**Module 16 - CSS in Full Stack Course**

**CSS Selectors & Styling**

**Theory Assignment**

1. **What is a CSS selector? Provide examples of element, class, and ID selectors.**

**Ans:** CSS selectors are used to select the content you want to style. Selectors are the part of CSS rule set. CSS selectors select HTML elements according to its id, class, type, attribute etc.

* **Element Selector**
* The element selector selects the HTML element by name.
* **Example:** <!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

<meta name="viewport" content="width=device-width, initial-scale=1.0">

    <title>Document</title>

<style>

p{

text-align:center;

font-family:Times New Roman;

font-weight:600;

color:pink;

}

</style>

</head>

<body>

<p>India is Best Country in the World</p>

</body>

</html>

* **Class Selector**
* This selector targets elements that have a specific class attribute. It begins with a dot (.).
* **Example:** <!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

<meta name="viewport" content="width=device-width, initial-scale=1.0">

    <title>Document</title>

<style>

.vel{

text-align:center;

font-family:Times New Roman;

font-weight:600;

color:pink;

}

p.demo{

text-align:center;

font-family:Times New Roman;

font-weight:500;

color:blue;

}

</style>

</head>

<body>

<p class=”vel”>India is Best Country in the World</p>

<p class=”demo”>India and Russia is Good Friend</p>

</body>

</html>

* **Id Selector**
* The id selector selects the id attribute of an HTML element to select a specific element. An id is always unique within the page so it is chosen to select a single, unique element. It is written with the hash character (#), followed by the id of the element. It is highest priority of the selector.
* **Example:** <!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

<meta name="viewport" content="width=device-width, initial-scale=1.0">

    <title>Document</title>

<style>

#first{

text-align:center;

font-family:Times New Roman;

font-weight:500;

color:yellow;

}

</style>

</head>

<body>

<p id=”first”>India and Russia Both are Good Friendly Countries </p>

</body>

</html>

1. **Explain the concept of CSS specificity. How do conflicts between multiple styles get resolved?**

**Ans:** CSS specificity is a crucial concept that determines which CSS rules apply to an element when multiple styles could potentially affect it. It is based on the principle that some selectors are more specific than others, allowing for a hierarchy of importance when it comes to styling elements.

* **How Specificity Works:**
* Specificity is calculated based on the components used in a CSS selector. The more specific the selector, the higher the specificity.

1. **Inline Styles:**

* Inline styles Directly applied in the HTML element using the style attribute. These have the first highest specificity. Inline styles are applied directly to the element in the HTML using the style attribute. The inline CSS is also a method to insert style sheets in HTML document
* **Example:** **<p style="color: red;">Hello, world!</p>**

1. **Id Selectors:**

* Second highest priority, identified by the unique id attribute of an element
* **Example: #vel{ color: red;} <p id=”vel”>Hello,World</p>**

1. **Class Selector:**

* Third highest priority, targeted using class names.
* **Example: .vel{ color: pink;} <p class=”vel”> Hello Wolrld</p>**
* **Resolving Conflicts:**
* **Inline styles** will always override other rules.
* If there are no inline styles, the rule with the **highest specificity** wins.
* ID selector is present, it will override any class, attribute, or element selectors.
* If multiple class selectors are present, the one with the highest specificity will apply.

1. **What is the difference between internal, external, and inline CSS? Discuss the advantages and disadvantages of each approach.**

**Ans:**

* **Difference Between Internal, External, And Inline CSS**

|  |  |  |  |
| --- | --- | --- | --- |
| **Feature** | **Internal CSS** | **External CSS** | **Inline CSS** |
| **Location** | It is used within <head> section of HTML document. | It is used in a separate .css file. | It is used within HTML tag using the style attribute. |
| **Sector Scope** | Affects multiple elements within the same HTML element. | Affects multiple HTML documents or an entire website. | Affects a single element or a group of elements. |
| **Priority** | Medium priority. Overrides external styles but can be overridden by inline styles. | Lowest priority. Can be overridden by both inline and internal styles. | Highest priority. Overrides internal and external styles. |
| **Reusability** | Can be reused on multiple elements within the same HTML document. | Can be reused on multiple HTML documents or an entire website. | Not reusable. Styles need to be repeated for each element. |
| **File Size** | Internal styles are part of the HTML file, which increases the file size. | External styles are in a separate file, which reduces the HTML file size and can be cached for faster page loads. | Inline styles increase the HTML file size, which can affect the page load time. |

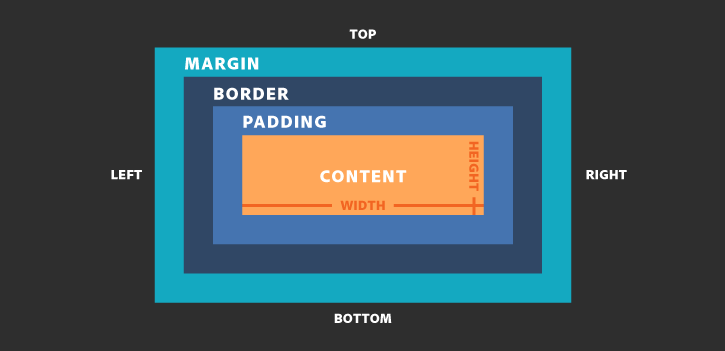
* **Advantages of Inline CSS**
* Inline CSS Overrides external and internal styles with higher specificity.
* Using style attributes we can provide styles directly to our HTML elements.
* Inline styles don’t require separate CSS files, potentially reducing HTTP requests.
* No need to create and upload a separate document as in the external style
* **Disadvantages of Inline CSS**
* Inline CSS does not provide browser cache advantages.
* Inline CSS styles cannot be reused anywhere else.
* Adding style attributes to every HTML element is time-consuming.
* Styling multiple elements can increase your pages size and download time, impacting overall page performance.
* **Advantages of Internal CSS**
* You need not upload several files because the code will only be added to one HTML file.
* It is used multiple elements within the same HTML element.
* You can include CSS in HTML texts by utilising a type of CSS known as internal CSS. A single HTML web page’s layout can be designed, and styles can be modified within the HTML code.
* You need not upload several files because the code will only be added to one HTML file.
* No dependency on external resources 🡺 No issues with broken file links or incorrect paths.
* **Disadvantages of Internal CSS**
* Limited Reusability 🡺 Styles are restricted to one page.
* Larger page sizes 🡺 Embedding CSS in HTML increases file size.
* Difficult to Maintain for Large Projects
* Performance Issues on Larger Sites
* Styles are not cached, slowing down page loading.
* **Advantages of External CSS**
* A significant advantage of external CSS is its reusability, as a single stylesheet can be linked across multiple web pages, significantly reducing repetition and redundancy.
* A performance advantage of external CSS is that it uses browser caching to improve loading times after the initial visit.
* **Easier Maintenance and Scalability** 🡺 Centralized styling for all pages.
* **Flexibility** 🡺 Ability to use multiple CSS files for different purposes or devices.
* **Collaboration-friendly** 🡺 Multiple developers can work simultaneously on different aspects of the project.
* **SEO benefits** 🡺 Cleaner HTML and faster loading improve search engine rankings.
* **Disadvantages of External CSS**
* Caching issues may result in outdated content being displayed to users.
* File management complexity, especially for large projects.
* Caching issues may result in outdated content being displayed to users.
* Dependency on external servers introduces risks like downtime or broken links.
* Increased HTTP requests can slow down the initial page load.
* Slower rendering due to blocking external resources.

**5-CSS Box Model**

**Theory Assignment**

**1: Explain the CSS box model and its components (content, padding, border, margin). How does each affect the size of an element?**

**Ans:** The CSS box model is a fundamental concept in web design, and it defines how elements are structured and how their sizes are calculated on a webpage.



* **Content**
* The content of the box, where text and images appear.
* The content area is the central part of the CSS box model, containing the main content (e.g., text, images, videos, or elements like <p> or <span>). It can be styled with [CSS properties](https://www.geeksforgeeks.org/css-properties-complete-reference/)like height and width.
* **Padding**
* The padding area is the space between the content and the border of an element. The padding is transparent.
* It includes the areas highlighted in light green and skin color in the example.
* The distance between the content edge and the border is the padding.
* The border marks the end of the padding area.
* The padding area contributes to the element’s total dimensions.
* Padding can be adjusted using CSS properties.
* **Border**
* A border that goes around the padding and content.
* The area that marks the end of an element is called as the border it is the outer fencing for the element.
* The CSS border is a shorthand property used to set the border on an element
* **Margin**
* The area outside the border element is called margin. The margin is completely transparent and doesn't have any background color. It clears an area around the element.
* Basically this area depends on the parent of the element.
* Top, bottom, left and right margin can be changed independently using separate properties. You can also change all properties at once by using shorthand margin property.

**Question 2: What is the difference between border-box and content-box box-sizing in CSS? Which is the default?**

**Ans:**