



# Introduction to CSS3: Part.1

## Introduction to Internet and Web



부산대학교 정보·의생명 공학대학  
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PUSAN NATIONAL UNIVERSITY

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HTML+CSS

HTML



HTML without CSS

# CSS INTRODUCTION

# What is CSS?

- ❖ CSS stands for Cascading Style Sheets
- ❖ CSS describes **how HTML elements are to be displayed** on screen, paper, or in other media
- ❖ External stylesheets are stored in CSS files
  - CSS saves a lot of work. It can control the layout of multiple web pages all at once

# CSS Demo - One HTML Page - Multiple Styles!

❖ Here we will show one HTML page displayed with four different stylesheets.

## Welcome to My Homepage

Use the menu to select different Stylesheets

- Stylesheet 1
- Stylesheet 2
- Stylesheet 3
- Stylesheet 4
- No Stylesheet

## Same Page Different Stylesheets

This is a demonstration of how different stylesheets can change the layout of your HTML page. You can change the layout of this page by selecting different stylesheets in the menu, or by selecting one of the following links:

[Stylesheet1](#), [Stylesheet2](#), [Stylesheet3](#), [Stylesheet4](#).

## No Styles

This page uses DIV elements to group different sections of the HTML page. Click here to see how the page looks like with no stylesheet:

[No Stylesheet](#).

## Side-Bar

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## No Styles

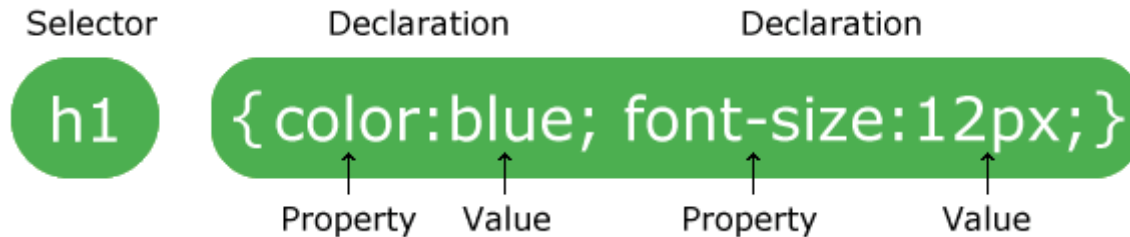
This page uses DIV elements to group different sections of the HTML page. Click here to see how the page looks like with no stylesheet:

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# CSS Syntax

❖ A CSS **rule** consists of a **selector** and a **declaration block**:



- The **selector** points to the HTML element you want to style.
- The **declaration block** contains one or more **declarations** separated by semicolons.
- Each declaration includes a **CSS property name** and a **value**, separated by a colon.
- A CSS declaration always ends with a semicolon, and declaration blocks are surrounded by curly braces.

# CSS Comments

- ❖ Comments are used to explain the code, and may help when you edit the source code at a later date.
- ❖ Comments are ignored by browsers.
- ❖ A CSS comment is placed inside the `<style>` element
- ❖ A CSS comment starts with `/*` and ends with `*/`:

Hello World!

This paragraph is styled with CSS.

CSS comments are not shown in the output.

```
1  <!DOCTYPE html>
2  <html>
3  <head>
4  <style>
5  /* This is a single-line comment
6  */
7  /* This is
8  a multi-line
9  comment */
10  p {
11      color: red;
12      /* Set text color to red */
13  }
14  </style>
15  </head>
16  <body> skip </body>
17  </html>
18
19
20
21
22
23
```

# CSS HOW TO

# Three Ways to Insert CSS

- ❖ When a browser reads a style sheet, it will format the HTML document according to the information in the style sheet.
- ❖ There are three ways of inserting a style sheet:
  - External CSS
  - Internal CSS
  - Inline CSS

# External CSS

- ❖ With an external style sheet, you 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.
- ❖ An external style sheet can be written in any text editor, and must be saved with a `.css` extension.
- ❖ The external `.css` file should not contain any HTML tags.

# External CSS Example

This is a heading

This is a paragraph.

mystyle.css

```
body {  
    background-color: lightblue;  
}  
  
h1 {  
    color: navy;  
    margin-left: 20px;  
}
```

```
1  <!DOCTYPE html>  
2  <html>  
3  <head>  
4  <link rel="stylesheet" href="mystyle.css">  
5  
6  </head>  
7  <body>  
8  
9  <h1>This is a heading</h1>  
10 <p>This is a paragraph.</p>  
11  
12 </body>  
13 </html>  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23
```

# 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.

**This is a heading**

This is a paragraph.

```
1  <!DOCTYPE html>
2  <html>
3  <head>
4  <style>
5  body {
6      background-color: lightblue;
7  }
8  h1 {
9      color: navy;
10     margin-left: 20px;
11 }
12 </style>
13 </head>
14 <body>
15 skip
16 </body>
17 </html>
18
19
20
21
22
23
```



# Inline CSS

- ❖ An inline style may be used to apply a unique style for a single element.
- ❖ To use inline styles, add the **style** attribute to the relevant element. The style attribute can contain any CSS property.

This is a heading

This is a paragraph.

```
1 <!DOCTYPE html>
2 <html>
3 <body style="background-
4 color:lightblue;">
5 <h1 style="color:navy;margin-left:
6 20px">
7 This is a heading</h1>
8 <p>This is a paragraph.</p>
9 </body>
10 </html>
11
12
13
14
15
16
17
18
19
20
21
22
23
```

# Multiple Style Sheets Example

- ❖ All the styles in a page will "cascade" into a new "virtual" style sheet by the following rules, where number one has the highest priority:
  - Inline style (inside an HTML element)
  - External and internal style sheets (in the head section)
  - Browser default
- ❖ So, an **inline style has the highest priority**, and will override external and internal styles and browser defaults.

## Multiple Styles Will Cascade into One

Here, the background color of the page is set with inline CSS, and also with an internal CSS, and also with an external CSS.

```
1 <!DOCTYPE html>
2 <html>
3 <head>
4 <link rel="stylesheet"
5       type="text/css"
6       href="mystyle.css">
7 <style>
8 body {background-color: linen;}
9 </style>
10 </head>
11 <body style="background-color:
12 orange">
13 skip
14 </body>
15 </html>
16
17
18
19
20
21
22
23
```

# CSS SIMPLE SELECTORS

# CSS Selectors

- ❖ CSS selectors are used to **"find" (or select)** the HTML elements you want to style.
- ❖ We can divide CSS selectors into five categories:
  - **Simple selectors** (select elements based on name, id, class)
  - **Combinator selectors** (select elements based on a specific relationship between them)
  - **Pseudo-class selectors** (select elements based on a certain state)
  - **Pseudo-elements selectors** (select and style a part of an element)
  - **Attribute selectors** (select elements based on an attribute or attribute value)

# Simple Selectors

❖ Select elements based on **name, id, class**

Selector	Example	Example description
<u>#id</u>	#firstname	Selects the element with id="firstname"
<u>.class</u>	.intro	Selects all elements with class="intro"
<u>element.class</u>	p.intro	Selects only <p> elements with class="intro"
<u>*</u>	*	Selects all elements
<u>element</u>	p	Selects all <p> elements
<u>element,element,..</u>	div, p	Selects all <div> elements and all <p> elements

# Simple Selectors Example

- ❖ CSS Grouping Selector
- ❖ The grouping selector selects all the HTML elements with the same style definitions.

**Hello World!**

**Smaller heading!**

This is a paragraph.

```
1  <!DOCTYPE html>
2  <html>
3  <head>
4  <style>
5  h1, h2{
6      text-align: right;
7      color: red;
8  }
9  p.center {
10     text-align: center;
11     color: blue;
12 }
13 </style>
14 </head>
15 <body>
16
17 <h1>Hello World!</h1>
18 <h2>Smaller heading!</h2>
19 <p class="center">This is a
20 paragraph.</p>
21
22 </body>
23 </html>
```

# CSS COMBINATORS

# CSS Combinators

❖ A combinator is something that explains the relationship between the selectors.

❖ There are four different combinators in CSS:

- descendant selector (space)
- child selector (>)
- adjacent sibling selector (+)
- general sibling selector (~)

Example	Example description
div p	Selects all <p> elements inside <div> elements
div > p	Selects all <p> elements where the parent is a <div> element
div + p	Selects the first <p> element that are placed immediately after <div> elements
p ~ ul	Selects every <ul> element that are preceded by a <p> element



# Descendant Selector

- ❖ The descendant selector matches all elements that are descendants of a specified element.

## Descendant Selector

Paragraph 1 in the div.

Paragraph 2 in the div.

Paragraph 3 in the div.

Paragraph 4. Not in a div.

Paragraph 5. Not in a div.

```
1  <!DOCTYPE html>
2  <html>
3  <head>
4  <style>
5  div p{background-color:yellow; }
6  </style>
7  </head>
8  <body>
9  <div>
10 <p>Paragraph 1 in the div.</p>
11 <p>Paragraph 2 in the div.</p>
12 <section><p>Paragraph 3 in the
13 div.</p>
14 </section>
15 </div>
16 <p>Paragraph 4. Not in a div.</p>
17 <p>Paragraph 5. Not in a div.</p>
18 </body>
19 </html>
20
21
22
23
```

# Child Selector

- ❖ The child selector selects all elements that are the children of a specified element.

## Child Selector

Paragraph 1 in the div.

Paragraph 2 in the div.

Paragraph 3 in the div.

Paragraph 4 in the div.

Paragraph 5. Not in a div.

Paragraph 6. Not in a div.

```
1  <!DOCTYPE html>
2  <html>
3  <head>
4  <style>
5  div>p {background-color:yellow; }
6  </style>
7  </head>
8  <body>
9  <h2>Child Selector</h2>
10 <div>
11 <p>Paragraph 1 in the div.</p>
12 <p>Paragraph 2 in the div.</p>a
13 <section><p>Paragraph 3 in the
14 div.</p> </section>
15 <!-- not Child but Descendant -->
16 <p>Paragraph 4 in the div.</p>
17 </div>
18 <p>Paragraph 5. Not in a div.</p>
19 <p>Paragraph 6. Not in a div.</p>
20 </body>
21 </html>
22
23
```

# Adjacent Sibling Selector

- ❖ The adjacent sibling selector selects all elements that are the adjacent siblings of a specified element.
  - Sibling elements must have the same parent element, and "adjacent" means "immediately following".

## Adjacent Sibling Selector

Paragraph 1 in the div.

Paragraph 2. After a div.

Paragraph 3 in the div.

Paragraph 4. After a div.

Paragraph 5. After a div.

```
1  <!DOCTYPE html>
2  <html>
3  <head>
4  <style>
5  div+p {background-color:yellow; }
6  </style>
7  </head>
8  <body>
9  <h2>Adjacent Sibling
10 Selector</h2>
11 <div>
12 <p>Paragraph 1 in the div.</p>
13 </div>
14 <p>Paragraph 2. After a div.</p>
15 <div>
16 <p>Paragraph 3 in the div.</p>
17 </div>
18 <p>Paragraph 4. After a div.</p>
19 <p>Paragraph 5. After a div.</p>
20 </body>
21 </html>
22
23
```

# General Sibling Selector

- ❖ The general sibling selector selects all elements that are siblings of a specified element.

## General Sibling Selector

Paragraph 1.

Paragraph 2.

Paragraph 3.

Some code.

Paragraph 4.

```
1  <!DOCTYPE html>
2  <html>
3  <head>
4  <style>
5  div~p {
6      background-color:yellow; }
7  </style>
8  </head>
9  <body>
10 <h2>General Sibling Selector</h2>
11 <p>Paragraph 1.</p>
12 <div>
13     <p>Paragraph 2.</p>
14 </div>
15 <p>Paragraph 3.</p>
16 <code>Some code.</code>
17 <p>Paragraph 4.</p>
18 </body>
19 </html>
20
21
22
23
```

# CSS PSEUDO-CLASS

# Pseudo-classe

- ❖ A pseudo-class is used to define a special state of an element.
- ❖ For example, it can be used to:
  - Style an element when a user mouse over it
  - Style visited and unvisited links differently
  - Style an element when it gets focus

## ❖ The syntax of pseudo-classes:

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

```
1  <!DOCTYPE html>  
2  <html>  
3  <head>  
4  <style>  
5  
6  a:link { color: red;}  
7  a:visited { color: green;}  
8  a:hover { color: hotpink;}  
9  a:active { color: blue;}  
10 </style>  
11 </head>  
12 <body>  
13  
14 <a href="default.asp"  
15 target="_blank">This is a  
16 link</a>  
17  
18 </body>  
19 </html>  
20  
21  
22  
23
```

# What are Pseudo-classes?

## ❖ All CSS Pseudo Classes

Selector	Example	Example description
<u>:active</u>	a:active	Selects the active link
<u>:checked</u>	input:checked	Selects every checked <input> element
<u>:disabled</u>	input:disabled	Selects every disabled <input> element
<u>:empty</u>	p:empty	Selects every <p> element that has no children
<u>:enabled</u>	input:enabled	Selects every enabled <input> element
<u>:first-child</u>	p:first-child	Selects every <p> elements that is the first child of its parent
<u>:first-of-type</u>	p:first-of-type	Selects every <p> element that is the first <p> element of its parent
<u>:focus</u>	input:focus	Selects the <input> element that has focus
<u>:hover</u>	a:hover	Selects links on mouse over
<u>:in-range</u>	input:in-range	Selects <input> elements with a value within a specified range

# What are Pseudo-classes?

## ❖ All CSS Pseudo Classes

<u>:last-child</u>	p:last-child	Selects every <p> elements that is the last child of its parent
<u>:last-of-type</u>	p:last-of-type	Selects every <p> element that is the last <p> element of its parent
<u>:link</u>	a:link	Selects all unvisited links
<u>:not(selector)</u>	:not(p)	Selects every element that is not a <p> element
<u>:nth-child(n)</u>	p:nth-child(2)	Selects every <p> element that is the second child of its parent
<u>:nth-last-child(n)</u>	p:nth-last-child(2)	Selects every <p> element that is the second child of its parent, counting from the last child
<u>:nth-last-of-type(n)</u>	p:nth-last-of-type(2)	Selects every <p> element that is the second <p> element of its parent, counting from the last child
<u>:nth-of-type(n)</u>	p:nth-of-type(2)	Selects every <p> element that is the second <p> element of its parent
<u>:only-of-type</u>	p:only-of-type	Selects every <p> element that is the only <p> element of its parent



# What are Pseudo-classes?

## ❖ All CSS Pseudo Classes

<u>:only-child</u>	p:only-child	Selects every <p> element that is the only child of its parent
<u>:optional</u>	input:optional	Selects <input> elements with no "required" attribute
<u>:out-of-range</u>	input:out-of-range	Selects <input> elements with a value outside a specified range
<u>:read-only</u>	input:read-only	Selects <input> elements with a "readonly" attribute specified
<u>:read-write</u>	input:read-write	Selects <input> elements with no "readonly" attribute
<u>:required</u>	input:required	Selects <input> elements with a "required" attribute specified
<u>:root</u>	root	Selects the document's root element
<u>:target</u>	#news:target	Selects the current active #news element (clicked on a URL containing that anchor name)
<u>:valid</u>	input:valid	Selects all <input> elements with a valid value
<u>:visited</u>	a:visited	Selects all visited links

# CSS PSEUDO-ELEMENTS

# Pseudo-elements

❖ A CSS pseudo-element is used to style specified parts of an element.

❖ For example, it can be used to:

- Style the first letter, or line, of an element
- Insert content before, or after, the content of an element

❖ Syntax

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

This is an introduction.

This is a paragraph with some text. A bit more text even.

```
1  <!DOCTYPE html>  
2  <html>  
3  <head>  
4  <style>  
5    p.intro::first-letter {  
6      color: red;  
7      font-size: 200%;  
8    }  
9  </style>  
10 </head>  
11 <body>  
12  
13 <p class="intro">This is an  
14 introduction.</p>  
15 <p>This is a paragraph with some  
16 text. A bit more text even.</p>  
17  
18 </body>  
19 </html>  
20  
21  
22  
23
```

# Other Pseudo-elements

Selector	Example	Example description
<u>::after</u>	p::after	Insert something after the content of each <p> element
<u>::before</u>	p::before	Insert something before the content of each <p> element
<u>::first-letter</u>	p::first-letter	Selects the first letter of each <p> element
<u>::first-line</u>	p::first-line	Selects the first line of each <p> element
<u>::marker</u>	::marker	Selects the markers of list items
<u>::selection</u>	p::selection	Selects the portion of an element that is selected by a user

# CSS ATTRIBUTE SELECTORS

# Attribute Selectors

- ❖ It is possible to style HTML elements that have specific attributes or attribute values.
- ❖ The [attribute] selector is used to select elements with a specified attribute.
- ❖ The [attribute="value"] selector is used to select elements with a specified attribute and value.

```
1  <!DOCTYPE html>
2  <html>
3  <head>
4  <style>
5  a[target] { color: red;}
6  a[target=_blank] { background-
7  color: yellow;}
8  </style>
9  </head>
10 <body>
11
12 <a href="http://www.disney.com"
13 target="_blank">disney.com</a>
14 <a
15 href="http://www.wikipedia.org"
16 target="_top">wikipedia.org</a>
17
18 </body>
19 </html>
20
21
22
23
```

# ALL CSS Attribute Selectors

Selector	Example	Example description
<u>[attribute]</u>	[target]	Selects all elements with a target attribute
<u>[attribute=value]</u>	[target=_blank]	Selects all elements with target="_blank"
<u>[attribute~=value]</u>	[title~=flower]	Selects all elements with a title attribute containing the word "flower"
<u>[attribute =value]</u>	[lang =en]	Selects all elements with a lang attribute value starting with "en"
<u>[attribute^=value]</u>	a[href^="https"]	Selects every <a> element whose href attribute value begins with "https"
<u>[attribute\$=value]</u>	a[href\$=".pdf"]	Selects every <a> element whose href attribute value ends with ".pdf"
<u>[attribute*=value]</u>	a[href*="w3schools"]	Selects every <a> element whose href attribute value contains the substring "w3schools"

# Selector Example

❖ div + p

❖ p:first-child

❖ div p:first-child

❖ p[style]

❖ p.pnu

```
1 <style>
2   _____ { color: red;}
3 </style>
4
5 <body>
6
7 <div>
8   <p>This is a paragraph.</p>
9   <p style="text-
10 align:right">This is a
11 paragraph.</p>
12 </div>
13 <p>This is a paragraph.</p>
14 <p class="pnu">This is a
15 paragraph.</p>
16
17 </body>
18
19
20
21
22
23
```



# CSS SPECIFICITY

# Specificity Hierarchy

- ❖ Every CSS selector has its place in the specificity hierarchy.
- ❖ There are four categories which define the specificity level of a selector:
  - Inline styles : 1000
  - IDs : 100
  - Classes/Pseudo-classes/attributes : 10
  - Elements/Pseudo-elements : 1

Selector	Specificity Value	Calculation
p	1	1
p.test	11	1 + 10
p#demo	101	1 + 100
<p style="color: pink;">	1000	1000
#demo	100	100
.test	10	10
p.test1.test2	21	1 + 10 + 10
#navbar p#demo	201	100 + 1 + 100
*	0	0 (the universal selector is ignored)

# More Specificity Rules Examples

## ❖ Equal specificity: the latest rule wins

```
h1 {background-color: yellow;}  
h1 {background-color: red;}
```

## ❖ ID selectors have a higher specificity than attribute selectors

```
div#a {background-color: green;}  
#a {background-color: yellow;}  
div[id=a] {background-color: blue;}
```

## ❖ A class selector beats any number of element selectors

## ❖ The universal selector (\*) and inherited values have a specificity of 0

# CSS COLORS

# CSS Color Names

- ❖ Colors are specified using predefined color names, or RGB, HEX, HSL, RGBA, HSLA values.
- ❖ CSS/HTML support 140 standard color names.
- ❖ In CSS, a color can be specified by using a color name:

Tomato	Orange
DodgerBlue	MediumSeaGreen
Gray	SlateBlue
Violet	LightGray

# CSS Color Names Example

This is Heading

This is body1, with tomato background

This is body2, with MediumSeaGreen text color

This is body3, with violet border

```
1 <!DOCTYPE html>
2 <html>
3 <body>
4 <h1 style="background-
5 color:DodgerBlue;">This is
6 Heading</h1>
7 <p style="background-
8 color:Tomato;"> This is body1,
9 with tomato background</p>
10 <p
11 style="color:MediumSeaGreen;">This
12 is body2, with MediumSeaGreen text
13 color</p>
14 <p style="border:5px solid
15 Violet;">This is body3, with
16 violet border</p>
17 </body>
18 </html>
```

# CSS RGB Colors

❖ In CSS, a color can be specified as an RGB value, using this formula:

`rgb(red, green, blue)`

❖ Each parameter (red, green, and blue) defines the intensity of the color between 0 and 255.

`rgb(255, 0, 0)`

`rgb(0, 0, 255)`

`rgb(60, 179, 113)`

`rgb(238, 130, 238)`

`rgb(255, 165, 0)`

`rgb(106, 90, 205)`

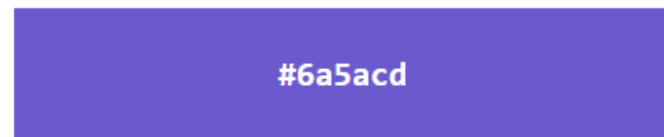
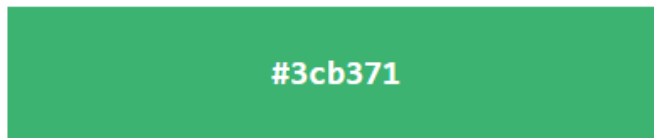
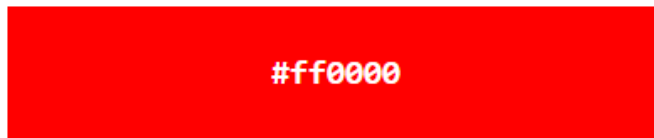
# CSS HEX Colors

❖ In CSS, a color can be specified using a hexadecimal value in the form:

***#rrggbb***

❖ Where rr (red), gg (green) and bb (blue) are hexadecimal values between 00 and ff (same as decimal 0-255).

❖ For example, #ff0000 is displayed as red, because red is set to its highest value (ff) and the others are set to the lowest value (00).





# CSS HSL Colors

❖ In CSS, a color can be specified using hue, saturation, and lightness (HSL) in the form:

**`hsl(hue, saturation, lightness)`**

- Hue is a degree on the color wheel from 0 to 360. 0 is red, 120 is green, and 240 is blue.
- Saturation is a percentage value, 0% means a shade of gray, and 100% is the full color.
- Lightness is also a percentage, 0% is black, 50% is neither light or dark, 100% is white

`hsl(0, 100%, 50%)`

`hsl(240, 100%, 50%)`

`hsl(147, 50%, 47%)`

`hsl(300, 76%, 72%)`

`hsl(39, 100%, 50%)`

`hsl(248, 53%, 58%)`

# CSS Color Example

Same as color name "Tomato":

**rgb(255, 99, 71)**

**#ff6347**

**hsl(9, 100%, 64%)**

```
1 <!DOCTYPE html>
2 <html>
3 <body>
4 <p>Same as color name "Tomato":</p>
5 <h1 style="background-color:rgb(255,
6 99, 71);">rgb(255, 99, 71)</h1>
7
8 <h1 style="background-
9 color:#ff6347;">#ff6347</h1>
10 <h1 style="background-color:hsl(9,
11 100%, 64%);">hsl(9, 100%, 64%)</h1>
12 </body>
13 </html>
14
15
16
17
18
19
20
21
22
23
```

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