

# Introduction to CSS

## What is CSS?

- **CSS (Cascading Style Sheets)** is used to style and format the layout of HTML elements.
- It separates **content (HTML)** from **presentation (CSS)**.
- Helps make web pages **attractive, responsive, and consistent**.

## Why use CSS?

1. Improves design (colors, fonts, layout).
2. Makes websites responsive across devices.
3. Reusable styles (write once, use multiple times).
4. Faster page loading (less inline styling).

## Types of CSS

1. **Inline CSS** – written inside an HTML element using the `style` attribute.

```
<p style="color: blue; font-size: 18px;">This is inline CSS</p>
```

2. **Internal CSS** – written inside `<style>` tag in the HTML `<head>`.

```
<head>
  <style>
    p {
      color: green;
      font-size: 20px;
    }
  </style>
</head>
<body>
  <p>This is internal CSS</p>
</body>
```

3. **External CSS** – written in a separate `.css` file and linked with `<link>`.

```
<!-- index.html -->
<head>
  <link rel="stylesheet" href="style.css">
</head>

<!-- style.css -->
p {
  color: red;
  font-size: 22px;
}
```

**Best Practice:** Always use **External CSS** for large projects.

## CSS Syntax

```
selector {
  property: value;
}
```

## Example:

```
h1 {  
  color: blue;  
  font-size: 30px;  
}
```

- **Selector** → selects HTML element (h1)
- **Property** → defines what you want to change (color, font-size)
- **Value** → actual styling value (blue, 30px)

## Output Example

```
<!DOCTYPE html>  
<html>  
<head>  
  <style>  
    h1 {  
      color: purple;  
      text-align: center;  
    }  
    p {  
      color: gray;  
      font-size: 18px;  
    }  
  </style>  
</head>  
<body>  
  <h1>Hello CSS</h1>  
  <p>This is styled with CSS.</p>  
</body>  
</html>
```

# CSS Selectors

## What are Selectors?

- A **selector** is used to target HTML elements so that we can apply styles to them.
- They define "**which elements**" the CSS rules will apply to.

## Types of CSS Selectors

### 1. Universal Selector (\*)

Selects **all elements** on the page.

```
* {  
  margin: 0;  
  padding: 0;  
}
```

Useful for resetting default browser styles.

### 2. Element Selector

Selects all elements of a given type.

```
p {  
  color: blue;  
}
```

All `<p>` elements will be blue.

### 3. ID Selector (#)

Selects an element with a specific **id**. (Unique for each element)

```
#main-heading {  
  color: red;  
}  
<h1 id="main-heading">Welcome</h1>
```

### 4. Class Selector (.)

Selects elements with a specific **class**. (Can be reused multiple times)

```
.highlight {  
  background-color: yellow;  
}  
<p class="highlight">This is highlighted</p>
```

### 5. Grouping Selector (,)

Apply same style to multiple elements.

```
h1, h2, p {  
  font-family: Arial;  
}
```

### 6. Combinators

Used to define relationships between elements.

- **Descendant (space)** → selects all elements inside another element

```
div p {  
  color: green;  
}  
All <p> inside <div> will be green.
```

- **Child (>)** → selects direct children only

```
div > p {  
  color: orange;  
}
```

- **Adjacent sibling (+)** → selects element immediately after another

```
h1 + p {  
  font-weight: bold;  
}
```

- **General sibling (~)** → selects all siblings after an element

```
h1 ~ p {  
  color: purple;  
}
```

## 7. Attribute Selectors

Select elements based on attributes.

```
input[type="text"] {  
  border: 2px solid blue;  
}  
a[href^="https"] {  
  color: green;  
}  
a[href$=".pdf"] {  
  color: red;  
}
```

**Note:** ^= = starts with, \$= = ends with, \*= = contains

## 8. Pseudo-classes

Select elements based on **state**.

```
a:hover {  
  color: red;  
}  
input:focus {  
  border-color: green;  
}  
li:nth-child(2) {  
  color: orange;  
}
```

## 9. Pseudo-elements

Select **parts of elements**.

```
p::first-letter {  
  font-size: 30px;  
  color: blue;  
}  
p::before {  
  content: "Before Element";  
}  
p::after {  
  content: "After Element";  
}
```

# Colors and Background in CSS:

CSS supports multiple ways to define colors:

### 1. Color Names

```
h1 {  
  color: red;  
}
```

## 2. Hexadecimal (#RRGGBB)

```
p{  
  color:#008000; /* green */  
}
```

## 3. RGB (Red Green Blue)

```
p{  
  color:rgb(255,0,0); /* red */  
}
```

## 4. RGBA (Red Green Blue Alpha) → last value = transparency (0 to 1)

```
p{  
  color:rgba(0,0,255,0.5); /* semi-transparent blue */  
}
```

## 5. HSL (Hue Saturation Lightness)

```
p{  
  color:hsl(120,100%,40%); /* green shade */  
}
```

## 6. HSLA (Hue Saturation Lightness Alpha)

```
p{  
  color:hsla(200,100%,50%,0.6);  
}
```

# Background Properties

## 1. Background Color

```
body {  
  background-color: lightblue;  
}
```

## 2. Background Image

```
body {  
  background-image:url("bg.jpg");  
}
```

## 3. Background Repeat

```
body {  
  background-repeat: no-repeat; /* default is repeat */  
}
```

## 4. Background Position

```
body {  
  background-position: center top;
```

```
}
```

## 5. Background Size

```
body {  
  background-size: cover; /* cover entire screen */  
  /* other values: auto, contain, specific px/% */  
}
```

## 6. Background Attachment

```
body {  
  background-attachment: fixed; /* background stays fixed while scrolling */  
}
```

## 7. Background Shorthand

Instead of writing separately, you can write in one line:

```
body {  
  background: url("bg.jpg") no-repeat center center/cover;  
}
```

## Example

```
<!DOCTYPE html>  
<html>  
<head>  
  <style>  
    body {  
      background: url("https://picsum.photos/800/400") no-repeat center  
center/cover;  
      color: white;  
      font-family: Arial;  
      text-align: center;  
      height: 100vh;  
    }  
    h1 {  
      background-color: rgba(0, 0, 0, 0.6);  
      padding: 20px;  
    }  
    p {  
      color: hsl(50, 100%, 50%);  
    }  
  </style>  
</head>  
<body>  
  <h1>CSS Background Example</h1>  
  <p>This text has color using HSL.</p>  
</body>  
</html>
```

## Text and Fonts in CSS

### ➤ Text Properties:

#### 1. Text Color

```
p {  
  color: darkblue;  
}
```

#### 2. Text Alignment

```
h1 {
  text-align: center; /* left, right, center, justify */
}
```

### 3. Text Decoration

```
a {
  text-decoration: none; /* none, underline, overline, line-through */
}
```

### 4. Text Transform

```
p {
  text-transform: uppercase; /* uppercase, lowercase, capitalize */
}
```

### 5. Line Height

```
p {
  line-height: 1.6; /* spacing between lines */
}
```

### 6. Letter Spacing & Word Spacing

```
p {
  letter-spacing: 2px;
  word-spacing: 5px;
}
```

### 7. Text Shadow

```
h1 {
  text-shadow: 2px 2px 5px gray;
}
```

## ➤ Font Properties

### 1. Font Family

```
p {
  font-family: Arial, Helvetica, sans-serif;
}
```

**Note:** Always provide a **fallback font**.

### 2. Font Size

```
p {
  font-size: 18px;
}
```

### 3. Font Style

```
p {
  font-style: italic; /* normal, italic, oblique */
}
```

## 4. Font Weight

```
p {  
  font-weight: bold;    /* normal, bold, bolder, lighter, 100-900 */  
}
```

## 5. Font Variant

```
p {  
  font-variant: small-caps;  
}
```

### ➤ Units for Fonts

- **Absolute Units:** px, pt
- **Relative Units:** em (relative to parent), rem (relative to root), %, vh, vw

#### Example:

```
h1 {  
  font-size: 2em;    /* 2 times parent's font size */  
}  
p {  
  font-size: 1.5rem; /* relative to root <html> font size */  
}
```

### ➤ Using Google Fonts

```
<head>  
  <link href="https://fonts.googleapis.com/css2?family=Roboto&display=swap"  
rel="stylesheet">  
  <style>  
    p {  
      font-family: 'Roboto', sans-serif;  
    }  
  </style>  
</head>
```

#### Example:

```
<!DOCTYPE html>  
<html>  
<head>  
  <style>  
    body {  
      font-family: Arial, sans-serif;  
      background: #f4f4f4;  
      padding: 20px;  
    }  
    h1 {  
      text-align: center;  
      text-transform: uppercase;  
      text-shadow: 2px 2px 5px gray;  
    }  
    p {  
      font-size: 18px;  
      line-height: 1.6;  
      letter-spacing: 1px;  
      color: #333;  
    }  
  </style>  
</head>
```



```
    }
    a {
      text-decoration: none;
      color: darkblue;
    }
    a:hover {
      text-decoration: underline;
    }
  </style>
</head>
<body>
  <h1>Text and Fonts Example</h1>
  <p>This paragraph demonstrates text properties and fonts in CSS.</p>
  <a href="#">Hover over this link</a>
</body>
</html>
```