

## Pseudo-class Selectors in CSS

Pseudo-class selectors are special keywords in CSS used to define the style of an element based on its state, position, or other characteristics that are not represented in the DOM structure. They allow styling dynamic states or structural relationships of elements.

```
selector:pseudo-class {  
    property: value;  
}
```

### 1. Dynamic Pseudo-classes (Interactive states)

These are used for styling elements based on user interactions.

**:hover** - When the user hovers over an element.

```
button:hover {  
    background-color: blue;  
}
```

**:focus** - When an element is focused (e.g., an input field).

```
input:focus {  
    outline: 2px solid green;  
}
```

**:active** - When an element is being clicked.

```
a:active {  
    color: red;  
}
```

## 2. Structural Pseudo-classes

These are used to style elements based on their position within a parent.

**:first-child** - Matches the first child of an element.

```
p:first-child {  
    font-weight: bold;  
}
```

**:last-child** - Matches the last child of an element.

```
p:last-child {  
    font-style: italic;  
}
```

**:nth-child(n)** - Matches the nth child of an element.

```
li:nth-child(2) {  
    color: red;  
}
```

**:nth-last-child(n)** - Matches the nth child from the end.

```
li:nth-last-child(1) {  
    color: blue;  
}
```

**:only-child** - Matches an element if it is the only child of its parent

```
p:only-child {  
    color: purple;  
}
```

### 3. Form Pseudo-classes

Used for styling form elements based on their state.

**:checked** - Matches a checked input (checkbox/radio).

```
input[type="checkbox"]:checked {  
    border: 2px solid red;  
}
```

**:disabled** - Matches disabled form elements.

```
button:disabled {  
    background-color: grey;  
}
```

**:enabled** - Matches enabled form elements.

```
input:enabled {  
    border: 1px solid green;  
}
```

**:required** - Matches form elements with the required attribute.

```
input:required {  
    border: 1px solid red;  
}
```

### 3) Link Pseudo-classes

Used for styling hyperlinks based on their state.

**:link** - Matches links that have not been visited.

```
a:link {  
  color: blue;  
}
```

**:visited** - Matches links that have been visited.

```
a:visited {  
  color: purple;  
}
```

### 4) Advanced Pseudo-classes

**:target** - Matches an element targeted by a URL fragment.

```
#section1:target {  
  background-color: yellow;  
}
```

**:root** - Matches the root element of the document (usually <html>).

```
:root {  
  --primary-color: blue;  
}
```

**:first-of-type** - Matches the first element of its type within its parent.

```
p:first-of-type {  
  color: green;  
}
```

**:last-of-type** - Matches the last element of its type within its parent.

```
p:last-of-type {  
  color: orange;  
}
```

**:only-of-type** - Matches an element if it is the only one of its type within its parent.

```
p:only-of-type {  
  font-size: 20px;  
}
```

**:nth-of-type(n)** - Matches the nth element of its type within its parent.

```
div:nth-of-type(3) {  
  background-color: yellow;  
}
```