WEB DEV MODULE 01

Sure! Here's a detailed, exam-focused explanation of the topics you mentioned. The content is structured clearly, written in simple language, and uses full sentences to make it easier to understand and remember without compromising on depth or length.

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1. The Basics of the Internet

The **Internet** is a global network of interconnected computers that allows users to communicate and share information. It is not owned by any single entity, but it functions through a set of protocols such as TCP/IP that manage how data is transferred. It connects millions of private, public, academic, business, and government networks.

The Internet allows services like email, file transfer, video streaming, online shopping, and access to web pages. Users access the Internet using devices like computers, smartphones, or tablets through an Internet Service Provider (ISP). It plays a key role in modern communication, education, and commerce.

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2. Web Client vs Web Server

A **Web Client** is a device or software, such as a web browser (e.g., Chrome, Firefox), that sends requests to a web server to access web pages or resources. It is used by the end user to view websites and interact with web content.

A **Web Server** is a computer or software that stores web pages, websites, and data. It responds to the requests sent by web clients by sending back the requested web page or file. Examples of web server software include Apache, Nginx, and Microsoft IIS.

In simple terms, the web client asks for data, and the web server provides that data.

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3. World Wide Web (WWW)

The **World Wide Web (WWW)** is a system of interlinked hypertext documents and resources that are accessed through the Internet using a web browser. It was invented by Tim Berners-Lee in 1989.

The WWW uses protocols like HTTP to access web pages stored on web servers. Users can click on hyperlinks to move from one document to another, making information access easy and fast. The WWW is only one of the services that run on the Internet, others include email and FTP.

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4. FTP (File Transfer Protocol)

FTP, or File Transfer Protocol, is a standard network protocol used to transfer files from one computer to another over a TCP-based network like the Internet. FTP allows users to upload, download, delete, rename, move, and copy files on a server.

Users often need an FTP client software to connect to an FTP server. It is commonly used by web developers to upload website files to a web server. FTP can be accessed using username and password or anonymously.

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5. HTTP vs HTTPS

HTTP (HyperText Transfer Protocol) is the protocol used for transmitting web pages over the Internet. It is responsible for transferring data between a web client and a web server. However, HTTP is not secure because data is sent in plain text.

SSL: Secure Sockets Layer
TLS: Transport Layer Security

HTTPS (HTTP Secure) is the secure version of HTTP. It uses encryption protocols like SSL or TLS to secure data transferred between the browser and the server. HTTPS protects data from being intercepted by attackers and is widely used in online transactions and secure websites.

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6. Introduction to HTML

HTML (HyperText Markup Language) is the standard markup language used to create web pages. It defines the structure and layout of a web page using various tags and attributes.

HTML is not a programming language. It is a markup language that tells the browser how to display content. Every web page you see on the Internet is written using HTML, often combined with CSS and JavaScript.

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7. History of HTML

HTML was developed by Tim Berners-Lee in 1991. The first version was very basic, with a small set of tags. Over the years, HTML evolved to support more features:

- HTML 2.0 (1995) was the first official standard.
- HTML 3.2 (1997) introduced scripting languages and better formatting.
- HTML 4.01 (1999) added CSS support and accessibility improvements.
- HTML5 (2014) introduced new features like multimedia support and semantic tags.

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8. HTML Tags and Attributes

Tags are the basic building blocks of HTML. They define how the content should be displayed in a browser. Tags usually come in pairs: an opening tag <tagname> and a closing tag </tagname>.

Attributes provide additional information about an element. They are always included in the opening tag and have a name-value format like attribute="value". Common attributes include id, class, style, src, and href.

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9. HTML Tag vs Element

A **tag** is just the command used in HTML, like or <img>. It tells the browser how to format or handle the content.

An **element** includes the tag, its attributes (if any), and the content inside it. For example, This is a paragraph. is an element, while and are tags.

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10. HTML: Basic Tags

Metadata means "data about the webpage."
It gives information like:Page title,Author name,Keywords,How the page should look on different devices

Some commonly used basic HTML tags include:

- <html>: The root tag of an HTML document.
- <head>: Contains metadata, title, and links to scripts or stylesheets.
- <title>: Defines the title of the page shown in the browser tab.
- <body>: Contains all the visible content of the web page.
- <h1> to <h6>: Headings, where <h1> is the largest and <h6> is the smallest.
- : Defines a paragraph.
-
: Inserts a line break.
- <hr>: Inserts a horizontal line.

<meta charset="UTF-8">: Specifies that the webpage uses UTF-8 encoding, which supports most characters from all languages.

Container/Paired Tags = Need both start and end tags.
Empty/void Tags = Do not need a closing tag.

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11. HTML Lists

HTML supports three types of lists:

1. **Ordered List (<ol>)**: Displays items in a numbered list. Each item is placed inside an <li> tag.
2. **Unordered List (<ul>)**: Displays items in bullet points.
3. **Description List (<dl>)**: Used for definitions. It contains <dt> for the term and <dd> for the description.

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12. HTML Images

To insert an image, the <img> tag is used. It is a self-closing tag and must include the src attribute to define the image path and the alt attribute for alternate text.

Example:

```
<img src="image.jpg" alt="A description of the image">
```

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13. HTML Hyperlinks

Hyperlinks are created using the <a> tag. The href attribute defines the link's destination. You can link to other pages, websites, or even files.

Example:

```
<a href="https://www.example.com">Visit Example</a>
```

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14. HTML Tables

Tables are created using the <table> tag. Other tags used in a table include:

- <tr>: Table row.
- <td>: Table data (cell).
- <th>: Table header cell.
- <thead>, <tbody>, and <tfoot>: Used to group parts of a table.

Example:

```
<table>
  <tr>
    <th>Name</th>
    <th>Age</th>
  </tr>
  <tr>
    <td>John</td>
    <td>25</td>
  </tr>
</table>
```

```
<table border="1">
  <thead>
    <tr>
      <th>Name</th>
      <th>Age</th>
    </tr>
  </thead>

  <tbody>
    <tr>
      <td>Alice</td>
      <td>25</td>
    </tr>
    <tr>
      <td>Bob</td>
      <td>30</td>
    </tr>
  </tbody>

  <tfoot>
    <tr>
      <td colspan="2">End of Data</td>
    </tr>
  </tfoot>
</table>
```

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15. Introduction and Advantages of HTML5

HTML5 is the latest version of HTML. It was developed to replace both HTML 4.01 and XHTML 1.0. HTML5 includes new elements, attributes, and behaviors and supports modern multimedia without needing extra plugins.

Advantages of HTML5:

A plugin is a small software component that adds a specific feature or functionality to an existing application, allowing it to do more without modifying the core structure.

Semantic tags in HTML are tags that clearly describe the meaning or purpose of the content inside them, making the structure of the webpage more understandable for both humans and machines

- Provides native support for video and audio.
- Introduces semantic tags like <article>, <section>, <header>, and <footer>.
- Supports mobile and responsive web design.
- Allows offline web applications using local storage.
- Offers better performance and cleaner code.

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16. HTML5 Web Forms

HTML5 introduced new input types and attributes for creating more powerful and user-friendly web forms. New input types include:

- email: Validates email format.
- date: Allows date picking.
- number: Accepts numeric input.
- range: Creates a slider.
- color: Opens a color picker.

New attributes include placeholder, required, autofocus, and pattern.

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17. HTML5 Media (Video & Audio)

HTML5 makes it easy to add multimedia using:

- <video> tag: To embed videos.
- <audio> tag: To embed sound or music.

Embed means to insert or integrate one piece of content or media (like images, videos, or documents) directly into a webpage or another application, so it can be viewed or used without needing to leave the page.

Both tags use src to define the file path and may include attributes like controls, autoplay, and loop.

Example:

```
<video src="movie.mp4" controls></video>
<audio src="music.mp3" controls></audio>
```

Would you like me to turn this into a downloadable PDF or continue with any JavaScript or CSS topics next?