CSS

CSS is used to control the style of a web document in a simple and easy way.CSS is the stands for "Cascading Style Sheet". It is used to make web pages presentable. The reason for using this is to simplify the process of making web pages presentable. It allows you to apply styles on web pages. More importantly, it enables you to do this independently of the HTML that makes up each web page.

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
- CSS saves a lot of work. It can control the layout of multiple web pages all at once
- External stylesheets are stored in CSS files

Advantages of CSS

- CSS saves time − You can write CSS once and then reuse same sheet in multiple HTML pages. You can define a style for each HTML element and apply it to as many Web pages as you want.

- Pages load faster − If you are using CSS, you do not need to write HTML tag attributes every time. Just write one CSS rule of a tag and apply it to all the occurrences of that tag. So less code means faster download times.

- Easy maintenance − To make a global change, simply change the style, and all elements in all the web pages will be updated automatically.

- Superior styles to HTML − CSS has a much wider array of attributes than HTML, so you can give a far better look to your HTML page in comparison to HTML attributes.

- Multiple Device Compatibility − Style sheets allow content to be optimized for more than one type of device. By using the same HTML document, different versions of a website can be presented for handheld devices such as PDAs and cell phones or for printing.

- Global web standards − Now HTML attributes are being deprecated and it is being recommended to use CSS. So its a good idea to start using CSS in all the HTML pages to make them compatible to future browsers.

SYNTAX

A CSS comprises of style rules that are interpreted by the browser and then

applied to the corresponding elements in your document. A style rule is made of three parts:

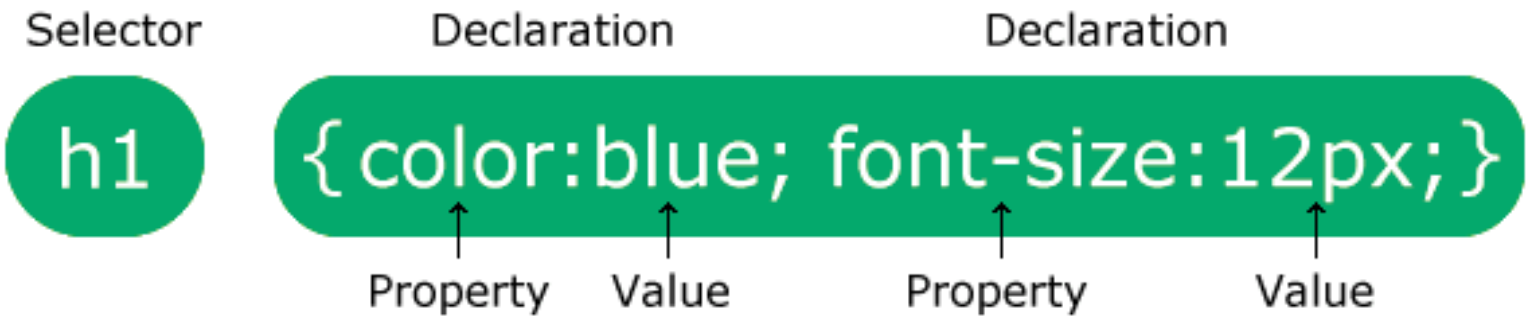
Selector: A selector is an HTML tag at which a style will be applied. This could be any tag like <h1> or <table> etc.

Property: A property is a type of attribute of HTML tag. Put simply, all the HTML attributes are converted into CSS properties. They could be color, border, etc.

Value: Values are assigned to properties. For example, color property can have the value either red or #F1F1F1 etc.

CSS Style Rule Syntax as follows:

selector { property: value }



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.

Multiple CSS declarations are separated with semicolons, and declaration blocks are surrounded by curly braces.

Ways to add CSS

There are four ways to associate styles with your HTML document. Most commonly used methods are inline CSS and External CSS.

1) Internal CSS/ Embedded CSS -The <style> Element

The internal style sheet is used to add a unique style for a single document. It is defined in <head> section of the HTML page inside the <style> tag.

```
<head>
<style type="text/css" media="...">
Style Rules
.....
</style>
</head>
```

```
<!DOCTYPE html>
<html>
<head>
<style>
body {
  background-color: linen;
}

h1 {
  color: red;
  margin-left: 40px;
}
</style>
</head>
<body>

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

</body>
</html>
```

2) Inline CSS -The *style* Attribute

It is used to *style* attribute of any HTML element to define style rules. These rules will be applied to that element only. Here is the generic syntax:

<element style="...style rules....">

Example
Following is the example of inline CSS based on the above syntax:

```
<h1 style ="color:#36C;"> This is inline CSS </h1>
```

```
<!DOCTYPE html>
<html>
<body>
<h1 style="color:red;margin-left:40px;">Inline CSS is applied on this
heading.</h1>
<p>This paragraph is not affected.</p>
</body>
</html>
```

3) External CSS -The <link> Element

The external style sheet is generally used when you want to make changes on multiple pages. It is ideal for this condition because it facilitates you to change the look of the entire web site by changing just one file. It uses the <link> tag on every pages and the <link> tag should be put inside the head section.

The <link> element can be used to include an external stylesheet file in 0HTML document. An external style sheet is a separate text file with **.css** extension. We define all the Style rules within this text file and then you can include this file in any HTML document using <link> element.
Here is the generic syntax of including external CSS file:

```
<head>
<link type="text/css" href="..." media="..." />
</head>
```

Example:

```
<head>
<link rel="stylesheet" type="text/css" href="mystyle.css">
</head>
```

Example

Consider a simple style sheet file with a name *mystyle.css* having the following rules:

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

Now you can include this file *mystyle.css* in any HTML document as follows:

```
<head>
<link type="text/css" href="mystyle.css" media="all" />
</head>
```

CSS Rules Overriding

We have discussed four ways to include style sheet rules in an HTML document. Here is the rule to override any Style Sheet Rule.

- Any inline style sheet takes the highest priority. So, it will override any rule defined in <style>...</style> tags or the rules defined in any external style sheet file.
- Any rule defined in <style>...</style> tags will override the rules defined in any external style sheet file.
- Any rule defined in the external style sheet file takes the lowest priority, and the rules defined in this file will be applied only when the above two rules are not applicable.

CSS Properties

FONTS

set the following font properties of an element:

- The **font-family property** is used to change the face of a font.
- The **font-style property** is used to make a font italic or oblique.
- The **font-variant property** is used to create a small-caps effect.
- The **font-weight property** is used to increase or decrease how bold or light a font appears.
- The **font-size property** is used to increase or decrease the size of a font.
- The **font property** is used as shorthand to specify a number of other font properties.

Set the Font Family

Following is the example, which demonstrates how to set the font family of an element. Possible value could be any font family name.

Generic Font Families:

In CSS there are five generic font families:

Serif fonts have a small stroke at the edges of each letter. They create a sense of formality and elegance.

Sans-serif fonts have clean lines (no small strokes attached). They create a modern and minimalistic look.

Monospace fonts - here all the letters have the same fixed width. They create a mechanical look.

Cursive fonts imitate human handwriting.

Fantasy fonts are decorative/playful fonts.

Some Font Examples

Generic Font Family	**Examples of Font Names**
Serif	Times New Roman
	Georgia
	Garamond
Sans-serif	Arial
	Verdana
	Helvetica
Monospace	Courier New
	Lucida Console
	Monaco
Cursive	Brush Script MT
	Lucida Handwriting
Fantasy	Copperplate
	Papyrus

All the different font names belong to one of the generic font families.

```
<p style="font-family:georgia,garamond,serif;">
This text is rendered in either georgia, garamond, or the defaultserif font depending on which font you have at your system.</p>
```

It will produce the following result:

This text is rendered in either georgia, garamond, or the default serif font depending on which font you have at your system.

Set the Font Style

The following example demonstrates how to set the font style of an element.

Syntax: font-style:<value>

Possible values:normal, italic and oblique.

Initial Value: normal

Applies to: All elements

```
<p style="font-style:italic;">
This text will be rendered in italic style
</p>
```

Set the Font Variant

The following example demonstrates how to set the font variant of an element.

Possible values are normal and small-caps.

```
<p style="font-variant:small-caps;">
This text will be rendered as small caps
</p>
```

It will produce the following result:

THIS TEXT WILL BE RENEDERED AS SMALL CAPS

Set the Font Weight

The following example demonstrates how to set the font weight of an element. The font-weight property provides the functionality to specify how bold a font is.

Syntax: font-weight:<vlaue>

Possible values could be normal, bold, bolder, lighter, 100, 200, 300, 400, 500, 600,700,800,900

Initial Value: normal

Applies: All Elements

```
<p style="font-weight:bold;">
This font is bold.
</p>
<p style="font-weight:bolder;">
This font is bolder.
</p>
<p style="font-weight:900;">
This font is 900 weight.
</p>
```

Set the Font Size

The following example demonstrates how to set the font size of an element. The font-size property is used to control the size of fonts.

Syntax: font-size:<absolute-size>/<realtive size>/<length>/<percentage>

Possible values : <absolutrsize>: xx-small, x-small, small, medium, large, x-large, xx-large,

<relative value> :smaller, larger

<length>

<percentage>

Initial Value: medium

Applies: All Elements

```
<p style="font-size:20px;">
This font size is 20 pixels</p>
<p style="font-size:small;">
This font size is small</p>
<p style="font-size:large;">
This font size is large</p>
```

It will produce the following result:

This font size is 20 pixels

This font size is small

This font size is large

Font

To shorten the code, it is also possible to specify all the individual font properties in one property.
The font property is a shorthand property for:
font-style
font-variant
font-weight
font-size/line-height
font-family

Syntax: font:<value>
Initial Value: Not Defined
Applies: All Elements

```
<html>
<p style="font:italic small-caps bold 15px
georgia;">
Applying all the properties on the text at once.
</p>
</html>
```

```
<html>
<head>
<style type="text/css">
h4{font-family:Times New Roman;font-size:x-
large;}
h6{font-family:arial;font-size:10px;}
</style>
</head>
<body>
<h4> This is example of CSS</h4>
<h6>This is example of CSS</h6>
</body>
</html>
```

CSS Text Formatting

CSS has a lot of properties for formatting text. CSS text formatting properties is used to format text and style text.CSS text formatting include following properties:

1.Text-color:The **color** property is used to set the color of a text.
2.Text-alignment: The **text-align** property is used to align the text of a document.
3.Text-decoration:The **text-decoration** property is used to underline, overline, and strikethrough text.
4.Text-transformation:The **text-transform** property is used to capitalize text or convert text to uppercase or lowercase letters.
5.Text-indentation:The **text-indent** property is used to indent the text of a paragraph.
6.Letter spacing: The **letter-spacing** property is used to add or subtract space between the letters that make up a word.
7.Line height: The **line-height** CSS property sets the height of a line box. It's commonly used to set the distance between lines of text.
8.Text-direction:The **direction** property is used to set the text direction.
9.Text-shadow:The **text-shadow** property is used to set the text shadow around a text.
10.Word spacing: The **word-spacing** property is used to add or subtract space between the words of a sentence.

1.TEXT COLOR

Text-color property is used to set the color of the text. **Text-color can be set by using the name “red”, hex value “#ff0000” or by its RGB value“rgb(255, 0, 0).** The default text color for a page is defined in the body selector.

Syntax:

```
body{ color:color name;}
```

we can define both the background-color property and the color property.

Example:

```
body {background-color: lightgrey;
  color: blue;}
```

```
<!DOCTYPE html>
<html>
<head>
<style>
body {
  color: blue;
}
h1 {
  color:#FFA500;
}
h2{color:rgb(255,165,0)}
</style>
</head>
<body>
<h1>This is heading 1</h1>
<h2>This is heading2</h2>
<p>This is an ordinary paragraph. Notice that this text is blue.
The default text color for a page is defined in the body
selector.</p>
<p>Another paragraph.</p>
</body>
</html>
```

2.TEXT ALIGNMENT

Text alignment property is used to set the horizontal alignment of the text.**The text can be set to left, right, centered and justified alignment.**In justified alignment, line is stretched such that left and right margins are straight.

Syntax: `body { text-align:alignment type; }`

Initial Value: Determined by browser

Applies to : Block-level elements(<p>,) .

A block-level element always starts on a new line, and the browsers automatically add some space (a margin) before and after the element.

A block-level element always takes up the full width available (stretches out to the left and right as far as it can).

Text Align Last

The text-align-last property specifies how to align the last line of a text.

```
<!DOCTYPE html>
<html>
<head>
<style>
h1 {text-align: center;}
h2 {text-align: left;}
h3 {text-align: right;}
p{text-align:justify}
</style>
</head>
<body>
<h1>Heading 1 (center)</h1>
<h2>Heading 2 (left)</h2>
<h3>Heading 3 (right)</h3>
<p>The three headings above are aligned center, left and right.</p>
</body>
</html>
```

```
<html>
<head>
<style>
p.a { text-align-last: right;}
p.b {text-align-last: center;}
p.c {text-align-last: justify;}
</style>
</head>
<body>
<h1>The text-align-last Property</h1>
<h2>text-align-last: right:</h2>
<p class="a">Parag Milk Foods is an Indian company that manufactures, markets and sells milk and milk products. The company is India's second largest producer of cheese under its brand Go and the country's largest producer of cow ghee under its brand Govardhan.</p>
<h2>text-align-last: center:</h2>
<p class="b">Parag Milk Foods is an Indian company that manufactures, markets and sells milk and milk products. The company is India's second largest producer of cheese under its brand Go and the country's largest producer of cow ghee under its brand Govardhan.</p>
<h2>text-align-last: justify:</h2>
<p class="c">Parag Milk Foods is an Indian company that manufactures, markets and sells milk and milk products. The company is India's second largest producer of cheese under its brand Go and the country's largest producer of cow ghee under its brand Govardhan.</p>
</body>
</html>
```

Vertical Alignment

The `vertical-align` property sets the vertical alignment of an element.

Syntax: body { vertical-align:alignment type; }
Possible Values: baseline/sub/super/top/text top/middle/bottom/text-bottom
Initial Value: baseline
Applies to : Inline elements

```
<!DOCTYPE html>
<html>
<head>
<style>
img.a {vertical-align: baseline;}
img.b {vertical-align: text-top;}
img.c {vertical-align: text-bottom;}
img.d {vertical-align: sub;}
img.e {vertical-align: super;}
img.f {vertical-align: middle;}
img.g {vertical-align: bottom;}
img.h {vertical-align: text-bottom;}
</style></head>
<body>
<h1>The vertical-align Property</h1>
<h2>vertical-align: baseline (default):</h2>
<p>An <img class="a" src="C:\Users\KIRAS3\Pictures\Picture1.jpg" width="9'
height="9"> image with a default alignment.</p>
<h2>vertical-align: text-top:</h2>
<p>An <img class="b" src="C:\Users\KIRAS3\Pictures\Picture1.jpg" width="9'
height="9"> image with a text-top alignment.</p>
<h2>vertical-align: text-bottom:</h2>
<p>An <img class="c" src="C:\Users\KIRAS3\Pictures\Picture1.jpg" width="9'
height="9"> image with a text-bottom alignment.</p>
<h2>vertical-align: sub:</h2>
<p>An <img class="d" src="C:\Users\KIRAS3\Pictures\Picture1.jpg" width="9'
height="9"> image with a sub alignment.</p>
<h2>vertical-align: sup:</h2>
<p>An <img class="e" src="C:\Users\KIRAS3\Pictures\Picture1.jpg" width="9'
height="9"> image with a super alignment.</p>
<h2>vertical-align: middle:</h2>
<p>An <img class="f" src="C:\Users\KIRAS3\Pictures\Picture1.jpg" width="9"
height="9"> image with a super alignment.</p>
<h2>vertical-align: bottom:</h2>
<p>An <img class="g" src="C:\Users\KIRAS3\Pictures\Picture1.jpg" width="9'
height="9"> image with a super alignment.</p>
<h2>vertical-align: text-bottom:</h2>
<p>An <img class="h" src="C:\Users\KIRAS3\Pictures\Picture1.jpg" width="9'
height="9"> image with a super alignment.</p>
</body></html>
```

3.TEXT DECORATION

Text decoration is used to add or remove decorations from the text.**Text decoration can be underline, overline, line-through or none.**

Syntax:body{text-decoration:decoration type;}
Possible Values:none/underline/overline/~~linethrough~~
Initial Value: none
Applies To: All Elements

Specify a Color for the Decoration Line

The **`text-decoration-color`** property is used to set the color of the decoration line.

Example:

```
h1 {
  text-decoration-line: overline;
  text-decoration-color: red;
}
```

```
<!DOCTYPE html>
<html>
<head>
<style>
h1 {text-decoration: overline;}
h2 {text-decoration: line-through;}
h3 {text-decoration: underline;}
p.a{text-decoration: overline underline;}
</style>
</head>
<body>
<h1>Overline text decoration</h1>
<h2>Line-through text decoration</h2>
<h3>Underline text decoration</h3>
<p class="a">Overline and underline text decoration.</p>
<p><strong>Note:</strong> It is not recommended to underline text that is not a link, as this often confuses the reader.</p>
</body>
</html>
```

4.TEXT TRANSFORMATION

Text transformation property is used to change the case of text, uppercase or lowercase. Text **transformation can be uppercase, lowercase or capitalize.**

Capitalize is used to change the first letter of each word to uppercase.

Syntax:`body{text transform:type;}`

Possible Values:

none/capitaize/uppercase/lowercase

Initial Value: none

Applies To: All Elements

```
<html>
<head>
<style>
p.uppercase {text-transform: uppercase;}
p.lowercase {text-transform: lowercase;}
p.capitalize {text-transform: capitalize;}
</style>
</head>
<body>
<h1>Using the text-transform property</h1>
<p class="uppercase">This text is transformed to uppercase.</p>
<p class="lowercase">This text is transformed to lowercase.</p>
<p class="capitalize">This text is capitalized.</p>
</body>
</html>
```

5.TEXT INDENTATION

Text indentation property is used to indent the first line of the paragraph.The size can be in px, cm, pt.

`Syntax: body { text-indent:size;}`

Possible Values: length/percentage
Initial Value: 0
Applies To: Block level Elements (P,h1, etc)

Unit	Description
em	Relative to the font-size of the element (2em means 2 times the size of the current font)
ex	Relative to the x-height of the current font (rarely used)
cm	centimeters
mm	millimeters
in	inches (1in = 96px = 2.54cm)
px	pixels (1px = 1/96th of 1in)
pt	points (1pt = 1/72 of 1in)
pc	picas (1pc = 12 pt)

```
<!DOCTYPE html>
<html>
<head>
<style>
h2{text-indent:80px;}
h3{text-indent:60%;}
</style>
</head>
<body>
<h1>Indentation</h1>
<h2>This is text formatting properties.<br>
Text indentation property is used to indent the
first line of the paragraph.
</h2>
<h3>Indent</h3>
</body>
</html>
```

6.LETTER SPACING

This property is used to specify the space between the characters of the text.
The size can be given in px.
Syntax: body { letter-spacing:size; }
Possible Values:normal/length
Initial Value: normal
Applies To: All Elements

```
<html>
<head>
<style>
h2 {letter-spacing:4px;}
</style>
</head>
<body>
<h1>Letter sapcing</h1>
<h2>This is text formatting properties.</h2>
</body>
</html>
```

7.LINE HEIGHT

This property is used to set the space between the lines.
Syntax: body { line-height:size; }
Possible Values:normal/length/number/percentage
Initial Value: normal
Applies To: All Elements

```
<!DOCTYPE html>
<html>
<head>
<style>
h2{line-height:40px;}
</style>
</head>
<body>
<h1>Line Height</h1>
<h2>This is text formatting properties.<br>
This property is used to set the space between the
lines.</h2>
</body>
</html>
```

8.TEXT DIRECTION

Text direction property is used to set the direction of the text.**The direction can be set by using rtl : right to left .**Left to right is the default direction of the text.

Syntax: `body {direction:rtl; }`

bdo: Bidirectional override

```
<!DOCTYPE html>
<html>
<head>
<style>
h2{direction: rtl;}
</style>
h3{direction: rtl;}
</head>
<body>
<h1>Text Direction</h1>
<h2>This is text formatting properties.</h2>
<h3><bdo dir="rtl">Text Direction</bdo></h3>
</body>
</html
```

9.TEXT SHADOW

Text shadow property is used to add shadow to the text.
You can specify the horizontal size, vertical size and shadow color for the text.

Syntax: `body { text-shadow:horizontal size vertical size color name; }`

```
<!DOCTYPE html>
<html>
<head>
<style>
h1
{text-shadow:3px 1px blue;}
</style>
</head>
<body>
<h1>Text Shadow</h1>
<h2>This is text formatting properties.</h2>
</body>
</html>
```

10.WORD SPACING

Word spacing is used to specify the space between the words of the line.
The size can be given in px.
Syntax: body { word-spacing:size; }
Possible Values:normal/length
Initial Value: normal
Applies To: All Elements

```
<!DOCTYPE html>
<html>
<head>
<style>
h2{word-spacing:5px;}
</style>
</head>
<body>
<h1>Word Spacing</h1>
<h2>This is text formatting properties.</h2>
</body>
</html>
```

CSS Images

Images play an important role in any webpage. Though it is not recommended to include a lot of images, but it is still important to use good images wherever required.

CSS plays a good role to control image display. You can set the following image properties using CSS.

The **border** property is used to set the width of an image border.

The **height** property is used to set the height of an image.

The **width** property is used to set the width of an image.

The Image Border Property

The *border* property of an image is used to set the width of an image border. This property can have a value in length or in percentage.

A width of zero pixels means no border.

The Image Height Property

The *height* property of an image is used to set the height of an image. This property can have a value in length or in percentage. While giving value in percentage, it applies it in respect of the box in which an image is available.

The Image Width Property

The *width* property of an image is used to set the width of an image. This property can have a value in length or in percentage While giving value in percentage, it applies it in respect of the box in which an image is available.

```
<html>
<body>
<img style = "border:0px; height:100px; width:150px;" src =
"C:\Users\KIRAS3\Pictures\pic2.jpg" />
<br />
<img style = "border:3px dashed red; height:100px;
width:150px;" src = "C:\Users\KIRAS3\Pictures\pic1.jpg" />
</body>
</html>
```

CSS Margins(Box property)

Margins are used to create space around elements, outside of any defined borders. With CSS, you have full control over the margins. There are properties for setting the margin for each side of an element (top, right, bottom, and left).

Margin - Individual Sides

CSS has properties for specifying the margin for each side of an element:

margin-top
margin-right
margin-bottom
margin-left

All the margin properties can have the following values:

auto - the browser calculates the margin
length - specifies a margin in px, pt, cm, etc.
% - specifies a margin in % of the width of the containing element

Note: Negative values are allowed.

Syntax: margin-top/right/bottom/left:value
Possible values: length/percentage/auto
Initial Value: 0
Applies to: All Elements

```
<!DOCTYPE html>
<html>
<head>
<style>
body{
border: 1px solid black;
margin-top: 100px;
margin-bottom: 100px;
margin-right: 150px;
margin-left: 80px;
background-color: lightblue;
}
</style>
</head>
<body>
<h2>Using individual margin properties</h2>
<div>This div element has a top margin of 100px, a right margin of 150px, a bottom margin of 100px, and a left margin of 80px.</div>
</body>
</html>
```

Margin - Shorthand Property

To shorten the code, it is possible to specify all the margin properties in one property.

The `margin` property is a shorthand property for the following individual margin properties:

- `margin-top`
- `margin-right`
- `margin-bottom`
- `margin-left`

So, here is how it works:

If the `margin` property has four values:

- **margin: 25px 50px 75px 100px;**
  - top margin is 25px
  - right margin is 50px
  - bottom margin is 75px
  - left margin is 100px

```
<!DOCTYPE html>
<html>
<head>
<style>
div {
  border: 1px solid black;
  margin: 25px 50px 75px 100px;
  background-color: lightblue;
}
</style>
</head>
<body>

<h2>The margin shorthand property - 4 values</h2>

<div>This div element has a top margin of 25px, a right margin of 50px, a bottom margin of 75px, and a left margin of 100px.</div>

<hr>

</body>
</html>
```

CSS Padding (Box property)

The CSS `padding` properties are used to generate space around an element's content, inside of any defined borders.

With CSS, you have full control over the padding. There are properties for setting the padding for each side of an element (top, right, bottom, and left).

CSS has properties for specifying the padding for each side of an element:

padding-top
padding-right
padding-bottom
padding-left

Syntax: padding-top/right/bottom/left:value

Possible values:
length/percentage/auto

Initial Value: 0

Applies to: All Elements

```
<!DOCTYPE html>
<html>
<head>
<style>
body{
border: 1px solid black;
padding-top: 100px;
padding-bottom: 100px;
padding-right: 150px;
padding-left: 80px;
background-color: lightblue;
}
</style>
</head>
<body>
<h2>Using individual margin properties</h2>
<div>This div element has a top margin of 100px, a right margin of 150px, a bottom margin of 100px, and a left margin of 80px.</div>
</body>
</html>
```

Padding - Shorthand Property

To shorten the code, it is possible to specify all the padding properties in one property.

The `padding` property is a shorthand property for the following individual padding properties:

- `padding-top`
- `padding-right`
- `padding-bottom`
- `padding-left`

So, here is how it works:

If the `padding` property has four values:

- **padding: 25px 50px 75px 100px;**
  - top padding is 25px
  - right padding is 50px
  - bottom padding is 75px
  - left padding is 100px

```
<!DOCTYPE html>
<html>
<head>
<style>
div {
  border: 1px solid black;
  padding: 25px 50px 75px 100px;
  background-color: lightblue;
}
</style>
</head>
<body>
<h2>The padding shorthand property - 4 values</h2>
<div>This div element has a top padding of 25px, a right padding of 50px, a bottom padding of 75px, and a left padding of 100px.</div>
</body>
</html>
```

CSS Borders (Box property)

CSS Border Style

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

The `border-style` property can have from one to four values (for the top border, right border, bottom border, and the left border).

```
<!DOCTYPE html>
<html>
<head>
<style>
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;}
</style>
</head>
<body>
<h2>The border-style Property</h2>
<p>This property specifies what kind of border to display:</p>
<p class="dotted">A dotted border.</p>
<p class="dashed">A dashed border.</p>
<p class="solid">A solid border.</p>
<p class="double">A double border.</p>
<p class="groove">A groove border.</p>
<p class="ridge">A ridge border.</p>
<p class="inset">An inset border.</p>
<p class="outset">An outset border.</p>
<p class="none">No border.</p>
<p class="hidden">A hidden border.</p>
<p class="mix">A mixed border.</p>
</body>
</html>
```

CSS Border Width

The `border-width` property specifies the width of the four borders.

The width can be set as a specific size (in px, pt, cm, em, etc) or by using one of the three pre-defined values: thin, medium, or thick.

CSS has properties for specifying the width for each side of an element:

border-top-width

border-right-width

border-bottom-width

border-left-width

Syntax: border-top/right/bottom/left-width:value
Possible values: : thin/ medium/ thick/length
Initial Value:medium
Applies to: All Elements

```
<!DOCTYPE html>
<html>
<head>
<style>
p.one {
  border-style: solid;
  border-top-width: 10px;
  border-right-width: 10px;
  border-bottom-width: 10px;
  border-left-width: 15px;
}
p.two {
  border-style: solid;
  border-width: medium;
}
p.three {
  border-style: dotted;
  border-width: 2px;
}
p.four {
  border-style: dotted;
  border-width: thick;
}
p.five {
  border-style: double;
  border-width: 15px;
}
p.six {
  border-style: double;
  border-width: thick;
}
</style>
</head>
<body>
<h2>The border-width Property</h2>
<p>This property specifies the width of the four
borders:</p>
<p class="one">Some text.</p>
<p class="two">Some text.</p>
<p class="three">Some text.</p>
<p class="four">Some text.</p>
<p class="five">Some text.</p>
<p class="six">Some text.</p>
<p><b>Note:</b> The "border-width" property
does not work if it is used alone.
Always specify the "border-style"
property to set the borders first.</p>
</body>
</html>
```

CSS Border Width

The `border-width` property specifies the width of the four borders.

The width can be set as a specific size (in px, pt, cm, em, etc) or by using one of the three pre-defined values: thin, medium, or thick.

Syntax: border-width:value
Possible values: : thin/ medium/ thick/length
Initial Value: Not defined
Applies to: All Elements

```
<!DOCTYPE html>
<html>
<head>
<style>
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;
}
p.five {
  border-style: double;
  border-width: 15px;
}
p.six {
  border-style: double;
  border-width: thick;
}
</style>
</head>
<body>
<h2>The border-width Property</h2>
<p>This property specifies the width of the four borders:</p>
<p class="one">Some text.</p>
<p class="two">Some text.</p>
<p class="three">Some text.</p>
<p class="four">Some text.</p>
<p class="five">Some text.</p>
<p class="six">Some text.</p>
<p><b>Note:</b> The "border-width" property does not work if it is used alone.
Always specify the "border-style" property to set the borders first.</p>
</body>
</html>
```

CSS Border Color

The `border-color` property is used to set the color of the four borders.

The color can be set by:

- name - specify a color name, like "red"
- HEX - specify a HEX value, like "#ff0000"
- RGB - specify a RGB value, like "rgb(255,0,0)"
- HSL - specify a HSL value, like "hsl(0, 100%, 50%)"
- Transparent

Syntax: border-color:value

Applies to: All Elements

```
<!DOCTYPE html>
<html>
<head>
<style>
p.a {
  border-style: solid;
  border-color: red;}
p.b {
  border-style: solid;
  border-color: green;}
p.c {
  border-style: dotted;
  border-color: blue;}
</style>
</head>
<body>
<h2>The border-color Property</h2>
<p>This property specifies the color of the four borders:</p>
<p class="a">A solid red border</p>
<p class="b">A solid green border</p>
<p class="c">A dotted blue border</p>
<p><b>Note:</b> The "border-color" property does not work if it is used alone. Use the "border-style" property to set the borders first.</p>
</body>
</html>
```

Specific Side Colors

The `border-color` property can have from one to four values (for the top border, right border, bottom border, and the left border).

```
<!DOCTYPE html>
<html>
<head>
<style>
p.one {
  border-style: solid;
  border-color: red green blue yellow; /* red top, green right,
blue bottom and yellow left */
}
</style>
</head>
<body>
<h2>The border-color Property</h2>
<p>The border-color property can have from one to four values
(for the top border, right border, bottom border, and the left
border):</p>
<p class="one">A solid multicolor border</p>
</body>
</html>
```

CSS Border - Individual Sides

It is possible to specify a different border for each side. In CSS, there are also properties for specifying each of the borders (top, right, bottom, and left).

```
<!DOCTYPE html>
<html>
<head>
<style>
p {
  border-top-style: dotted;
  border-right-style: solid;
  border-bottom-style: dotted;
  border-left-style: solid;
}
</style>
</head>
<body>
<h2>Individual Border Sides</h2>
<p>2 different border styles.</p>
</body>
</html>
```

CSS Border - Shorthand Property

There are many properties to consider when dealing with borders.

To shorten the code, it is also possible to specify all the individual border properties in one property.

The `border` property is a shorthand property for the following individual border properties:

- `border-width`
- `border-style` (required)
- `border-color`

```
<!DOCTYPE html>
<html>
<head>
<style>
p {
  border: 5px solid red;
}
</style>
</head>
<body>
<h2>The border Property</h2>
<p>This property is a shorthand property for
border-width, border-style, and border-
color.</p>
</body>
</html>
```

We can also specify all the individual border properties for just one side:

Left Border

```
<!DOCTYPE html>
<html>
<head>
<style>
p {
  border-left: 6px solid red;
  background-color: lightgrey;
}
</style>
</head>
<body>
<h2>The border-left Property</h2>
<p>This property is a shorthand property
for border-left-width, border-left-style, and
border-left-color.</p>
</body>
</html>
```

Bottom Border

```
<!DOCTYPE html>
<html>
<head>
<style>
p {
  border-bottom: 6px solid red;
  background-color: lightgrey;
}
</style>
</head>
<body>
<h2>The border-left Property</h2>
<p>This property is a shorthand property for border-left-width,
border-left-style, and border-left-color.</p>
</body>
</html>
```

We can also specify all the individual border properties for just one side:

Right Border

```
<!DOCTYPE html>
<html>
<head>
<style>
p {
  border-right: 6px solid red;
  background-color: lightgrey;
}
</style>
</head>
<body>
<h2>The border-left Property</h2>
<p>This property is a shorthand property
for border-left-width, border-left-style, and
border-left-color.</p>
</body>
</html>
```

Top Border

```
<!DOCTYPE html>
<html>
<head>
<style>
p {
  border-top: 6px solid red;
  background-color: lightgrey;
}
</style>
</head>
<body>
<h2>The border-left Property</h2>
<p>This property is a shorthand property for border-left-width,
border-left-style, and border-left-color.</p>
</body>
</html>
```

CSS Rounded Borders

The `border-radius` property is used to add rounded borders to an element:

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

p.round {
  border: 2px solid red;
  border-radius: 5px;
  padding: 5px;
}
</style>
</head>
<body>
<h2>The border-radius Property</h2>
<p>This property is used to add rounded borders to an element:</p>
<p class="normal">Normal border</p>
<p class="round">Round border</p>
</body>
</html>
```

CSS Height, Width and Max-width

The CSS `height` and `width` properties are used to set the height and width of an element.
The CSS `max-width` property is used to set the maximum width of an element.

CSS Setting height and width

The height and width properties are used to set the height and width of an element.
The height and width properties do not include padding, borders, or margins. It sets the height/width of the area inside the padding, border, and margin of the element.

CSS height and width Values

The height and width properties may have the following values:
auto - This is default. The browser calculates the height and width
length - Defines the height/width in px, cm, etc.
% - Defines the height/width in percent of the containing block
initial - Sets the height/width to its default value
inherit - The height/width will be inherited from its parent value

```
<!DOCTYPE html>
<html>
<head>
<style>
div {
  height: 100px;
  width: 50%;
  background-color: powderblue;
}
</style>
</head>
<body>
<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>
```

Setting max-width

The `max-width` property is used to set the maximum width of an element.
The `max-width` can be specified in *length values*, like px, cm, etc., or in percent (%) of the containing block, or set to none (this is default. Means that there is no maximum width).
The problem with the `<div>` above occurs when the browser window is smaller than the width of the element (500px). The browser then adds a horizontal scrollbar to the page.
Using `max-width` instead, in this situation, will improve the browser's handling of small windows.

```
<!DOCTYPE html>
<html>
<head>
<style>
div {
  max-width: 500px;
  height: 100px;
  background-color: powderblue;
}
</style>
</head>
<body>
<h2>Set the max-width of an element</h2>
<div>This div element has a height of 100px and a max-
width of 500px.</div>
<p>Resize the browser window to see the effect.</p>
</body>
</html>
```

CSS Lists

HTML Lists and CSS List Properties

In HTML, there are two main types of lists:

unordered lists (<ul>) - the list items are marked with bullets

ordered lists (<ol>) - the list items are marked with numbers or letters

The CSS list properties allow you to:

Set different list item markers for ordered lists

Set different list item markers for unordered lists

Set an image as the list item marker

Add background colors to lists and list items

Different List Item Markers

The `list-style-type` property specifies the type of list item marker.

```
<!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>
```

CSS Backgrounds

The CSS background properties are used to add background effects for elements.

- `background-color`
- `background-image`
- `background-repeat`
- `background-attachment`
- `background-position`
- `background` (shorthand property)

CSS background-color

The `background-color` property specifies the background color of an element.
Syntax: background-color:value
Possible values: color/transparent
Initial Value: Transparent
Applies to: All Elements

```
<!DOCTYPE html>
<html>
<head>
<style>
body {background-color: lightblue;}
h1 {background-color: green;}
div {background-color: blue;}
p {background-color: yellow;}
</style>
</head>
<body>
<h1>Hello World!</h1>
<div>
This is a text inside a div element.
<p>This paragraph has its own background color.</p>
We are still in the div element.
</div>
</body>
</html>
```

Opacity / Transparency

The `opacity` property specifies the opacity/transparency of an element. It can take a value from 0.0 - 1.0. The lower value, the more transparent:

```
<!DOCTYPE html>
<html>
<head>
<style>
div {background-color: green;}
div.first {transparency: 0.1;}
div.second {opacity: 0.3;}
div.third {opacity: 0.6;}
</style>
</head>
<body>
<h1>Transparent Boxes</h1>
<p>When using the opacity property to add transparency to the background of an element, all of its child elements become transparent as well. This can make the text inside a fully transparent element hard to read:</p>
<div class="first">
<h1>opacity 0.1</h1>
</div>
<div class="second">
<h1>opacity 0.3</h1>
</div>
<div class="third">
<h1>opacity 0.6</h1>
</div>
<div>
<h1>opacity 1 (default)</h1>
</div>
</body></html>
```

CSS background-image

The `background-image` property specifies an image to use as the background of an element.
By default, the image is repeated so it covers the entire element.
Syntax: background-image:value
Possible values: url/none
Initial Value: none
Applies to: All Elements

CSS background-repeat

By default, the `background-image` property repeats an image both horizontally and vertically.Some images should be repeated only horizontally or vertically, or they will look strange.
Syntax: background-repeat:value
Possible values: repeat/repeat-x/repeat-y/no-repeat
Initial Value: repeat
Applies to: All Elements

CSS background-attachment

The `background-attachment` property specifies whether the background image should scroll or be fixed (will not scroll with the rest of the page).
Syntax: background-attachment:value
Possible values: scroll/fixed
Initial Value: scroll

CSS background-position

The `background-position` property is used to specify the position of the background image.
Syntax: background-position:value
Possible values:
percentage/length/top/bottom/center/left,right
Initial Value: 0%
Applies to: Block level and replaced elements

```
<!DOCTYPE html>
<html>
<head>
<style>
body {background-image:
url("C:\Users\KIRAS3\Pictures\download.jpg");
background-repeat: no-repeat;
background-attachment: fixed;
background-position: right top;
}
</style>
</head>
<body>
<h1>Hello World!</h1>
<p>This page has an image as the
background!</p>
</body></html>
```

CSS background - Shorthand property

To shorten the code, it is also possible to specify all the background properties in one single property. This is called a shorthand property.

Instead of writing:

```
body {
  background-color: #ffffff;
  background-image: url("
C:\Users\KIRAS3\Pictures\download.jpg ");
  background-repeat: no-repeat;
  background-position: right top;
}
```

We can write like this:

```
body {
 background: #ffffff url(" C:\Users\KIRAS3\Pictures\download.jpg ") no-repeat right top;
}
```

CSS Tables

Table Borders

To specify table borders in CSS, use the `border` property.

The example below specifies a solid border for <table>, <th>, and <td> elements.

Full-Width Table

The table above might seem small in some cases. If you need a table that should span the entire screen (full-width),

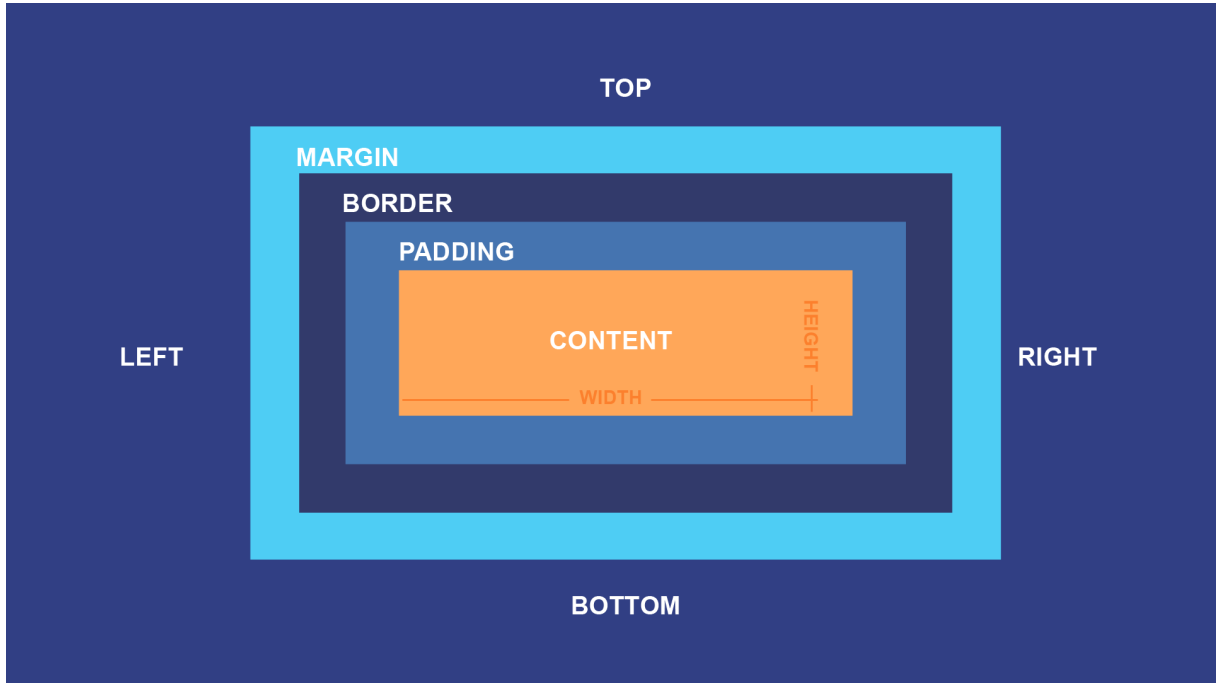
Collapse Table Borders

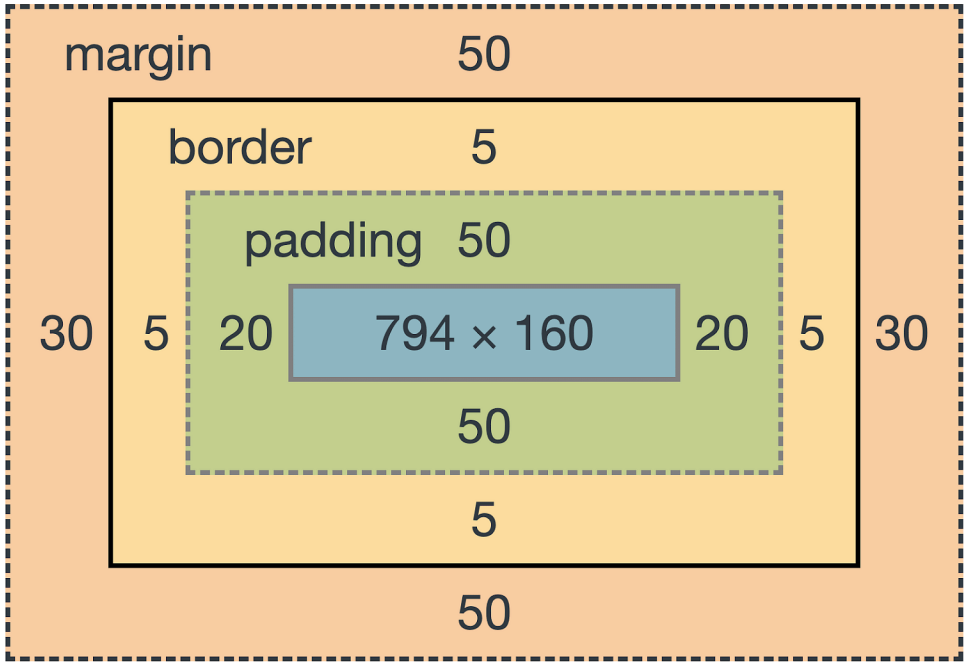
The `border-collapse` property sets whether the table borders should be collapsed into a single border.

```
<!DOCTYPE html>
<html>
<head>
<style>
table, td, th {
  border: 1px solid;
}
table {
  width: 100%;
  border-collapse: collapse;
}
</style>
</head>
<body>
<h2>Let the table borders collapse</h2>
<table>
<tr>
<th>Firstname</th>
<th>Lastname</th>
</tr>
<tr>
<td>Peter</td>
<td>Griffin</td>
</tr>
<tr>
<td>Lois</td>
<td>Griffin</td>
</tr>
</table>
</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: margins, borders, padding, and the actual content. The image below illustrates the box model:





Explanation of the different parts:

Content - The content of the box, where text and images appear

Padding - Clears an area around the content. The padding is transparent

Border - A border that goes around the padding and content

Margin - Clears an area outside the border. The margin is transparent

The box model allows us to add a border around elements, and to define space between elements.

```
<!DOCTYPE html>
<html>
<head>
<style>
div {
  background-color: lightgrey;
  width: 300px;
  border: 15px solid green;
  padding: 50px;
  margin: 20px;
}
</style>
</head>
<body>
<h2>Demonstrating the Box Model</h2>
<p>The CSS box model is essentially a box that wraps around every HTML element. It consists of: borders, padding, margins, and the actual content.</p>
<div>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.</div>
</body>
</html>
```

Styling Links

Links can be styled with any CSS property (e.g. `color`, `font-family`, `background`, etc.).

The four links states are:

a:link - a normal, unvisited link

a:visited - a link the user has visited

a:hover - a link when the user mouses over it

a:active - a link the moment it is clicked

Background Color

The background-color property can be used to specify a background color for links.

Text Decoration

The text-decoration property is mostly used to remove underlines from links.

```
<!DOCTYPE html>
<html>
<head>
<style>
/* unvisited link */
a:link {
 color: red;
   background-color: yellow;
   text-decoration: underline;
    padding: 14px 25px;
    text-align: center;}
/* visited link */
a:visited {
  color: green;
}
/* mouse over link */
a:hover {
  color: hotpink;
}
/* selected link */
a:active {
  color: blue;
}
</style>
</head>
<body>
<h2>Styling a link depending on state</h2>
<p><b><a href="www.google.com"
target="_blank">Google</a></b></p>
<p><b>Note:</b> a:hover MUST come after
a:link and a:visited in the CSS definition in
order to be effective.</p>
<p><b>Note:</b> a:active MUST come after
a:hover in the CSS definition in order to be
effective.</p>
</body>
</html>
```

CSS Selectors

1)The CSS element Selector

The element selector selects HTML elements based on the element name.

```
<!DOCTYPE html>
<html>
<head>
<style>
p {
  text-align: center;
  color: red;
}
</style>
</head>
<body>
<p>Every paragraph will be affected by the style.</p>
<p id="para1">Me too!</p>
<p>And me!</p>
</body>
</html>
```

2) The CSS id Selector

The id selector uses the id attribute of an HTML element to select a specific element.The id of an element is unique within a page, so the id selector is used to select one unique element!To select an element with a specific id, write a hash (#) character, followed by the id of the element.

```
<!DOCTYPE html>
<html>
<head>
<style>
#para1 {
  text-align: center;
  color: red;
}
</style>
</head>
<body>
<p id="para1">Hello World!</p>
<p>This paragraph is not affected by the style.</p>
</body>
</html>
```

3) The CSS class Selector

The class selector selects HTML elements with a specific class attribute.
To select elements with a specific class, write a period (.) character, followed by the class name.

```
<!DOCTYPE html>
<html>
<head>
<style>
.center {
  text-align: center;
  color: red;
}
</style>
</head>
<body>
<h1 class="center">Red and center-aligned heading</h1>
<p class="center">Red and center-aligned paragraph.</p>
</body>
</html>
```

4) The CSS pseudo-class Selector

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 mouses over it
•Style visited and unvisited links differently
•Style an element when it gets focus

Syntax
The syntax of pseudo-classes:

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

Anchor Pseudo-classes
Links can be displayed in different ways:

```
<!DOCTYPE html>
<html>
<head>
<style>
/* unvisited link */
a:link {
  color: red;
}
/* visited link */
a:visited {
  color: green;
}
/* mouse over link */
a:hover {
  color: hotpink;
}
/* selected link */
a:active {
  color: blue;
}
</style>
</head>
<body>
<h2>Styling a link
depending on state</h2>

<p><b><a href="default.asp"
target="_blank">This is a
link</a></b></p>
<p><b>Note:</b> a:hover MUST come
after a:link and a:visited in the CSS
definition in order to be effective.</p>
<p><b>Note:</b> a:active MUST come
after a:hover in the CSS definition in
order to be effective.</p>

</body>
</html>
```