

Batch T-6

Practical No. 1

Title of Assignment - Study of Web and its basics

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Problem Statement 1: Study and describe the following concepts in your words

1. Evolution of Web including web 3.0

Ans:

The web has changed a lot over time:

Web 1.0 (1990s): The first version of the web, where websites were simple and mostly just text. People could read information but couldn't interact much.

Web 2.0 (2000s): The web became more interactive. Social media, blogs, and video-sharing sites emerged, allowing users to create and share their own content.

Web 3.0 (2010s and beyond): The web is becoming smarter. It uses technologies like AI and blockchain to understand data better and give users more control over their information. It's more about connecting data in meaningful ways and ensuring privacy and security.

2. Which ports and protocols are used by the web? Describe those in detail?

Ans:

Ports and Protocols Used by the Web

Common Ports

1. Port 80 (HTTP):

- **Purpose:** The default port for regular web traffic.
- **Function:** Allows web servers and browsers to communicate. When you type a website address without specifying a port, it uses port 80.
- **Example:** Typing "<http://example.com>" in your browser uses port 80 to access the site.

2. Port 443 (HTTPS):

- **Purpose:** The default port for secure web traffic.
- **Function:** Ensures that data sent between your browser and the website is encrypted and safe from eavesdropping.
- **Example:** Typing "<https://wic.walchandsangli.ac.in>" in your browser uses port 443 to securely access the site.

Web Protocols

1. HTTP (HyperText Transfer Protocol):

- **Port:** 80
- The basic method for sending web pages and data over the internet.

2. HTTPS (HyperText Transfer Protocol Secure):

- **Port:** 443
- A secure version of HTTP that encrypts data.

3. FTP (File Transfer Protocol):

- **Ports:** 21 (commands), 20 (data)
- Used to transfer files between computers.

4. SFTP (SSH File Transfer Protocol):

- **Port:** 22
- A secure way to transfer files using SSH (Secure Shell).

5. SMTP (Simple Mail Transfer Protocol):

- **Port:** 25 (sending emails)
- Used for sending emails.

3. Difference Between HTTP & HTTPS

Ans.

Feature	HTTP	HTTPS
Port	80	443

Purpose	Transfers web pages and data	Transfers web pages and data securely
Encryption	No encryption; data is sent as plain text	Data is encrypted to keep it private
Security	Less secure; data can be intercepted	More secure; data is protected from eavesdropping
Use Case	Good for browsing general, non-sensitive websites	Essential for sensitive activities like online banking and shopping
Performance	Slightly faster because no encryption is involved	Slightly slower due to encryption, but the difference is minor with modern technology

4. What are web developer tools and why it is needed?

Ans.

Web Developer Tools (DevTools)

DevTools are built into browsers like Chrome, Firefox, Safari, and Edge, aiding in website and web application development, debugging, and optimization. Here are the key features and benefits:

Key Features:

1. **Inspector:**
 - View and edit HTML/CSS live.
 - Experiment with style changes without altering source code.
2. **Console:**
 - Write and execute JavaScript.

- Debug JavaScript with error logs.
- 3. **Network Panel:**
 - Monitor network requests (e.g., images, scripts).
 - Analyze loading times and resource sizes.
- 4. **Sources Panel:**
 - Access and debug HTML, CSS, and JavaScript files.
 - Set breakpoints and step through code.
- 5. **Performance Panel:**
 - Record and analyze page performance.
 - Identify and optimize slow areas.
- 6. **Application Panel:**
 - Manage browser storage (cookies, local storage).
 - Inspect web app data.
- 7. **Security Panel:**
 - Check webpage security.
 - Identify vulnerabilities and ensure secure connections.
- 8. **Accessibility Panel:**
 - Test and improve accessibility.
 - Ensure usability for everyone, including those with disabilities.

Why You Need DevTools:

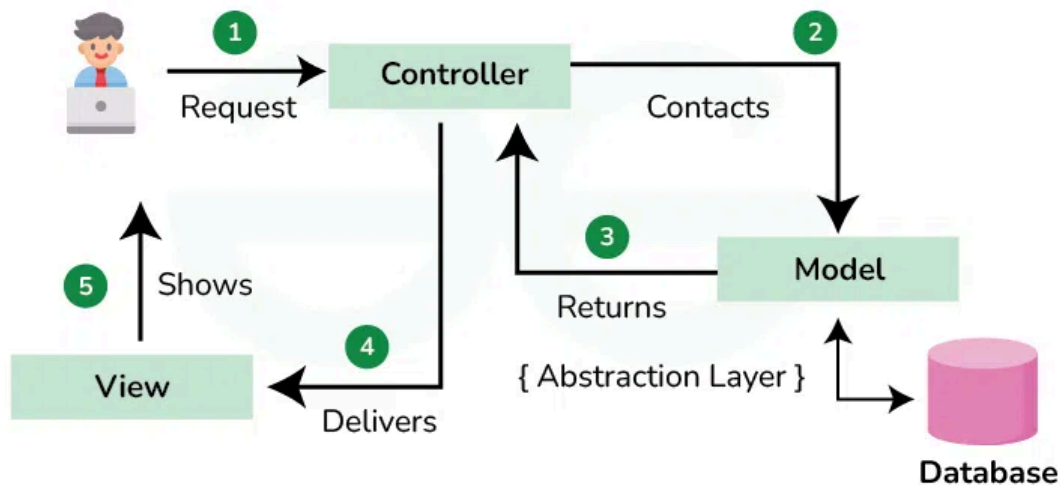
- Debugging, Performance, Testing, Resource Management, Security, Accessibility

5. Elaborate with diagram client server architecture and MVC architecture. When to use which architecture?

Ans.



Client-Server Architecture: Use this when you have a system where tasks are divided between a client (user interface) and a server (data and processing). For example, when you're using a web application, the client (browser) sends requests to the server, which processes them and sends back the results.



MVC Architecture (Model-View-Controller): Use this when you want to separate your application's concerns into three parts:

- **Model** (data and business logic),
- **View** (user interface),
- **Controller** (handles input and updates the Model).

This separation helps in organizing code and makes it easier to manage, especially in complex applications where you need a clear structure and flexibility. For instance, in a web app, the MVC pattern helps in maintaining and scaling the application by clearly defining the roles and interactions of its components.

6. What is HTML and HTML5?

Ans.

HTML (HyperText Markup Language) is the standard language for creating web pages, using tags to structure content.

HTML

- **Released:** 1999
- **Purpose:** Structure and present web content
- **Elements:** `<html>`, `<head>`, `<body>`, `<div>`, `<p>`, `<a>`, ``, etc.

HTML5

- **Released:** 2014
- **Purpose:** Improve web development with new features and multimedia support
- **New Elements:**
 - **Structural:** `<header>`, `<footer>`, `<section>`, `<article>`, `<nav>`, `<aside>`
 - **Media:** `<audio>`, `<video>`
 - **Forms:** `<datalist>`, `<keygen>`, `<output>`

7. Which are the currently used versions of HTML and CSS for web development?

Ans.

HTML5 and CSS3 are used for web development currently.

8. Which tools are available for front end development and back end development?

Ans.

Front End Development Tools

- **Frameworks/Libraries:** React, Vue.js, Angular
- **Build Tools:** Webpack, Parcel, Gulp
- **Package Managers:** npm, Yarn
- **Editors/IDEs:** Visual Studio Code, Sublime Text, Atom
- **Testing:** Jest, Mocha, Selenium

Back End Development Tools

- **Frameworks/Libraries:** Express.js, Django, Ruby on Rails
- **Databases:** MySQL, PostgreSQL, MongoDB
- **Server Environments:** Node.js, Apache, Nginx
- **Editors/IDEs:** Visual Studio Code, PyCharm, IntelliJ IDEA
- **Testing:** JUnit, RSpec, PyTest
- **Containers/CI:** Docker, Kubernetes

9. What MERN stack includes? Why and when is it preferred for web development?

Ans.

The **MERN stack** is a set of tools for building web apps:

- **MongoDB:** Stores data in a flexible way.
- **Express.js:** Helps manage the server side.
- **React:** Builds the user interface.
- **Node.js:** Runs the server using JavaScript.

Why Use MERN:

- Everything uses JavaScript, making coding simpler.
- Great for creating interactive websites and apps.

10. List out newly introduced input types, APIs, form elements, and elements that support media content in HTML5?

Ans.

New HTML5 Features:


- **Input Types:** `email`, `date`, `number`, `url`, `range`, `color`, `tel`, `search`, `time`, `datetime-local`
- **APIs:** Local Storage, Geolocation, Web Workers, Canvas, WebRTC, File API
- **Form Elements:** `datalist`, `keygen` (deprecated), `output`
- **Media Elements:** `audio`, `video`, `track`

11. Explain HTML5 Web storage.

Ans.

HTML5 Web Storage includes:

1. **Local Storage:**
 - Persistent; data remains after closing the browser.
 - Use: Long-term data (e.g., user preferences).
 - API: `localStorage` (methods: `setItem()`, `getItem()`, `removeItem()`, `clear()`).
2. **Session Storage:**
 - Temporary; data is cleared when the page is closed.
 - Use: Short-term data (e.g., form inputs).
 - API: `sessionStorage` (similar methods to `localStorage`).



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Tech Enthusiast and Computer Science Student
I am a Third year Eng. student

Achievements

- Pupil At CodeForces
- National Level Sports Player.
- Cleared UPSC NDA 146 Written Exam with 415 marks.

Skills

C++ Language★★★★

Competative Programming★★★★

Singing★★★★

Drumming★★★★

Study Experience

Dates	Study
2022-2026	WCE Sangli, Maharashtra
2015-2020	JNV Kagal, Kolhapur

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