**What are CSS Selectors?**

CSS selectors are patterns used to target specific HTML elements to apply styles. They allow developers to precisely define which HTML elements should receive certain styles. CSS selectors can be based on various attributes of HTML elements such as their tag name, class, ID, attributes, and even states (like hovering).

**How CSS Selectors Work:**

CSS selectors define rules that apply to HTML elements. When the browser renders the webpage, it matches the elements in the HTML document with the CSS selectors and applies the corresponding styles.

Here are the main types of CSS selectors:

1. **Element Selector**: Targets elements by their HTML tag name.
2. **Class Selector**: Targets elements by their class attribute.
3. **ID Selector**: Targets an element by its unique ID.
4. **Attribute Selector**: Targets elements based on their attributes.
5. **Pseudo-class Selector**: Targets elements in a specific state or condition, like hovering or focus.

**Example HTML Document with Various Selectors:**

html

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<!DOCTYPE html>

<html lang="en">

<head>

<meta charset="UTF-8">

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

<title>CSS Selectors Example</title>

<style>

/\* Element Selector: Targets all paragraph (p) elements \*/

p {

color: blue;

font-size: 18px;

}

/\* Class Selector: Targets elements with the class "highlight" \*/

.highlight {

background-color: yellow;

font-weight: bold;

}

/\* ID Selector: Targets the element with the ID "main-title" \*/

#main-title {

text-align: center;

color: darkgreen;

font-size: 24px;

}

/\* Attribute Selector: Targets anchor (a) elements with a specific href attribute \*/

a[href="https://example.com"] {

color: red;

text-decoration: none;

}

/\* Pseudo-class Selector: Targets links when the mouse hovers over them \*/

a:hover {

text-decoration: underline;

}

/\* Pseudo-class Selector: Targets input fields that are focused \*/

input:focus {

border: 2px solid blue;

}

</style>

</head>

<body>

<!-- ID Selector example -->

<h1 id="main-title">CSS Selectors Demonstration</h1>

<!-- Element Selector example -->

<p>This is a regular paragraph styled using the element selector.</p>

<!-- Class Selector example -->

<p class="highlight">This paragraph is highlighted using the class selector.</p>

<!-- Attribute Selector example -->

<p>Visit <a href="https://example.com">this link</a> for more information.</p>

<!-- Pseudo-class Selector example for hover -->

<p>Hover over <a href="https://example.com">this link</a> to see the hover effect.</p>

<!-- Pseudo-class Selector example for focus -->

<p>Click inside the input box to see the focus effect:</p>

<input type="text" placeholder="Focus on me!">

</body>

</html>

**Explanation of the Example:**

1. **Element Selector (p)**:
   * Targets all <p> elements and applies blue text color and a font size of 18px.

css

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p {

color: blue;

font-size: 18px;

}

1. **Class Selector (.highlight)**:
   * Targets elements with the class "highlight", applying a yellow background and bold text.

css

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.highlight {

background-color: yellow;

font-weight: bold;

}

1. **ID Selector (#main-title)**:
   * Targets the element with the ID "main-title", aligning its text to the center, changing the text color to dark green, and increasing the font size to 24px.

css

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#main-title {

text-align: center;

color: darkgreen;

font-size: 24px;

}

1. **Attribute Selector (a[href="https://example.com"])**:
   * Targets anchor (<a>) elements with the href attribute set to "https://example.com", making the link text red and removing the underline.

css

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a[href="https://example.com"] {

color: red;

text-decoration: none;

}

1. **Pseudo-class Selector (a:hover)**:
   * Applies a style when the mouse hovers over any anchor (<a>) element, adding an underline.

css

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a:hover {

text-decoration: underline;

}

1. **Pseudo-class Selector (input:focus)**:
   * Applies a blue border when the user focuses (clicks) inside an <input> field.

css

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input:focus {

border: 2px solid blue;

}