

Unit 1

1. Differentiate between Internet and World Wide Web

- **Internet** is a global system of interconnected computer networks that communicate using TCP/IP protocol. It provides services like email, file transfer, online chat, video conferencing, and browsing.
- **World Wide Web (WWW)** is a collection of interlinked hypertext documents and resources accessed via the Internet using web browsers.
- **Key Differences:**
 1. **Nature** – Internet is the infrastructure; WWW is a service running on it.
 2. **Protocols** – Internet uses multiple protocols (TCP/IP, FTP, SMTP), while WWW mainly uses HTTP/HTTPS.
 3. **Function** – Internet allows communication & connectivity; WWW allows accessing and sharing information.
 4. **Components** – Internet = hardware (routers, cables, satellites).
WWW = software (websites, browsers).
 5. **Analogy** – Internet is like a library (building + network), WWW is the collection of books (information).
- **Example:** Sending an email uses the Internet, while reading a webpage uses the WWW.

2. What is HTTP? Explain its working.

- **HTTP (HyperText Transfer Protocol)** is the foundation of data communication on the web.
 - It is an **application layer protocol** that defines how web clients (browsers) and servers communicate.
 - **Working Process:**
 1. User enters a URL in the browser.
 2. Browser sends an **HTTP request** to the web server.
 3. Server processes the request and sends an **HTTP response** (HTML page, images, etc.).
 4. Browser displays the content to the user.
 - **Characteristics:**
 - Uses **port 80** by default.
 - Works on **request–response model**.
 - **Stateless protocol** – each request is independent.
 - **Example:**
 - Request: GET /index.html HTTP/1.1
 - Response: HTML page sent from the server.
 - **Applications:** Website browsing, API communication, web services.
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3. Define HTTPS. How is it more secure than HTTP?

- **HTTPS (HyperText Transfer Protocol Secure)** is the secure version of HTTP that uses **SSL/TLS encryption**.
 - **Security Features:**
 1. **Encryption** – Data exchanged is encrypted, preventing hackers from reading it.
 2. **Authentication** – Uses **digital certificates** issued by Certificate Authorities (CA) to verify server identity.
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3. **Data Integrity** – Ensures data is not altered during transfer.

- **Difference from HTTP:**
 - HTTP sends data in plain text; HTTPS encrypts it.
 - HTTP works on port 80; HTTPS works on port 443.
 - **Advantages:**
 - Protects sensitive data like passwords, credit card details.
 - Prevents phishing and man-in-the-middle attacks.
 - **Example:** Online banking, e-commerce, Gmail, social media logins.
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4. Write a note on FTP with real-life applications.

- **FTP (File Transfer Protocol)** is a standard protocol for transferring files between a client and server on a network.
 - **How it Works:**
 - FTP uses two channels:
 1. **Command channel** (control communication).
 2. **Data channel** (actual file transfer).
 - Works on **TCP/IP**, generally using **port 21**.
 - **Features:**
 - Upload, download, delete, rename files.
 - Supports anonymous login and user authentication.
 - Can resume interrupted transfers.
 - **Real-life Applications:**
 1. Web developers upload website files to hosting servers.
 2. Companies share large project files securely.
 3. Software distribution – Linux, games, and drivers are often shared on FTP servers.
 4. Remote backup of important organizational data.
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- **Example Tools:** FileZilla, WinSCP.
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5. Explain the functions of a Web Browser. Give two examples.

- A **web browser** is software that allows users to access and interact with web resources.
- **Functions:**
 1. **Retrieval** – Sends requests to web servers and fetches content.
 2. **Rendering** – Interprets HTML, CSS, and JavaScript to display web pages.
 3. **Navigation** – Provides back, forward, reload, and stop options.
 4. **User Interface** – Provides address bar, bookmarks, tabs, and history.
 5. **Security** – Manages cookies, supports HTTPS, pop-up blocking, incognito mode.
 6. **Extensions** – Supports add-ons for ad-blocking, password managers, etc.
 7. **Cross-platform support** – Runs on multiple devices (PC, mobile).
- **Examples:**
 - **Google Chrome** – Fast, widely used, supports many extensions.
 - **Mozilla Firefox** – Open-source, strong privacy features.
- Browsers thus act as the **gateway to the World Wide Web**.

6. Define URL. Write its structure with an example.

- **URL (Uniform Resource Locator)** is the unique address used to access a resource on the Internet.
- It specifies the location of the resource and the protocol to be used.

- **Structure of a URL:**
 - protocol://domain-name:port/path?query#fragment
 1. **Protocol** – The method of communication (HTTP, HTTPS, FTP, etc.).
 2. **Domain name** – Human-readable address (e.g., www.google.com).
 3. **Port** (optional) – Default is 80 (HTTP) or 443 (HTTPS).
 4. **Path** – Location of the file or resource on the server.
 5. **Query string** – Parameters passed to the server.
 6. **Fragment** – A specific section of the page.
 - **Example:**
 - https://www.amazon.com:443/products?category=books#top
 - Protocol = HTTPS
 - Domain = amazon.com
 - Port = 443
 - Path = /products
 - Query = category=books
 - Fragment = top
-

7. What is a Web Client? Give two examples.

- A **Web Client** is software or hardware that communicates with a web server to request and display resources.
 - It acts as the **front-end** interface for the user.
 - **How it works:**
 - The user enters a URL in the client (e.g., browser).
 - The client sends an HTTP/HTTPS request to the server.
 - The server responds with web content (HTML, CSS, JavaScript).
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- **Examples of Web Clients:**
 1. **Google Chrome** – A popular web browser.
 2. **Mozilla Firefox** – Another widely used browser.
 - Other examples include Safari, Edge, Opera, or even mobile apps that access web APIs.
 - **Importance:** Without web clients, users cannot interact with or view information from the web server.
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8. Define a Web Server. List its features.

- A **Web Server** is software or hardware that stores, processes, and delivers web pages to clients over the Internet using HTTP/HTTPS.
 - **Working:** It receives client requests, processes them, and sends back the requested resources (HTML, images, videos).
 - **Features of Web Server:**
 1. **Supports multiple protocols** – HTTP, HTTPS, FTP, etc.
 2. **Handles concurrent users** – Can serve many users at the same time.
 3. **Security** – Provides SSL/TLS encryption and authentication.
 4. **Performance** – Uses caching and load balancing for faster responses.
 5. **Logging and monitoring** – Tracks requests and errors.
 6. **Virtual hosting** – Hosts multiple websites on a single server.
 7. **Scalability** – Can be configured to handle increased traffic.
 - **Examples of Web Servers:** Apache HTTP Server, Microsoft IIS, Nginx, Google Web Server.
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9. Write a short note on the history of Web Servers.

- The concept of the **web server** started in **1990**, when **Tim Berners-Lee** created the first web server at CERN called **CERN httpd**.
- **Early Development (1990–1995):**
 - CERN httpd was the first software to serve web pages.
 - Later, the **NCSA HTTPd** server became popular.
- **Apache Era (1995–2005):**
 - Apache HTTP Server was released in 1995.
 - It became the most widely used web server due to being open-source, stable, and highly configurable.
- **Modern Web Servers (2005–Present):**
 - **Nginx** (2004) introduced lightweight, high-performance architecture suitable for handling large traffic.
 - **Microsoft IIS** also grew in popularity for Windows-based hosting.
 - Cloud-based web servers like **Google Web Server (GWS)** and **Amazon Web Services (AWS)** dominate today.
- **Today:** Web servers support dynamic pages, APIs, cloud hosting, and high-level security, forming the backbone of the modern Internet.

10. What is HTML? Write the structure of an HTML file.

- **HTML (HyperText Markup Language)** is the standard markup language used to design and display web pages.
- It defines the structure of web content using elements and tags.
- HTML is platform-independent and interpreted by web browsers.
- **Basic Structure of HTML File**

<!DOCTYPE html>

```
<html>

<head>

  <title>My First Page</title>

</head>

<body>

  <h1>Hello, World!</h1>

  <p>This is a sample HTML page.</p>

</body>

</html>
```

Explanation:

- <!DOCTYPE html> – Defines the document type (HTML5).
- <html> – Root element.
- <head> – Contains metadata, title, links.
- <body> – Contains actual page content (text, images, links)

11. List any five commonly used HTML tags with examples.

? <h1> to <h6> – Headings

```
<h1>Main Heading</h1>
```

```
<h3>Sub Heading</h3>
```

? <p> – Paragraph

```
<p>This is a paragraph.</p>
```


? <a> – Anchor/Hyperlink

Visit Google

? – Image

? <table> – Table

<table border="1"><tr><td>Row 1</td></tr></table>

12. Differentiate between Block and Inline elements with example.

- **Block Elements:**
 - Occupy the full width of the page.
 - Always start on a new line.
 - Examples: <div>, <p>, <h1>.
- <p>This is a block element.</p>
- <div>Another block element</div>
- **Inline Elements:**
 - Occupy only as much width as needed.
 - Do not start on a new line.
 - Examples: , <a>, .
- <p>This is inline text.</p>

Key Difference: Block = container structure, Inline = formatting within text.

3. Explain iframe tag with example.

- **iframe (Inline Frame)** is used to embed another webpage inside a web page.
- It allows displaying content like videos, maps, or external sites.
- **Syntax:**

```
<iframe src="https://www.wikipedia.org" width="400"  
height="300"></iframe>
```

- **Uses:**
 - Embedding YouTube videos.
 - Showing Google Maps.
 - Displaying another website.
-

14. Explain <input> tag with any five attributes with example.

- **<input>** is used to take user input in forms.
- **Common Attributes:**
 1. **type** – Specifies input type (text, password, email).
 2. **name** – Name of input field (used in form submission).
 3. **value** – Default value in field.
 4. **placeholder** – Hint text.
 5. **required** – Makes field mandatory.
- **Example:**

```
<form>  
Name: <input type="text" name="username" placeholder="Enter  
Name"><br>  
Password: <input type="password" name="pass" required><br>  
Email: <input type="email" name="mail"><br>
```

```
<input type="submit" value="Register">
</form>
```

15. Explain Formatting text, superscript, subscript tag with example.

- **Formatting tags** are used to style and highlight text.
- **** – Bold text → **Bold**
- **<i>** – Italics → *Italic*
- **<u>** – Underline → Underline
- **<sup>** – Superscript (above text)
- **<sub>** – Subscript (below text)
- **Example:**

```
<p>This is <b>bold</b>, <i>italic</i>, and <u>underlined</u> text.</p>
```

```
<p>Water formula: H<sub>2</sub>O</p>
```

```
<p>Square: X<sup>2</sup></p>
```

16. Explain table tag and basic attributes with example.

- **Table** displays data in rows and columns.
- **Basic Tags:** **<table>**, **<tr>** (row), **<td>** (data), **<th>** (header).
- **Attributes:**
 1. **border** – Defines table border.
 2. **cellpadding** – Space inside cells.
 3. **cellspacing** – Space between cells.
 4. **align** – Alignment of table.
 5. **width** – Width of table.
- **Example:**

```
<table border="1" cellpadding="5" cellspacing="2">
  <tr><th>Name</th><th>Age</th></tr>
  <tr><td>Raj</td><td>20</td></tr>
</table>
```

17. Explain ordered list and unordered list with example.

- **Ordered List ():** Displays items in a numbered sequence.

```
<ol>
  <li>HTML</li>
  <li>CSS</li>
</ol>
```

- **Unordered List ():** Displays items with bullets.

```
<ul>
  <li>JavaScript</li>
  <li>PHP</li>
</ul>
```

- **Difference:** Ordered list shows ranking/steps; unordered is for general listing.
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18. Design Registration page in HTML.

- **Example Code:**

```
<!DOCTYPE html>
```

```
<html>
<head><title>Registration Page</title></head>
<body>
<h2>Student Registration Form</h2>
<form>
  Name: <input type="text" name="name"><br><br>
  Email: <input type="email" name="email"><br><br>
  Password: <input type="password" name="pass"><br><br>
  Gender: <input type="radio" name="gender" value="male"> Male
         <input type="radio" name="gender" value="female"> Female <br><br>
  Course: <select name="course">
         <option>BCA</option><option>B.Sc</option><option>B.Com</option>
         </select><br><br>
  <input type="submit" value="Register">
</form>
</body>
</html>
```

19. What is Web Technology & its importance of web technology?

- **Web Technology** refers to the tools, protocols, and languages used to create, maintain, and use websites and web applications.
- It includes **HTML, CSS, JavaScript, HTTP, web servers, databases, cloud services.**
- **Importance:**
 1. **Communication** – Enables global communication (email, chat, video calls).
 2. **Information Sharing** – Easy access to knowledge and resources.
 3. **E-commerce** – Online shopping, banking, payments.

4. **Education** – Online learning platforms, e-libraries.
 5. **Business Growth** – Companies reach worldwide markets.
 6. **Entertainment** – Music, movies, gaming via the web.
- Thus, web technology connects the world and supports almost every modern activity.
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20. Explain <h1> to <h6>, <u>, <i>, with example.

- **Heading Tags <h1> to <h6>:** Define headings, from largest <h1> to smallest <h6>.

<h1>Main Title</h1>

<h3>Sub Title</h3>

- **<u>** – Underline text.

<p><u>This text is underlined</u></p>

- **<i>** – Italic text.

<p><i>This is italic text</i></p>

- **** – Bold text.

<p>This is bold text</p>