

Web Programming

Lec 3: HTML+CSS





References

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 - https://link.springer.com/chapter/10.1007/978-1-4842-9250-1_7
- W3C Tutorial
 - <https://www.w3schools.com/php>
 - <https://www.w3schools.com/html>
 - <https://www.w3schools.com/js>
- Additional Topics
 - JQuery: <https://www.w3schools.com/jquery>
 - Bootstrap 5.0: <https://www.w3schools.com/bootstrap5>
 - Laravel/Blade Framework 11.0: <https://www.w3schools.in/laravel>





HTML

HTML - The Head Element

The HTML `<head>` element is a container for the following elements: `<title>`, `<style>`, `<meta>`, `<link>`, `<script>`, and `<base>`.

The HTML `<title>` Element

```
<!DOCTYPE html>
<html>
<head>
  <title>A Meaningful Page Title</title>
</head>
<body>
```

The content of the document.....

```
</body>
</html>
```





HTML

The HTML <style> Element

```
<!DOCTYPE html>
<html>
<head>
  <title>A Meaningful Page Title</title>
  <style>
    body {background-color: powderblue;}
    h1 {color: red;}
    p {color: blue;}
  </style>
</head>
<body>
```

The content of the document.....

```
</body>
</html>
```





HTML

The HTML `<link>` Element

The `<link>` element defines the relationship between the current document and an external resource.

The `<link>` tag is most often used to link to external style sheets

```
<!DOCTYPE html>
<html>
<head>
  <title>Page Title</title>
  <link rel="stylesheet" href="mystyle.css">
</head>
<body>

  <h1>This is a Heading</h1>
  <p>This is a paragraph.</p>

</body>
</html>
```





HTML

The HTML <meta> Element

The `<meta>` element is typically used to specify the character set, page description, keywords, author of the document, and viewport settings.

The metadata will not be displayed on the page, but is used by browsers (how to display content or reload page), by search engines (keywords), and other web services.

```
<meta charset="UTF-8">
```

```
<meta name="keywords" content="HTML, CSS, JavaScript">
```

```
<meta name="description" content="Free Web tutorials">
```

Refresh document every 30 seconds:

```
<meta http-equiv="refresh" content="30">
```

Setting the viewport to make your website look good on all devices:

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





HTML

The HTML <script> Element

```
<script>
function myFunction() {
    document.getElementById("demo").innerHTML
= "Hello JavaScript!";
}
</script>
```





HTML

```
<!DOCTYPE html>
<html>
<head>
  <title>Page Title</title>
  <script>
    function myFunction() {
      document.getElementById("demo").innerHTML = "Hello JavaScript!";
    }
  </script>
</head>
<body>

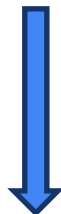
<h1>My Web Page</h1>
<p id="demo">A Paragraph</p>
<button type="button" onclick="myFunction()">Try it</button>

</body>
</html>
```

My Web Page

A Paragraph

Try it



My Web Page

Hello JavaScript!

Try it



HTML

```
<!DOCTYPE html>
<html>
<head>
  <title>Page Title</title>
  <script>
    function myFunction() {
      document.getElementById("demo").innerHTML = "Hello JavaScript!";
    }
  </script>
</head>
<body>

<h1>My Web Page</h1>
<p id="demo">A Paragraphzzzzzhhhhssssssuuuuuu<br> jhjhgfgvgggbvv</p>
<button type="button" onclick="myFunction()">Try it</button>

</body>
</html>
```

My Web Page

A Paragraphzzzzzhhhhssssssuuuuuu
jhjhggfvgggbvv

Try it



My Web Page

Hello JavaScript!

Try it



HTML

The HTML <base> Element

Specify a default URL and a default target for all links on a page:

```
<!DOCTYPE html>
<html>
<head>
  <base href="https://www.w3schools.com/" target="_blank">
</head>
<body>
```

```
<h1>The base element</h1>
```

`<p>` - Notice that we have only specified a relative address for the image. Since we have specified a base URL in the head section, the browser will look for the image at "https://www.w3schools.com/images/stickman.gif".`</p>`

`<p>HTML base tag` - Notice that the link opens in a new window, even if it has no `target="_blank"` attribute. This is because the target attribute of the base element is set to `"_blank"`.`</p>`



HTML

The base element



- Notice that we have only specified a relative address for the image. Since we have specified a base URL in the head section, the browser will look for the image at "https://www.w3schools.com/images/stickman.gif".

HTML base tag - Notice that the link opens in a new window, even if it has no target="_blank" attribute. This is because the target attribute of the base element is set to "_blank".

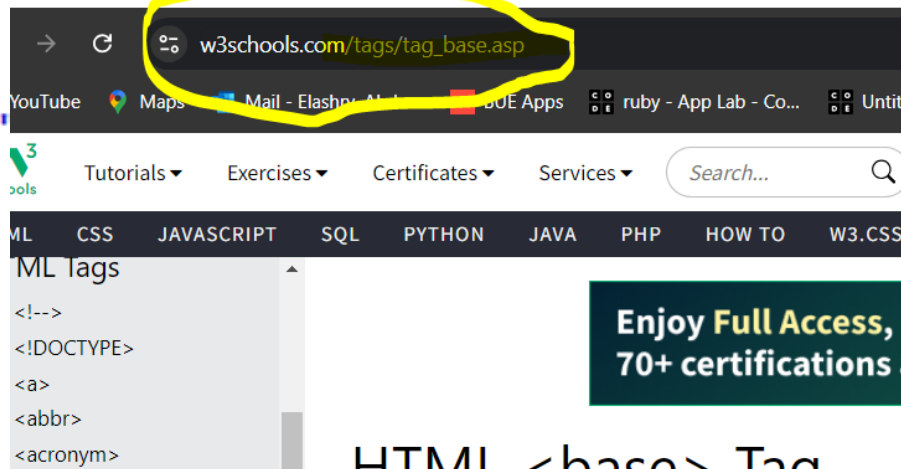
```
head>
```

```
<base href="https://www.w3schools.com/"
```

```
/head>
```

```
body>
```

```
<p><a href="tags/tag_base.asp">H  
if it has no target="_blank" att  
set to "blank" </p>
```





HTML

Chapter Summary

- The `<head>` element is a container for metadata (data about data)
- The `<head>` element is placed between the `<html>` tag and the `<body>` tag
- The `<title>` element is required and it defines the title of the document
- The `<style>` element is used to define style information for a single document
- The `<link>` tag is most often used to link to external style sheets
- The `<meta>` element is typically used to specify the character set, page description, keywords, author of the document, and viewport settings
- The `<script>` element is used to define client-side JavaScripts
- The `<base>` element specifies the base URL and/or target for all relative URLs in a page





CSS

CSS is the language we use to style an HTML document.
CSS describes how HTML elements should be displayed



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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Side-Bar

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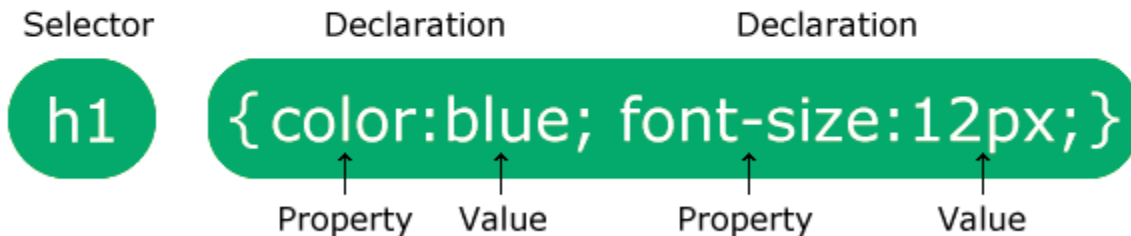
Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat. Ut wisi enim ad minim veniam, quis nostrud exerci tation ullamcorper suscipit lobortis nisl ut aliquip ex ea commodo consequat. Duis autem vel eum iriure dolor in hendrerit in vulputate velit esse molestie consequat, vel illum dolore eu feugiat nulla facilisis at vero eros et accumsan et iusto odio dignissim qui blandit praesent luptatum zzril delenit augue duiis dolore te feugait nulla facilisi.



CSS

CSS is the language we use to style an HTML document.
CSS describes how HTML elements should be displayed

CSS Syntax



The selector refers to the HTML element you want to style.





CSS

```
p {  
  color: red;  
  text-align: center;  
}
```

- `p` is a selector in CSS (it points to the HTML element you want to style: `<p>`).
- `color` is a property, and `red` is the property value
- `text-align` is a property, and `center` is the property value





CSS Selectors

Here, all `<p>` elements on the page will be center-aligned, with a red text color:

```
p {  
  text-align: center;  
  color: red;  
}
```

The CSS rule below will be applied to the HTML element with `id="para1"`:

```
#para1 {  
  text-align: center;  
  color: red;  
}
```





CSS

In this example only `<p>` elements with `class="center"` will be red and center-aligned:

```
p.center {  
  text-align: center;  
  color: red;  
}
```

```
<!DOCTYPE html>  
<html>  
<head>  
<style>  
p.center {  
  text-align: center;  
  color: red;  
}  
</style>  
</head>  
<body>  
  
<h1 class="center">This heading will not be affected</h1>  
<p class="center">This paragraph will be red and center-aligned.</p>  
  
</body>  
</html>
```



This heading will not be affected

This paragraph will be red and center-aligned.

```
<!DOCTYPE html>
<html>
<head>
<style>
p.center {
  text-align: center;
  color: red;
}
</style>
</head>
<body>

<h1 class="center">This heading will not be affected</h1>
<p class="center">This paragraph will be red and center-aligned.</p>

</body>
</html>
```





CSS

```
<!DOCTYPE html>
<html>
<head>
<style>
p.center {
  text-align: center;
  color: red;
}
```

This heading will not be affected

This paragraph will be red and center-aligned.

```
p.large {
  font-size: 300%;
}
</style>
</head>
<body>
```

**This paragraph will be red, center-aligned, and
in a large font-size.**

```
<h1 class="center">This heading will not be affected</h1>
<p class="center">This paragraph will be red and center-aligned.</p>
<p class="center large">This paragraph will be red,
center-aligned, and in a large font-size.</p>

</body>
</html>
```





CSS

```
<!DOCTYPE html>
<html>
<head>
<style>
p.center {
  text-align: center;
  color: red;
}

p.large {
  font-size: 300%;
}
</style>
</head>
<body>
```

This heading will not be affected

This paragraph will be red and center-aligned.

This paragraph will be red, center-aligned, and
in a large font-size.

```
<h1 class="center">This heading will not be affected</h1>
<p class="center">This paragraph will be red and center-aligned.</p>
<p class="center large">This paragraph will be red,
center-aligned, and in a large font-size.</p>

</body>
</html>
```





CSS

The CSS Universal Selector

The CSS rule below will affect every HTML element on the page:

```
* {  
  text-align: center;  
  color: blue;  
}
```

```
<!DOCTYPE html>  
<html>  
  <head>  
    <style>  
      * {  
        text-align: center;  
        color: blue;  
      }  
    </style>  
  </head>  
  <body>  
  
    <h1>Hello world!</h1>  
  
    <p>Every element on the page will be affected by the style.</p>  
    <p id="para1">Me too!</p>  
    <p>And me!</p>  
  
  </body>  
</html>
```



CSS

```
<!DOCTYPE html>
<html>
<head>
<style>
* {
  text-align: center;
  color: blue;
}
</style>
</head>
<body>

<h1>Hello world!</h1>

<p>Every element on the page will be affected by the
<p id="para1">Me too!</p>
<p>And me!</p>

</body>
</html>
```

Hello world!

Every element on the page will be affected by the style.

Me too!

And me!





CSS

In this example we have grouped the selectors from the code above:

```
h1, h2, p {  
  text-align: center;  
  color: red;  
}
```

All CSS Simple Selectors

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



CSS

CSS Comments

```
/* This is  
a multi-line  
comment */
```

```
p {  
  color: red;  
}
```

```
<!DOCTYPE html>  
<html>  
<head>  
<style>  
p {  
  color: red; /* Set text color to red */  
}  
</style>  
</head>  
<body>  
  
<h2>My Heading</h2>  
  
<!-- These paragraphs will be red -->  
<p>Hello World!</p>  
<p>This paragraph is styled with CSS.</p>  
<p>CSS comments are not shown in the  
output.</p>  
  
</body>  
</html>
```





CSS

CSS Border Style

https://www.w3schools.com/css/css_border.asp

The `border-style` property specifies what kind of border to display.

The following values are allowed:

- `dotted` - Defines a dotted border
- `dashed` - Defines a dashed border
- `solid` - Defines a solid border
- `double` - Defines a double border
- `groove` - Defines a 3D grooved border. The effect depends on the border-color value
- `ridge` - Defines a 3D ridged border. The effect depends on the border-color value
- `inset` - Defines a 3D inset border. The effect depends on the border-color value
- `outset` - Defines a 3D outset border. The effect depends on the border-color value
- `none` - Defines no border
- `hidden` - Defines a hidden border





CSS

```
p.dotted {border-style: dotted;}
p.dashed {border-style: dashed;}
p.solid {border-style: solid;}
p.double {border-style: double;}
p.groove {border-style: groove;}
p.ridge {border-style: ridge;}
p.inset {border-style: inset;}
p.outset {border-style: outset;}
p.none {border-style: none;}
p.hidden {border-style: hidden;}
p.mix {border-style: dotted dashed solid double;}
```

result:

A dotted border.

A dashed border.

A solid border.

A double border.

A groove border. The effect depends on the border-color value.

A ridge border. The effect depends on the border-color value.

An inset border. The effect depends on the border-color value.

An outset border. The effect depends on the border-color value.

No border.



```
p.one {  
  border-style: solid;  
  border-width: 5px;  
}
```

```
p.two {  
  border-style: solid;  
  border-width: medium;  
}
```

```
p.three {  
  border-style: dotted;  
  border-width: 2px;  
}
```

```
p.four {  
  border-style: dotted;  
  border-width: thick;  
}
```

result:

5px border-width

medium border-width

2px border-width

thick border-width





CSS

```
<!DOCTYPE html>
<html>
<head>
<style>
p.normal {
  border: 2px solid red;
  padding: 5px;
}

p.round1 {
  border: 2px solid red;
  border-radius: 5px;
  padding: 5px;
}

p.round2 {
  border: 2px solid red;
  border-radius: 8px;
  padding: 5px;
}

p.round3 {
  border: 2px solid red;
  border-radius: 12px;
  padding: 5px;
}
</style>
</head>
<body>
```

The border-radius Property

This property is used to add rounded borders to an element:

Normal border

Round border

Rounder border

Roudest border





Set the height and width of an element

```
<!DOCTYPE html>
<html>
<head>
<style>
div {
  height: 200px;
  width: 50%;
  background-color: powderblue;
}
</style>
</head>
<body>
```

This div element has a height of 200px and a width of 50%.

```
<h2>Set the height and width of an element</h2>
```

```
<div>This div element has a height of 200px and a width of 50%.</div>
```

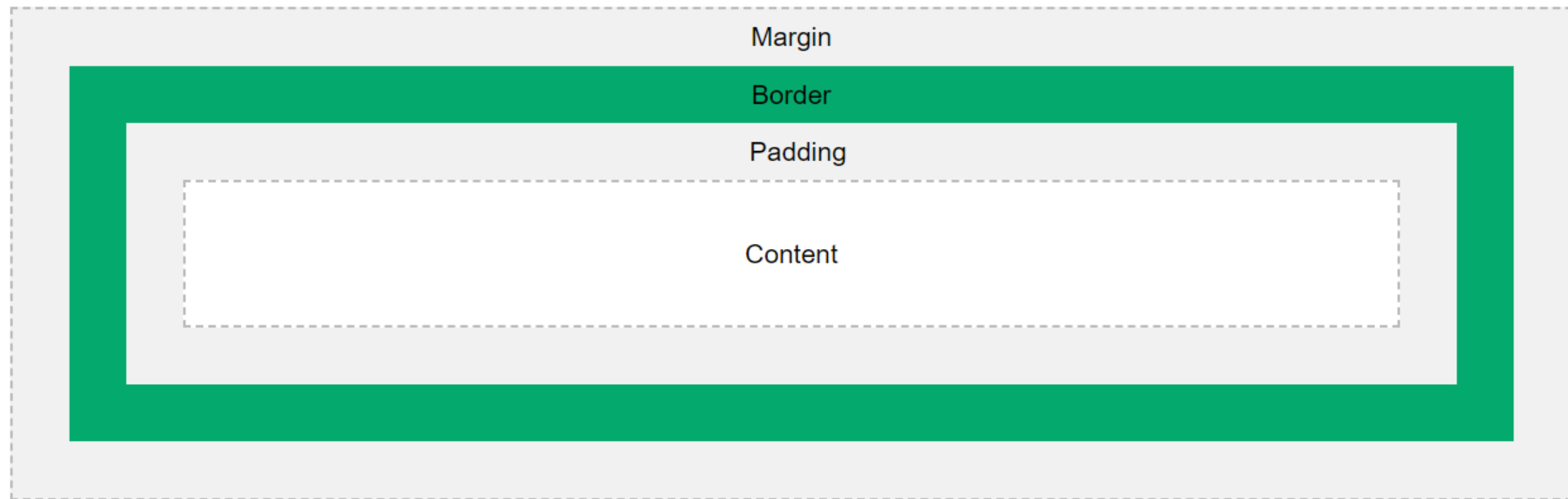
```
</body>
</html>
```



The CSS Box Model

In CSS, the term "box model" is used when talking about design and layout.

The CSS box model is essentially a box that wraps around every HTML element. It consists of: content, padding, borders and margins. The image below illustrates the box model:



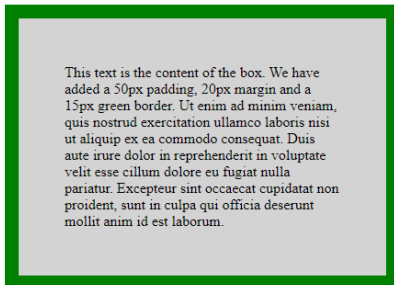


CSS

```
<!DOCTYPE html>
<html>
<head>
<style>
div {
  background-color: lightgrey;
  width: 300px;
  border: 15px solid green;
  padding: 50px;
  margin: 20px;
}
</style>
</head>
<body>
```

Demonstrating the Box Model

The CSS box model is essentially a box that wraps around every HTML element. It consists of: borders, padding, margins, and the actual content.



This text is the content of the box. We have added a 50px padding, 20px margin and a 15px green border. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.





CSS

```
<!DOCTYPE html>
<html>
<head>
<style>
h1 {
  text-shadow: 2px 2px red;
}
</style>
</head>
<body>

<h1>Text-shadow effect!</h1>

</body>
</html>
```

Text-shadow effect!





CSS

```
<!DOCTYPE html>
<html>
<head>
<style>
ul.a {
  list-style-type: circle;
}

ul.b {
  list-style-type: square;
}

ol.c {
  list-style-type: upper-roman;
}

ol.d {
  list-style-type: lower-alpha;
}
</style>
</head>
<body>

<h2>The list-style-type Property</h2>
```

<p>Example of unordered lists:</p>

```
<ul class="a">
  <li>Coffee</li>
  <li>Tea</li>
  <li>Coca Cola</li>
</ul>
```

```
<ul class="b">
  <li>Coffee</li>
  <li>Tea</li>
  <li>Coca Cola</li>
</ul>
```

<p>Example of ordered lists:</p>

```
<ol class="c">
  <li>Coffee</li>
  <li>Tea</li>
  <li>Coca Cola</li>
</ol>
```

```
<ol class="d">
  <li>Coffee</li>
  <li>Tea</li>
  <li>Coca Cola</li>
</ol>
```

```
</body>
</html>
```





```
<!DOCTYPE html>
<html>
<head>
<style>
ul.a {
  list-style-type: circle;
}

ul.b {
  list-style-type: square;
}

ol.c {
  list-style-type: upper-roman;
}

ol.d {
  list-style-type: lower-alpha;
}
</style>
</head>
<body>

<h2>The list-style-type Property</h2>
```

The list-style-type Property

Example of unordered lists:

- Coffee
 - Tea
 - Coca Cola
-
- Coffee
 - Tea
 - Coca Cola

Example of ordered lists:

- I. Coffee
 - II. Tea
 - III. Coca Cola
-
- a. Coffee
 - b. Tea
 - c. Coca Cola



Block-level Elements

A block-level element ALWAYS starts on a new line and takes up the full width available (stretches out to the left and right as far as it can).

The `<div>` element is a block-level element.

Examples of block-level elements:

- `<div>`
- `<h1>` - `<h6>`
- `<p>`
- `<form>`
- `<header>`
- `<footer>`
- `<section>`

Inline Elements

An inline element DOES NOT start on a new line and only takes up as much width as necessary.

This is `an inline element inside` a paragraph.

Examples of inline elements:

- ``
- `<a>`
- ``



The position Property

The `position` property specifies the type of positioning method used for an element.

There are five different position values:

- `static`
- `relative`
- `fixed`
- `absolute`
- `sticky`





The z-index Property

This is a heading

Because the image has a z-index of -1, it will be placed behind the text.



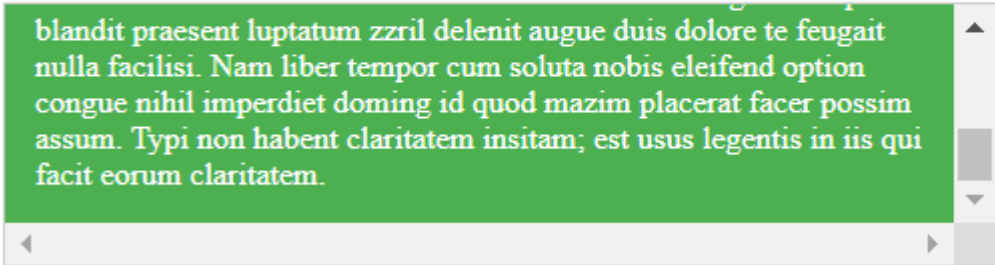
Example

```
img {  
  position: absolute;  
  left: 0px;  
  top: 0px;  
  z-index: -1;  
}
```

```
<!DOCTYPE html>
<html>
<head>
<style>
#overflowTest {
  background: #4CAF50;
  color: white;
  padding: 15px;
  width: 50%;
  height: 100px;
  overflow: scroll;
  border: 1px solid #ccc;
}
</style>
</head>
<body>
```

CSS Overflow

The overflow property controls what happens to content that is too big to fit into an area.



blandit praesent luptatum zzril delenit augue dui dolore te feugait nulla facilisi. Nam liber tempor cum soluta nobis eleifend option congue nihil imperdiet doming id quod mazim placerat facer possim assum. Typi non habent claritatem insitam; est usus legentis in iis qui facit eorum claritatem.

```
<h2>CSS Overflow</h2>
```

```
<p>The overflow property controls what happens to content that is too big to fit into an area.</p>
```

```
<div id="overflowTest">This text is really long and the height of its container is only 100 pixels. Therefore, a scrollbar is added to help the reader to scroll the content. Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat. Ut wisi enim ad minim veniam, quis nostrud exerci tation ullamcorper suscipit lobortis nisl ut aliquip ex ea commodo consequat. Duis autem vel eum iriure dolor in hendrerit in vulputate velit esse molestie consequat, vel illum dolore eu feugiat nulla facilisis at vero eros et accumsan et iusto odio dignissim qui blandit praesent luptatum zzril delenit augue dui dolore te feugait nulla facilisi. Nam liber tempor cum soluta nobis eleifend option congue nihil imperdiet doming id quod mazim placerat facer possim assum. Typi non habent claritatem insitam; est usus legentis in iis qui facit eorum claritatem.</div>
```

```
</body>
```



CSS

CSS Combinators

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

There are four different combinators in CSS:

- Descendant combinator (space)
- Child combinator ($>$)
- Next sibling combinator ($+$)
- Subsequent-sibling combinator (\sim)





CSS

Descendant Combinator

The descendant combinator matches all elements that are descendants of a specified element.

The following example selects all `<p>` elements inside `<div>` elements:

Example

```
div p {  
  background-color: yellow;  
}
```



```
<!DOCTYPE html>
<html>
<head>
<style>
div p {
  background-color: yellow;
}
</style>
</head>
<body>

<h2>Descendant Selector</h2>
```

```
<p>The descendant selector matches all elements that are descenda
```

```
<div>
  <p>Paragraph 1 in the div.</p>
  <p>Paragraph 2 in the div.</p>
  <section><p>Paragraph 3 in the div.</p></section>
</div>
```

```
<p>Paragraph 4. Not in a div.</p>
<p>Paragraph 5. Not in a div.</p>
```

```
</body>
</html>
```

Descendant Selector

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

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.





CSS

Child Combinator (>)

The child combinator selects all elements that are the children of a specified element.

The following example selects all <p> elements that are children of a <div> element:

Example

```
div > p {  
  background-color: yellow;  
}
```



```
<!DOCTYPE html>
<html>
<head>
<style>
div > p {
    background-color: yellow;
}
</style>
</head>
<body>
```

```
<h2>Child Selector</h2>
```

```
<p>The child selector (>) selects all elements that are the
```

```
<div>
  <p>Paragraph 1 in the div.</p>
  <p>Paragraph 2 in the div.</p>
  <section>
    <!-- not Child but Descendant -->
    <p>Paragraph 3 in the div (inside a section element).</p>
  </section>
  <p>Paragraph 4 in the div.</p>
</div>
```

```
<p>Paragraph 5. Not in a div.</p>
```

```
<p>Paragraph 6. Not in a div.</p>
```

```
</body>
```

```
</html>
```

Child Selector

The child selector (>) selects all elements that are the children of a specified element.

Paragraph 1 in the div.

Paragraph 2 in the div.

Paragraph 3 in the div (inside a section element).

Paragraph 4 in the div.

Paragraph 5. Not in a div.

Paragraph 6. Not in a div.





Next Sibling Combinator (+)

The next sibling combinator is used to select an element that is directly after another specific element.

Sibling elements must have the same parent element, and "adjacent" means "immediately following".

The following example selects the first `<p>` element that are placed immediately after `<div>` elements:

Example

```
div + p {  
  background-color: yellow;  
}
```




```
<!DOCTYPE html>
<html>
<head>
<style>
div + p {
  background-color: yellow;
}
</style>
</head>
<body>
```

```
<h2>Adjacent Sibling Selector</h2>
```

```
<p>The + selector is used to select an element that is directly after another specific element.
<p>The following example selects the first p element that is placed immediately after div elements:
```

```
<div>
  <p>Paragraph 1 in the div.</p>
  <p>Paragraph 2 in the div.</p>
</div>
```

```
<p>Paragraph 3. After a div.</p>
<p>Paragraph 4. After a div.</p>
```

```
<div>
  <p>Paragraph 5 in the div.</p>
  <p>Paragraph 6 in the div.</p>
</div>
```

```
<p>Paragraph 7. After a div.</p>
<p>Paragraph 8. After a div.</p>
```

```
</body>
</html>
```

Adjacent Sibling Selector

The + selector is used to select an element that is directly after another specific element.

The following example selects the first p element that are placed immediately after div elements:

Paragraph 1 in the div.

Paragraph 2 in the div.

Paragraph 3. After a div.

Paragraph 4. After a div.

Paragraph 5 in the div.

Paragraph 6 in the div.

Paragraph 7. After a div.

Paragraph 8. After a div.





Subsequent-sibling Combinator (~)

The subsequent-sibling combinator selects all elements that are next siblings of a specified element.

The following example selects all `<p>` elements that are next siblings of `<div>` elements:

Example

```
div ~ p {  
  background-color: yellow;  
}
```



```
<!DOCTYPE html>
```

```
<html>
```

```
<head>
```

```
<style>
```

```
div ~ p {  
  background-color: yellow;  
}
```

```
</style>
```

```
</head>
```

```
<body>
```

```
<h2>General Sibling Selector</h2>
```

```
<p>The general sibling selector (~) selects all elements that are
```

```
<p>Paragraph 1.</p>
```

```
<div>
```

```
  <p>Paragraph 2.</p>
```

```
</div>
```

```
<p>Paragraph 3.</p>
```

```
<code>Some code.</code>
```

```
<p>Paragraph 4.</p>
```

```
</body>
```

```
</html>
```

General Sibling Selector

The general sibling selector (~) selects all elements that are next siblings of a specified element.

Paragraph 1.

Paragraph 2.

Paragraph 3.

Some code.

Paragraph 4.

