# Module 16)

# CSS in Full Stack Course

1. CSS Selectors & Styling

**Theory Assignment**

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

A CSS selector is the first part of the CSS rule. It is a pattern used to select the HTML elements that developer wants to style. The selector tells the browser which elements the CSS rules should apply to.

Element Selector: It targets all elements of a specific type.

Class Selector: It targets element with a specific class. In this class names start with a dot.

ID Selector: It targets a single unique element with a specific ID. ID selector start with #.

Examples of element, class, and ID selectors

<!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>

        /\* element selector \*/

        h4{

            color: brown;

        }

        /\* Class selector \*/

        .box{

            border: 4px solid black;

            height:50px;

            width: 180px;

            color: rgb(56, 105, 6);

            padding:8px;

        }

        /\* ID selector \*/

        #header{

            color:blue;

        }

    </style>

</head>

<body>

    <h4 class="p"> This is an element selector.  </h4>

    <p class="box"> This is a class selector start with a dot (.) </p>

    <div id="header"> This is a ID selector start with hash (#).</div>

</body>

</html>

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

CSS specificity is a set of rules the browser uses to determine which CSS rule to apply when multiple rules target the same element.

* When multiple styles apply to the same element, the rule with the highest specificity wins.
* CSS specificity decides which style rule wins when multiple rules target the same element. The more specific the selector, the higher its priority.

p {

color: red; /\* element selector \*/

}

.box {

color: green; /\* class selector \*/

}

#special {

color: blue; /\* ID selector \*/

}

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

**External CSS:** With an external style sheet, we can change the look of an entire website by changing just one file.

Each HTML page must include a reference to the external style sheet file inside the <link> element, inside the head section.

<head>

<link rel=”stylesheet” href=”file.css”>

</head>

* An external style sheet can be written in any text editior and must be saved with a .css extension.
* The external .css file should not contain any HTML tags.

Advantage:

* Best for large websites.
* Reusable across multiple HTML pages.
* Cleaner HTML and easier maintenance.

Disadvantage:

* Requires an extra HTTP request.
* Styles may not apply if the CSS file is missing or fails to load.

**Internal CSS:** An internal style sheet may be used if one single HTML page has a unique style.

The internal style is defined inside the <style> element, inside the head section.

<head>

    <meta charset="UTF-8">

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

    <title>Image collage</title>

    <style>

      \*{

            box-sizing:border-box

      }

        .diamond{

            width: 100px;

            height:100px;

            border-radius:4px;

            position: absolute;

            transform: rotateZ(45deg);

            overflow: hidden;

        }

        .diamond img{

            width: 100px;

            height:100px;

            border-radius:4px;

            object-fit: cover;

        }

        #img1{

            margin-top: 100px;

            margin-left: 100px;

        }

        #img2{

            margin-top: 100px;

            margin-left: 240px;

        }

    </style>

</head>

Advantage:

* Keeps styles in one place in the same file.
* Good for small websites or single-page projects.

Disadvantage:

* Not reusable across multiple pages.
* Increases page size if repeated on many pages.

**Inline CSS:** An inline style may be used to apply a unique style for a single element.

To use inline style, add the style attribute to the relavent element. The style attribute can contain any CSS property.

<h2 style="text-align: center;">Filter</h2>

Advantage:

* Quick and easy for small changes.
* Useful for testing or overriding styles.

Disadvantage:

* Not reusable.
* HTML file becomes messy because CSS is mixed directly inside HTML tags.
* Low maintainability.

**Lab Assignment**

• Task:

Style the contact form (created in the HTML Forms lab) using external CSS.

The following should be implemented:

* Change the background color of the form.
* Add padding and margins to form fields.
* Style the submit button with a hover effect.
* Use class selectors for styling common elements and ID selectors for unique elements.

1. 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?
2. What is the difference between border-box and content-box box-sizing in CSS? Which is the default?

Lab Assignment

Task: Create a profile card layout using the box model. The profile card should include:

* A profile picture.
* The user’s name and bio.
* A button to "Follow" the user. Additional Requirements:
* Add padding and borders to the elements.
* Ensure the layout is clean and centered on the page using CSS margins.
* Use the box-sizing property to demonstrate both content-box and border-box on different elements.

1. CSS Flexbox

Theory Assignment

1. What is CSS Flexbox, and how is it useful for layout design? Explain the terms flex-container and flex-item.
2. Describe the properties justify-content, align-items, and flex-direction used in Flexbox.

Lab Assignment

• Task: Create a simple webpage layout using Flexbox. The layout should include:

* A header.
* A sidebar on the left.
* A main content area in the center.
* A footer. Additional Requirements:
* Use Flexbox to position and align the elements.
* Apply different justify-content and align-items properties to observe their effects.
* Ensure the layout is responsive, adjusting for smaller screens.

1. CSS Grid

Theory Assignment

1. Explain CSS Grid and how it differs from Flexbox. When would you use Grid over Flexbox?
2. Describe the grid-template-columns, grid-template-rows, and grid-gap properties. Provide examples of how to use them.

Lab Assignment

• Task: Create a 3x3 grid of product cards using CSS Grid.

Each card should contain:

* A product image.
* A product title.
* A price.

Additional Requirements:

* Use grid-template-columns to create the grid layout.
* Use grid-gap to add spacing between the grid items.
* Apply hover effects to each card for better interactivity.

1. Responsive Web Design with Media Queries

Theory Assignment

1. What are media queries in CSS, and why are they important for responsive design?
2. Write a basic media query that adjusts the font size of a webpage for screens smaller than 600px.

Lab Assignment

• Task: Build a responsive webpage that includes:

* A navigation bar.
* A content section with two columns.
* A footer. Additional Requirements:
* Use media queries to make the webpage responsive for mobile devices.
* On smaller screens (below 768px), stack the columns vertically.
* Adjust the font sizes and padding to improve readability on mobile.

1. Typography and Web Fonts

Theory Assignment

1. Explain the difference between web-safe fonts and custom web fonts. Why might you use a web-safe font over a custom font?
2. What is the font-family property in CSS? How do you apply a custom Google Font to a webpage?

Lab Assignment

• Task: Create a blog post layout with the following:

* A title, subtitle, and body content.
* Use at least two different fonts (one for headings, one for body content).
* Style the text to be responsive and easy to read.

Additional Requirements:

* Use a custom font from Google Fonts.
* Adjust line-height, font-size, and spacing for improved readability.