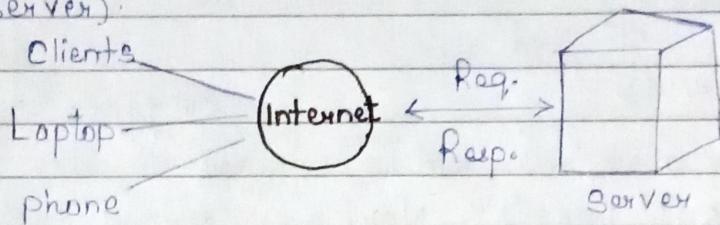


1. Explain the main components of client-server architecture and their functions.

→ Client - server architecture is a way to structure a computer network so that different devices (clients) can request and receive services from a central device (server).



Components of client - server :

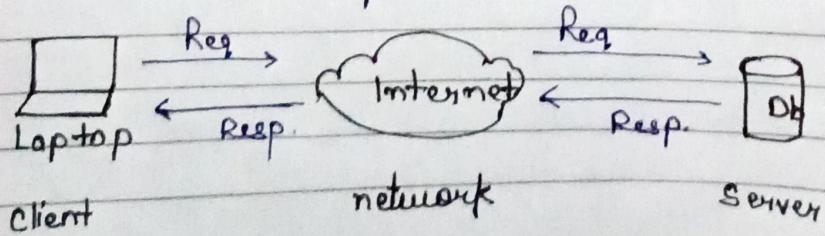
- **Client:** It is a device or software that makes requests to the server. Client can be computer or any other devices connected to network.
- **Server:** It is a powerful computer or software that provides services, resources or data to clients. It processes client req. and sends back response.
- **Network:** It is a medium through which clients and server communicate. It can be LAN or WAN like the internet.

ex - Wifi

- **Request:** A request is message sent by client to server asking for data or services.

ex - when you type url in browser

- **Response:** Is the message sent by the server back to client with the requested data or an action information.



2. Discuss the various career paths available after completing a web development course.

→ After completing a web - development course we will have following options in tech industry :-

1. Front End Developer: Focuses on visual aspects of website and web applications.

skills - HTML, CSS, JS, framework (React / Angular)

2. Back End Developer: Work on server - side, ensuring that the server , app , db communicate correctly.

skills - Node.js , Python, PHP , db (sql , mongo db)

3. Full Stack Developer: Skilled in both FE & BE . They can handle project that require them to work on both the client - side and server - side .

4. Web Design: Focuses on the aesthetics and usability of a website . They create layout , visual elements and user experience (UX) design .

skill - Graphic design , UX/UI design , HTML , CSS , Sketch .

5. DevOps Engineers - Focuses on deployment , scaling , performance of web application

skills - scripting lang , CI/CD tools , cloud services , sys admin

6. Quality Assurance (QA) Engineer

Ensure app function correctly and are free of bugs . They execute test cases and automated tests .

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• Freelance web Developer - Work independently, taking on various web development projects for different clients. They are specialize in FE & BE both.

• Technical Consultant - Provide expert advice on web development projects, helping companies design, develop, and implement web-solutions.

• project Manager Manage web development proj, co-ordinating developers, designers and clients to ensure project are completed on time within budget.

• Product Manager Focuses on strategy and roadmap of web-based product working closely with development and marketing items to build and launch successful products.

3. Describe the role of a web browsers developer tools on web development.

→ Web browser developer tools are essential for web development, providing a range of functionalities that help developers design, debug, and optimize web applications.

1. Inspect/^{Elements} - allows developers to view edit HTML and CSS. helps in understanding code structure of the webpage and making real-time changes to see how they affect.

2. Console - Display message logged by JS code, including errors, warning, custom logs.

3. Network - Monitor network activities, displaying all req. made by website webpage including time, status and payload.

4. Sources - provides access to the source files of the webpage including HTML, CSS, JS and other assets. It includes debugging tools like breakpoints.

5. Performance - Records / analyze the performance of a web page, providing detailed insights into the time taken by various processes.

6. Application - provides tool to inspect and manage web storage, including cookies, local storage...

4. What are advantages of using a version control system like Git in a development project?

→ VCS like Git in development project offers numerous advantages that enhance collaboration, streamline workflows and ensure the integrity and traceability of project.

1. Collaboration - multiple developer can work on same project without overwriting each other's changes. Git allows merging of changes and resolving conflicts.

2. Version History - keeps a detailed history of all changes made to the project.

Performance - Fast

Can be slower due to comprehensive features.

Functionality - Basic text editing with optional extensions, code completion, project management.

Use case - suitable for simple, quick edits and script.

Best for large, complex projects requiring robust dev tool.

Eg. Sublime Text, VS Code, IntelliJ IDEA, Visual Studio

Customization: highly customizable with plugins

Customizable, but often more rigid due to integrated tools.

Key Features of Text Editors:-

- 1. Simplicity
- 2. Speed
- 3. Customization
- 4. Syntax Highlighting
- 5. Multiple File Support
- 6.

* Common Uses:

- Quick edits to code or configuration files.
- Writing scripts or simple programs
- Note-taking and documentation
- Editing files on remote servers via SSH

Key Features of IDEs:-

- Integrated Tool
- Code Completion

- Debugging
- Project Management
- Refactoring Tool

Common uses:

- Large scale software development projects
- Complex applications requiring extensive debugging & testing
- Development in languages that benefit from IDE
- Projects with multiple components and dependencies.