

WEB PROGRAMMING WITH HTML, CSS, JS

LESSON 2

Cascading Style Sheets

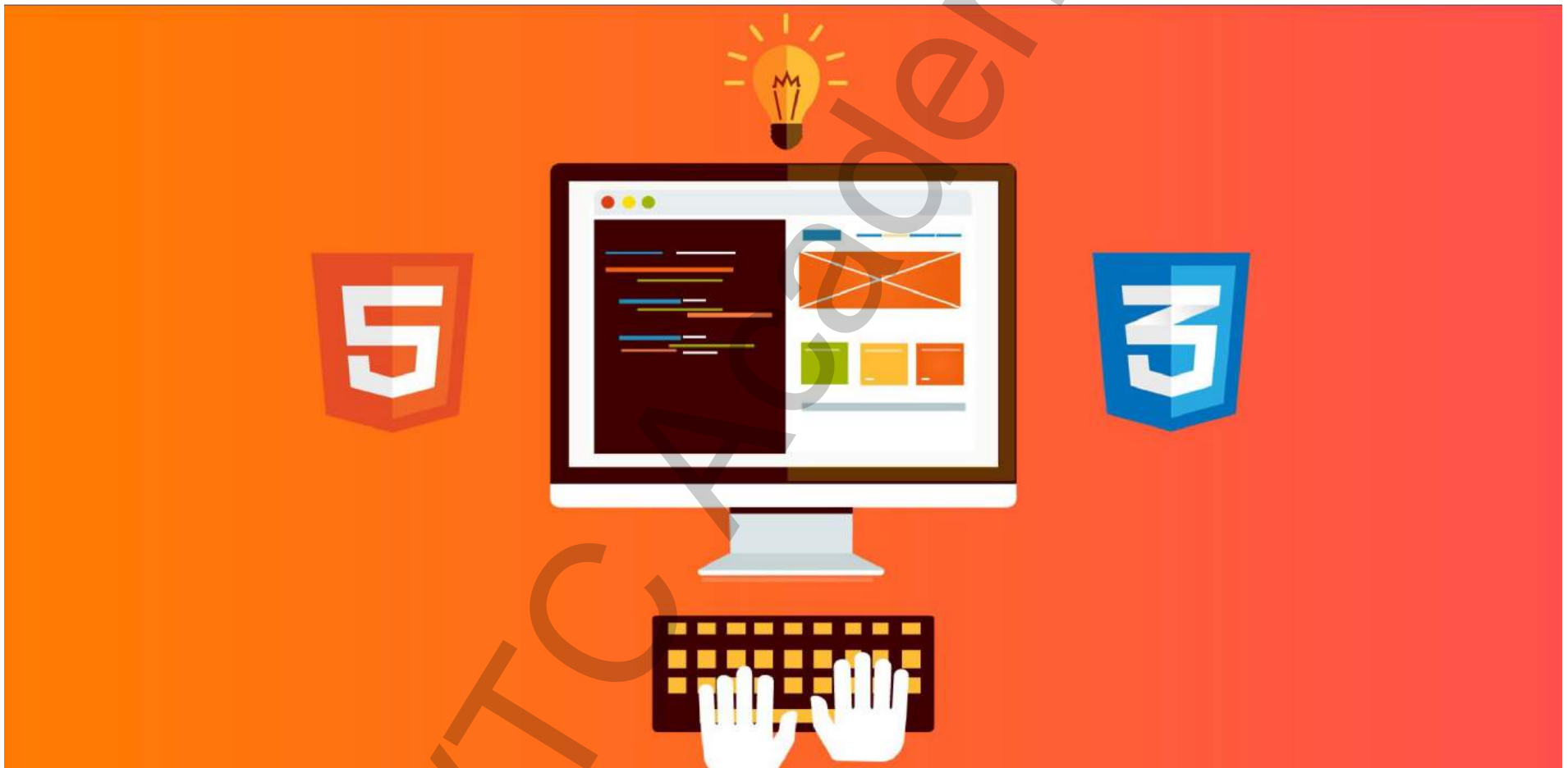
CONTENT

1. Introduction to CSS
2. CSS syntax and selectors
3. Ways to insert CSS
4. CSS properties: color, background, font, border, box,...
5. Margins and paddings
6. HTML block and inline elements
7. Summary

What is CSS?

- A **document** is usually a text file structured using a HTML (the most common markup language). CSS is a language for specifying how documents are presented to users.
- 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.
- CSS is a rule-based language — you define rules specifying groups of styles that should be applied to particular elements or groups of elements on your web page.

What is CSS?

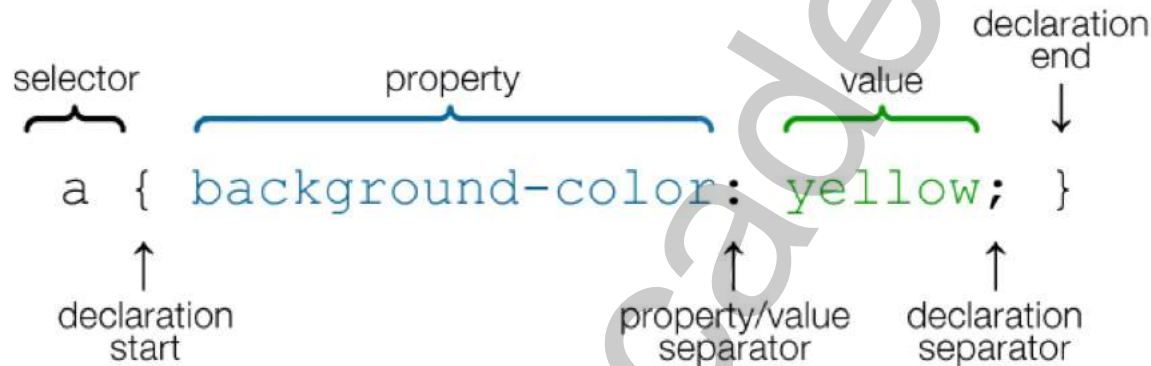


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Why Use CSS?

- CSS is used to define styles for your web pages, including the design, layout and variations in display for different devices and screen sizes.
- CSS solved a big problem: formatted tags (font, color,...).
- CSS saves a lot of work by using style definitions which are saved in external .css files.

- A CSS rule-set consists of a selector and a declaration block:



- 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.

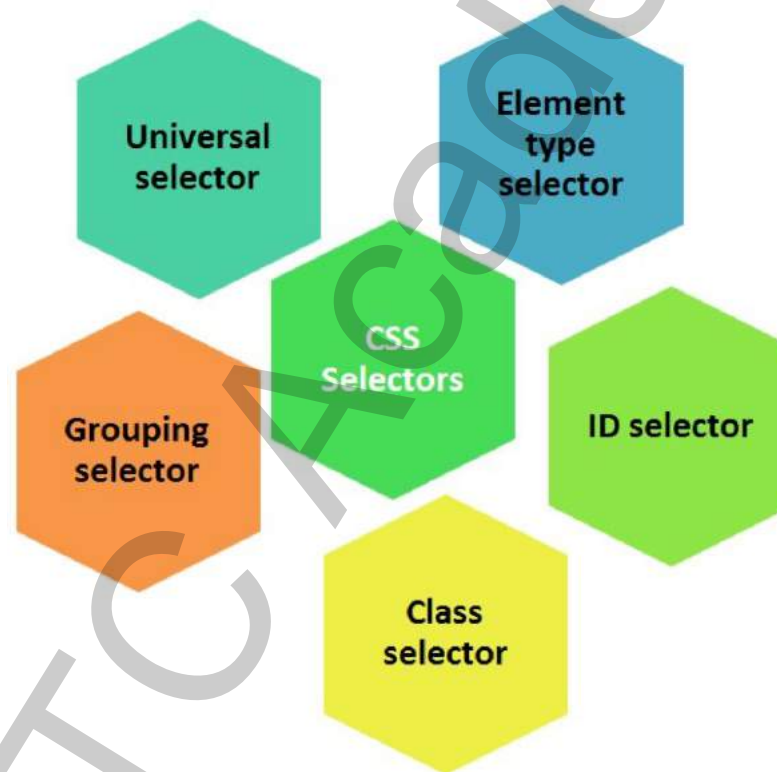
- In the following example all <p> elements will be center-aligned, with a red text color:

```
<style>
p {
    color: red;
    text-align: center;
}
</style>
```

Hello World!

These paragraphs are styled with CSS.

- CSS selectors are used to "find" (or select) HTML elements based on:
 - Element name
 - ID
 - Class
 - Attribute
 - ...



The element Selector

- The element selector selects elements based on the element name.
- You can select all <p> elements on a page like this (in this case, all <p> elements will be center-aligned, with a red text color):

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

<p>This is styled paragraph</p>

The id Selector

- The id selector uses the id attribute of an HTML element to select a specific element. The id of an element should be 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.
- The style rule below will be applied to the HTML element with id="p1":

```
#p1 {  
    text-align: center;  
    color: red;  
}
```

```
<p id="p1">This is styled paragraph</p>
```

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The id Selector

- The class selector selects elements with a specific class attribute.
- To select elements with a specific class, write a period (.) character, followed by the name of the class.
- In the example below, all HTML elements with class="center" will be red and center-aligned:

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

```
<p class="center">This is styled paragraph</p>
```

The id Selector

- The class selector selects elements with a specific class attribute. To select elements with a specific class, write a period (.) character, followed by the name of the class.
- In the example below, all HTML elements with class="center" will be red and center-aligned:

```
<p class="center large">This paragraph refers to two classes.</p>
```

The id Selector

- The class selector selects elements with a specific class attribute. To select elements with a specific class, write a period (.) character, followed by the name of the class.
- In the example below, all HTML elements with class="center" will be red and center-aligned:

```
<p class="center large">This paragraph refers to two classes.</p>
```

Grouping Selectors

- If you have elements with the same style definitions, it will be better to group the selectors, to minimize the code.
- To group selectors, separate each selector with a comma.
- In the example below we have grouped the selectors from the code above:

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

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 starts with `/*` and ends with `*/`.
- Comments can also span multiple lines:

```
p {  
    color: red;  
    /* This is a single-line comment */  
    text-align: center;  
}
```

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

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:
 - Inline style
 - Internal style sheet
 - External style sheet

Inline Style

- 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.
- The example to change the color and the left margin of a <h1> element:

```
<h1 style="color:blue;margin-left:30px;">This is a heading</h1>
```

This is a heading

This is a paragraph.

- **Note:** An inline style loses many of the advantages of a style sheet (by mixing content with presentation). Use this method sparingly.

Internal Style Sheet

- An internal style sheet may be used if one single page has a unique style.
- Internal styles are defined within the <style> element, inside the <head> section of an HTML page:

```
<head>
<style>
body {
    background-color: linen;
}
h1 {
    color: maroon;
    margin-left: 40px;
}
</style>
</head>
```

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External Style Sheet

- With an external style sheet, you can change the look of an entire website by changing just one file.
- Each page must include a reference to the external style sheet file inside the <link> element. The <link> element goes inside the <head> section:

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

- An external style sheet could not contain any html tags and include only CSS selectors.
- The style sheet file must be saved with a .css extension.

Working with CSS Colors

- CSS uses color values to specify a color. Typically, these are used to set a color either for the foreground of an element (i.e., its text) or else for the background of the element. They can also be used to affect the color of borders and other decorative effects.
- You can specify your color values in various formats:

Format	Syntax	Example
Hex Code	#RRGGBB	p{color:#FF0000;}
Short Hex Code	#RGB	p{color:#6A7;}
RGB %	rgb(rrr%,ggg%,bbb%)	p{color:rgb(50%,50%,50%);}
RGB Absolute	rgb(rrr,ggg,bbb)	p{color:rgb(0,0,255);}
keyword	aqua, black, etc.	p{color:teal;}

Background Color

- You can set the background color for HTML elements:

```
<h1 style="background-color:DodgerBlue;">Hello World</h1>  
<p style="background-color:Tomato;">Lorem ipsum...</p>
```

Hello World

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.

Text Color

- You can set the color of text:

```
<h1 style="color:Tomato;">Hello World</h1>  
<p style="color:DodgerBlue;">Lorem ipsum...</p>  
<p style="color:MediumSeaGreen;">Ut wisi enim...</p>
```

Hello World

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.

Border Color

- You can set the color of borders:

```
<h1 style="border:2px solid Tomato;">Hello World</h1>
```

```
<h1 style="border:2px solid DodgerBlue;">Hello World</h1>
```

```
<h1 style="border:2px solid Violet;">Hello World</h1>
```

Hello World

Hello World

Hello World

Color Values

- In HTML, colors can also be specified using RGB values, HEX values, HSL values, RGBA values, and HSLA values.
- Same as color name “Tomato”:

```
<h1 style="background-color:rgb(255, 99, 71);">...</h1>
```

```
<h1 style="background-color:#ff6347;">...</h1>
```

```
<h1 style="background-color:hsl(9, 100%, 64%);">...</h1>
```

rgb(255, 99, 71)

#ff6347

hsl(9, 100%, 64%)

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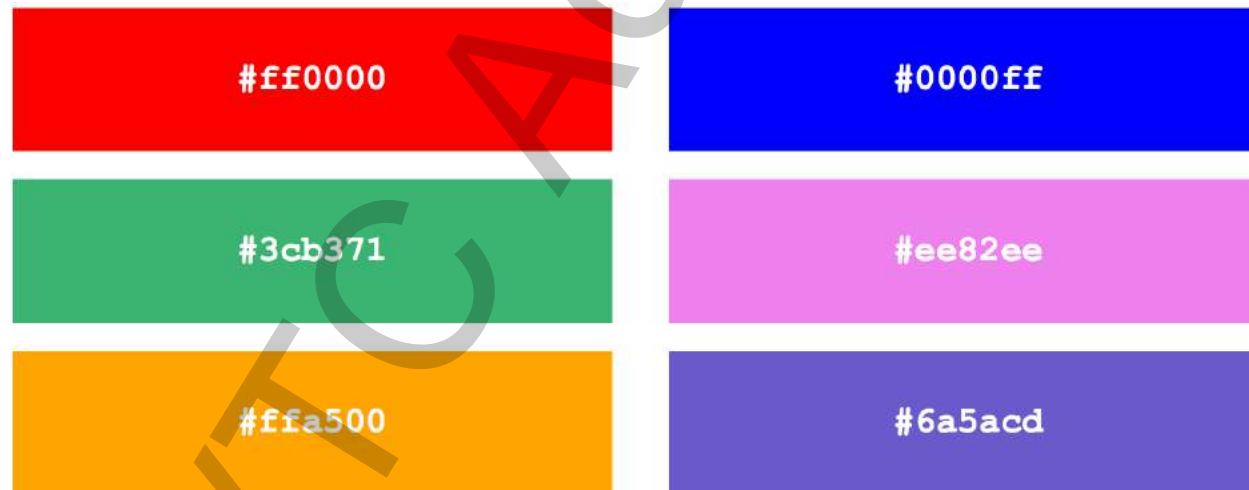
RGB Value

- In HTML, 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.
- To display the color black use `rgb(0, 0, 0)` and display the color white, use `rgb(255, 255, 255)`.
- Experiment by mixing the RGB values below:

`rgb(255, 99, 71)`

HEX Value

- In HTML, 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.



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Working with CSS Backgrounds

- The CSS background properties are used to define the background effects for elements.
- CSS background properties:
 - background-color
 - background-image
 - background-repeat
 - background-attachment
 - background-position

Working with CSS Backgrounds

- The background-color property specifies the background color of an element.
- The background color of a page is set like this:

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

- With CSS, a color is most often specified by:
 - a valid color name - like "red"
 - a HEX value - like "#ff0000"
 - an RGB value - like "rgb(255,0,0)"

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:

```
body {  
    background-image: url("gradient_bg.png");  
}
```

- You can set the image is repeated only horizontally (background-repeat: repeat-x;) or image repeat once (no-repeat):

```
body {  
    background-image: url("gradient_bg.png");  
    background-repeat: repeat-x;  
}
```

Working with CSS Borders

- The CSS border properties allow you to specify the style, width, and color of an element's border.
- The border-style property specifies what kind of border to display:
 - dotted - Defines a dotted border
 - dashed - Defines a dashed border
 - solid - Defines a solid border
 - double - Defines a double border
 - none - Defines no border
 - ...

Working with CSS Borders

```
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;}
```

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.

A hidden border.

A mixed border.

Working with CSS Fonts

- The CSS font properties define the font family, boldness, size, and the style of a text.

- Difference between serif and sans-serif fonts:



- CSS font families:

Generic family	Font family	Description
Serif	Times New Roman Georgia	Serif fonts have small lines at the ends on some characters
Sans-serif	Arial Verdana	"Sans" means without - these fonts do not have the lines at the ends of characters
Monospace	Courier New Lucida Console	All monospace characters have the same width

Font Family

- The font family of a text is set with the font-family property.
- The font-family property should hold several font names as a "fallback" system. If the browser does not support the first font, it tries the next font, and so on.
- Start with the font you want, and end with a generic family, to let the browser pick a similar font in the generic family, if no other fonts are available.
- More than one font family is specified in a comma-separated list:

```
p {  
    font-family: "Times New Roman", Times, serif;  
}
```

- The font-style property is mostly used to specify italic text.
- This property has three values:
 - normal - The text is shown normally
 - italic - The text is shown in italics
 - oblique - The text is "leaning" (oblique is very similar to italic, but less supported)

- Example:

```
p.normal {  
    font-style: normal;  
}  
p.italic {  
    font-style: italic;  
}
```

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- The font-size property sets the size of the text. You should not use font size adjustments to make paragraphs look like headings, or headings look like paragraphs.
- Absolute font-size value:
 - Sets the text to a specified size
 - Does not allow a user to change the text size in all browsers (bad for accessibility reasons)
- Absolute size is useful when the physical size of the output is known
 - Relative font-size value:
 - Sets the size relative to surrounding elements
 - Allows a user to change the text size in browsers

Font Size

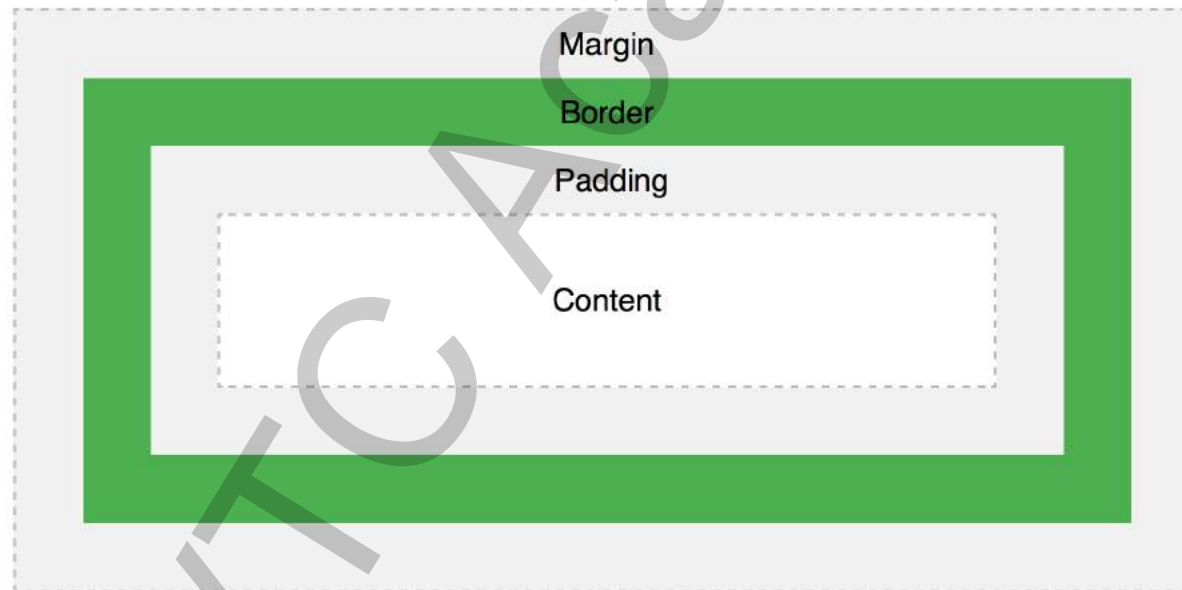
- Setting the text size with pixels gives you full control over the text size:

```
p {  
    font-size: 14px;  
}
```
- To allow users to resize the text (in the browser menu), many developers use em instead of pixels. The em size unit is recommended by the W3C.
- 1em is equal to the current font size. The default text size in browsers is 16px. So, the default size of 1em is 16px.
- The size can be calculated from pixels to em: $pixels/16=em$

```
p {  
    font-size: 0.875em; /* 14px/16=0.875em */  
}
```

Margins and Paddings

- The CSS margin properties are used to create space around elements, outside of any defined borders.
- The CSS padding properties are used to generate space around an element's content, inside of any defined borders.



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CSS Margin

- 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).
- CSS has properties for specifying the margin for each side of an element:
 - margin-top
 - margin-right
 - margin-bottom
 - margin-left

```
p {  
  margin-top: 100px;  
  margin-right: 150px;  
  margin-bottom: 100px;  
  margin-left: 80px;  
}
```




```
p {  
  margin: 100px 150px 100px 80px;  
}
```

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CSS Padding

- 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



```
p {  
  padding-top: 100px;  
  padding-right: 150px;  
  padding-bottom: 100px;  
  padding-left: 80px;  
}
```

```
p {  
  padding: 100px 150px 100px 80px;  
}
```

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HTML Block and Inline Elements

- 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).

```
<div>Hello</div>
```

```
<div>World</div>
```

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

- Block level elements in HTML:

<address>	<article>	<aside>	<blockquote>	<canvas>	<dd>	<div>	<dl>
<dt>	<fieldset>	<figcaption>	<figure>	<footer>	<form>	<h1>-<h6>	<header>
<hr>		<main>	<nav>	<noscript>		<output>	<p>
<pre>	<section>	<table>	<tfoot>		<video>		

HTML Block and Inline Elements

- 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`` in a paragraph

This is an inline `` element inside a paragraph.

- Inline elements in HTML:

<code><a></code>	<code><abbr></code>	<code><acronym></code>	<code></code>	<code><bdo></code>	<code><big></code>	<code>
</code>	<code><button></code>
<code><cite></code>	<code><code></code>	<code><dfn></code>	<code></code>	<code><i></code>	<code></code>	<code><input></code>	<code><kbd></code>
<code><label></code>	<code><map></code>	<code><object></code>	<code><q></code>	<code><samp></code>	<code><script></code>	<code><select></code>	<code><small></code>
<code></code>	<code></code>	<code><sub></code>	<code><sup></code>	<code><textarea></code>	<code><time></code>	<code><tt></code>	<code><var></code>

The <div> Element

- The <div> element is often used as a container for other HTML elements.
- The <div> element has no required attributes, but style, class and id are common.
- When used together with CSS, the <div> element can be used to style blocks of content:

```
<div style="background-color:black;color:white;padding:20px;">  
  <h2>London</h2>  
  <p>London is the capital city of England. It is the most populous  
    city in the United Kingdom, with a metropolitan area of over 13  
    million inhabitants.</p>  
</div>
```

The <div> Element

- The <div> element is often used as a container for other HTML elements.
- The <div> element has no required attributes, but need style, class or id.

```
<div style="background-color:black;color:white;padding:20px;">
```

```
<h2>London</h2>
```

```
<p>London is the capital city of England. It is the most populous  
city in the United Kingdom, with a metropolitan area of over 13  
million inhabitants.</p>
```

```
</div>
```

London

London is the capital city of England. It is the most populous city in the United Kingdom, with a metropolitan area of over 13 million inhabitants.

Standing on the River Thames, London has been a major settlement for two millennia, its history going back to its founding by the Romans, who named it Londinium.

The Element

- The element is often used as a container for some text.
- The element has no required attributes, but style, class and id are common.
- When used together with CSS, the element can be used to style parts of the text:

```
<h1>My <span style="color:red">Important</span> Heading</h1>
```



My Important Heading

Summary

- CSS stands for Cascading Style Sheets.
- CSS describes how HTML elements are to be displayed on screen, paper, or in other media.
- CSS selectors are used to "find" (or select) HTML elements based on: element name, id, class, attribute,...
- There are three ways of inserting a style sheet: inline style, internal style sheet, external style sheet.
- Popular CSS properties are: color, background-image, margins, padding, font,...

Summary

- A block-level element always starts on a new line and takes up the full width available.
- An inline element does not start on a new line and only takes up as much width as necessary.

References

- Books:
 - Web Design with HTML, CSS, JavaScript and jQuery Set:
<https://www.amazon.com/Web-Design-HTML-JavaScript-jQuery/dp/1118907442/>
 - HTML5 and CSS3 All-in-One For Dummies:
<https://www.amazon.com/HTML5-CSS3-All-One-Dummies/dp/1118289382/>
- Tutorials:
 - <https://www.w3schools.com/html/default.asp>
 - <https://www.w3schools.com/css/default.asp>
 - <https://www.w3schools.com/js/default.asp>

*Thank
you!*