

CSS Selectors

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Type, Id and Class Selector

In CSS, selectors are used to select elements in an HTML or XHTML document, so that styles can be applied to them. There are three main types of selectors: type selectors, ID selectors, and class selectors.

Type selectors: select elements by their HTML tag name. For example, `p` selects all `<p>` elements in the document.

```
p {  
  color: blue;  
  font-size: 14px;  
}
```

ID selectors: select elements by their unique "id" attribute. An ID selector is denoted by a "#" symbol. For example, `#header` selects the element with the "id" attribute of "header".

```
<div id="header"></div>
```

```
#header {  
  background-color: black;  
}
```

Class selectors: select elements by their "class" attribute. A class selector is denoted by a "." symbol. For example, `.highlight` selects all elements with the "class" attribute of "highlight".

```
<p class="highlight">This is a highlighted paragraph</p>
```

```
.highlight {  
  background-color: yellow;  
}
```

Attribute Selectors

In CSS, attribute selectors are used to select elements based on their presence or value of the attribute. This can be useful for targeting elements that have a specific attribute or for targeting elements with a specific value for an attribute.

```
<input type="text" required>
```

```
[required] {  
  border: 1px solid red;  
}
```

Attribute + Value Selector

The **[attribute=value]** selector selects all elements that have the specified attribute with the specified value. In the following code, we can see two anchor tags with href attributes used.

```
<a href="https://www.google.com">Google Search</a>  
<a href="https://www.facebook.com">Facebook</a>
```

We can select href attributes with value = <https://www.google.com> using the attribute + value selector.

```
[href="https://www.google.com"] {  
  font-size: 1.5em;  
}
```

Pseudo Class Selector

A pseudo-class selector in CSS is used to select and style a specific state of an element. It is denoted by a colon (:) followed by the specific pseudo-class. For example, :hover is used to select and style an element when the user's cursor is hovering over it. Other common pseudo-class selectors include: active, :hover, :focus, :visited and :first-letter. These can be used in combination with standard class and ID selectors to create specific styles for different states of an element.

```
p::first-letter{
  font-size: 2em;
}

a:hover{
  color: aquamarine;
}
```

In the above code, the font-size of the first letter of each paragraph is doubled. Also, when we hover over the anchor elements, their color changes to aquamarine.

Structural Pseudo Class Selectors

Structural pseudo-classes are a type of pseudo-class selector in CSS that allow you to select and style elements based on how they are related to other elements in the document tree, rather than their actual class or ID. Some common examples of structural pseudo-classes include:

:first-child, which selects the first child element of a parent element.

:last-child, which selects the last child element of a parent element.

:nth-child(n), which selects the nth child element of a parent element.

:only-child, which selects an element that is the only child of its parent element.

:first-of-type, which selects the first element of a given type within a parent element.

:last-of-type, which selects the last element of a given type within a parent element.

:nth-of-type(n), which selects the nth element of a given type within a parent element.

:only-of-type, which selects an element that is the only element of its type within a parent element.

These selectors can be combined with standard class and ID selectors to create even more specific styles.

For instance, **p:first-of-type** will select the first p element of the parent element, **div:last-of-type** will select the last div element of the parent element, and so on.

Specificity - Type Vs Class Selector

In CSS, specificity is a way to determine which styles will be applied to an element. It is used to resolve conflicts when multiple CSS rules target the same element.

A type selector (also known as an element selector) targets an element based on its tag name, such as p, div, span, etc. A class selector targets an element based on its class attribute, such as .highlight.

When it comes to specificity, a class selector has higher specificity than a type selector. This means that if there is a conflict between a class selector and a type selector, the class selector will take precedence and its styles will be applied to the element.

For example, if you have the following CSS:

```
<p class="highlight">This is a highlighted paragraph</p>
```

```
p {  
  color: blue;  
}  
.highlight {  
  color: yellow;  
}
```

The text color will be yellow, because the class selector **.highlight** has higher specificity than the type selector **p**.

It's also worth noting that, if specificity is equal, the last declared rule will be applied.