – Designs and develops the visible part of the website using HTML, CSS, and JavaScript.
Backend Developer – Handles logic, database operations, and server management.
Database Administrator (DBA) – Manages, secures, and maintains the database.

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7. Install VS Code and configure it for HTML, CSS, and JavaScript development. Take a screenshot of the setup.

Steps to install and set up VS Code:
1. Download VS Code from the official website.
2. Install extensions like *Live Server* and *Prettier*.
3. Create a new HTML file and open it with Live Server to see instant results.

(Screenshot should be added manually.)

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8. Explain the difference between static and dynamic websites. Provide an example of each.

Static Website: Displays fixed content that doesn't change unless edited manually. Example: A portfolio website.

Dynamic Website: Displays content that changes based on user interaction or database input. Example: Facebook or Amazon.

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9. Research and list five web browsers. Explain how rendering engines differ between them.

1. Google Chrome – uses Blink engine.
2. Mozilla Firefox – uses Gecko engine.
3. Microsoft Edge – uses Blink engine.
4. Safari – uses WebKit engine.
5. Opera – uses Blink engine.

Rendering engines determine how HTML, CSS, and JavaScript are displayed, so websites may look slightly different on each browser.

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10. Draw a labeled diagram showing the basic web architecture flow — client, server, database, and APIs.

Client (Browser) ↔ Server (Backend) ↔ Database
↕
API (connects client and server)