WEB DEV MODULE 02

Sure! Here's a detailed explanation of each topic from the **exam point of view**, written in **complete sentences** using **simple and easy-to-understand language**. The content is **not shortened**, so it's detailed enough for thorough revision.

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1. Introduction to Cascading Style Sheets (CSS)

Cascading Style Sheets (CSS) is a **style sheet language** used to describe how HTML elements should be **displayed** on a screen, paper, or other media. CSS allows us to control the **layout, color, font, spacing, borders**, and **overall appearance** of web pages.

The word **"Cascading"** in CSS means that **multiple style rules can apply** to the same element, and the final result depends on which rule is more specific or appears last. CSS helps in **separating content from presentation**, which makes web pages easier to maintain and more flexible.

Instead of writing styles repeatedly in each HTML tag, we can write them once in a CSS file and **apply them across multiple pages**, saving time and reducing redundancy.

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2. Creating a Style Sheet

There are **three main ways** to create and apply CSS in an HTML document:

1. **Inline CSS**:
   This is written directly within an HTML tag using the style attribute.
   Example: This is blue text
2. **Internal CSS**:
   This is written inside the <style> tag within the <head> section of an HTML document.
   Example:
3. <style>
4. p {
5. color: green;
6. }
7. </style>
8. **External CSS**:
   This is the most commonly used method. CSS rules are written in a separate file with a .css extension and linked to the HTML file using the <link> tag.
   Example:
9. <link rel="stylesheet" href="styles.css">

External CSS promotes **reusability**, **organization**, and **cleaner HTML code**.

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3. CSS Selectors

CSS selectors are used to **target HTML elements** so we can apply styles to them. Here are the main types of CSS selectors:

- **Element Selector**: Targets HTML elements by their name.
  Example: p { color: red; } – applies to all <p> tags.
- **Class Selector**: Targets elements with a specific class using a dot (.).
  Example: .highlight { background-color: yellow; }
- **ID Selector**: Targets elements with a specific ID using a hash (#).
  Example: #header { font-size: 24px; }
- **Group Selector**: Targets multiple elements together.
  Example: h1, h2, p { margin: 10px; }
- **Universal Selector**: Targets all elements using an asterisk (*).
  Example: * { box-sizing: border-box; }
- **Descendant Selector**: Applies style to elements inside a specific element.
  Example: div p { color: blue; }

Selectors help in **precisely targeting** elements, improving both **efficiency** and **design control**.

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4. Introduction to CSS3

CSS3 is the **latest version** of CSS. It introduced many **new features** and **modules** that make web design more powerful and flexible. CSS3 provides advanced capabilities such as:

- **Transitions** for smooth changes
- **Animations** for dynamic effects
- **2D and 3D transforms**
- **Rounded corners**, **gradients**, and **shadows**
- **Multi-column layouts**

CSS3 is **backward compatible** with older CSS, meaning older styles will still work, but the new features allow developers to create **modern, responsive, and visually appealing websites**.

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5. Border and Box Effects

CSS3 introduced advanced **border and box effects** that allow for creative visual designs:

- **Border-radius**: Rounds the corners of elements.
  Example: border-radius: 10px;
- **Box-shadow**: Adds shadow around elements.
  Example: box-shadow: 4px 4px 10px gray;
- **Outline-offset**: Controls the space between an outline and the element's border.

These effects help in making **elements stand out** and add a modern touch to web design.

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6. Background Images

CSS allows the use of **background images** for any HTML element. Properties used with background images include:

- background-image: Sets the image.
  Example: background-image: url('image.jpg');
- background-size: Defines the size of the image (cover, contain, or custom size).
- background-repeat: Decides if the image should repeat (no-repeat, repeat-x, etc.)
- background-position: Sets the position of the image (e.g., center, top right).

Background images enhance the **visual appearance** of a webpage and can be customized for **better layout**.

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7. 2D & 3D Transformation

CSS3 allows transforming elements in 2D or 3D space:

2D Transformations:

- translate(x, y): Moves an element from its position.
- rotate(angle): Rotates the element.
- scale(x, y): Scales the size.
- skew(x, y): Skews the element.

3D Transformations:

- rotateX(), rotateY(), and rotateZ(): Rotates along the X, Y, or Z axis.
- perspective: Adds depth to 3D transformed elements.

These properties create **interactive and engaging** effects in modern websites.

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8. Transition and Animation

CSS Transitions:

Transitions allow you to **smoothly change** property values over time. Example:

```
button {
  transition: background-color 0.3s ease;
}
```

When you hover over the button and change the background, it will **transition smoothly**.

CSS Animations:

Animations provide **step-by-step visual changes** using @keyframes.

Example:

```
@keyframes slide {
  from { left: 0; }
  to { left: 100px; }
}
```

Animations allow for **looping, delays**, and **control over different stages**, making websites more dynamic.

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9. Multi-Column Layout

CSS3 provides the ability to display content in **multiple columns**, just like newspapers or magazines.

Properties include:

- column-count: Defines number of columns.
- column-gap: Sets the space between columns.
- column-rule: Adds a border between columns.

Example:

```
div {
  column-count: 3;
  column-gap: 20px;
}
```

This layout is useful for **better content organization** and readability, especially in blogs or long articles.

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10. Introduction to CSS Library Framework

CSS frameworks are **pre-prepared libraries** that make web development faster and easier by providing **ready-to-use styles and components**.

Popular CSS Frameworks:

- **Bootstrap**: Provides a grid system, responsive design, and pre-styled components.
- **Tailwind CSS**: Utility-first framework that gives you full design control.
- **Bulma**: Simple and modern framework focused on Flexbox.

Flexbox (short for Flexible Box Layout) is a CSS layout model that allows you to design complex layouts more easily and dynamically by distributing space and aligning content within a container.

Benefits of using CSS frameworks:

- **Faster development**
- **Consistent design**
- **Cross-browser compatibility**
- **Mobile responsiveness**

These frameworks help developers **save time**, **avoid repetitive work**, and focus on building features instead of styling everything from scratch.

Let me know if you'd like flashcards or a one-page revision sheet based on this. 😊