

Web Programming

Lecture 1: Introduction



References

- PHP 8 Basics, 2020, Springer
 - o https://link.springer.com/chapter/10.1007/978-1-4842-8082-9 2
- The Absolute Beginner's Guide to HTML and CSS, 2023, Springer
 - o https://link.springer.com/chapter/10.1007/978-1-4842-9250-1 7
- W3C Tutorial
 - o https://www.w3schools.com/php
 - o https://www.w3schools.com/html
 - o https://www.w3schools.com/js
- Additional Topics
 - o JQuery: https://www.w3schools.com/jquery
 - O Bootstrap 5.0: https://www.w3schools.com/bootstrap5
 - O Laravel/Blade Framework 11.0: https://www.w3schools.in/laravel

Grades Distribution

Туре	Grade	Notes
Midterm	15	
Final Exam	25	
Quizzes	10	
Participation	30	
Project	20	Project Evaluation Grade x Individual Discussion
Total	100	

Study Sources

- Lecture Material
- Lab Exercises
- Provided References
- Provided Online Resources
- Self-Learning
- Projects and Assignments



Participation Grades

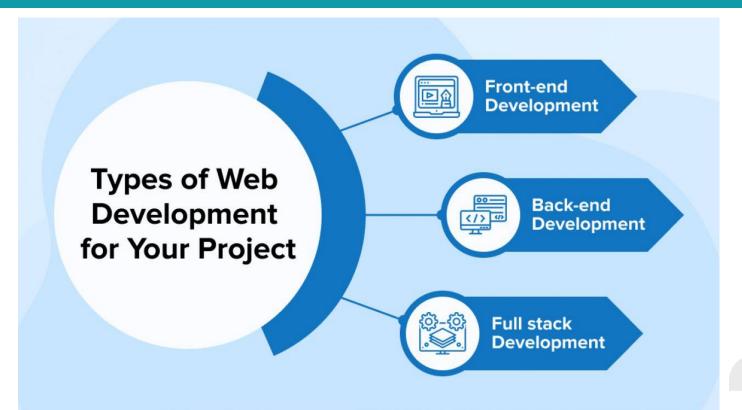
- Participation Criteria:
 - 0: Not Attended, Unable to follow up
 - 1: Successfully write and run 50% of provided programs.
 - 2: Run almost all provided programs. Make 50% of in-class exercises.
 - 3: Run almost all provided programs. Make almost all in-class exercises.
- General Notes
 - Excuses not accepted as we take 10 best grades.
 - Student who cheat will lose the related participation or quiz garde.
 - Using AI to generate code is considered as cheating case.

Agenda

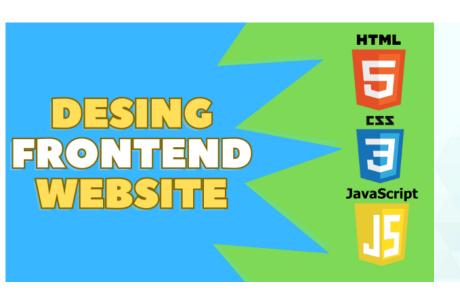
Lecture	Topic	Assignment	Self-learning
1	Introduction to Course, HTML Basics		
2	Advanced HTML and CSS	HTML Exercise	Bootstrap
3	Javascript Language Basics	HTML Exercise	
4	Javascript Language Advanced	Javascript Exercise	
5	Javascript Integration with HTML/CSS	Javascript Exercise	JQuery
6	PHP Language Basics	Javascript Exercise	

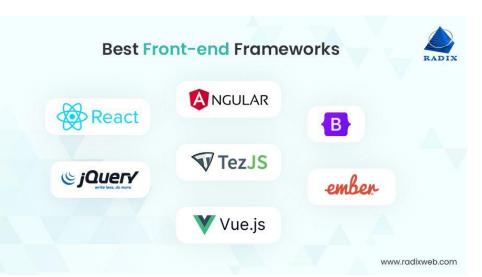
Agenda

Lecture	Topic	Assignment	Self Learning
7	PHP Language Advanced (Functions, Classes)	PHP Exercise	
8	PHP Integration with MySQL/Files	PHP Exercise	
9	PHP Integration with HTML/Rendering	PHP Exercise	
10	PHP Integration with HTML/Forms	PHP Exercise	Laravel
11	Web Based Systems	Project	
12	Web Based Systems	Project	



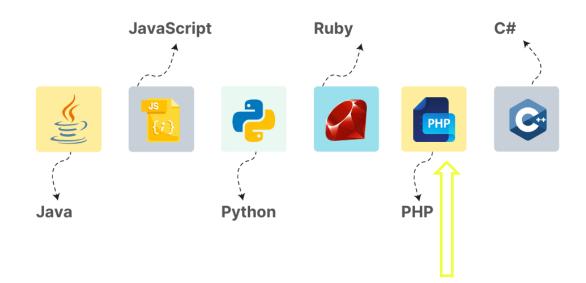
Introduction



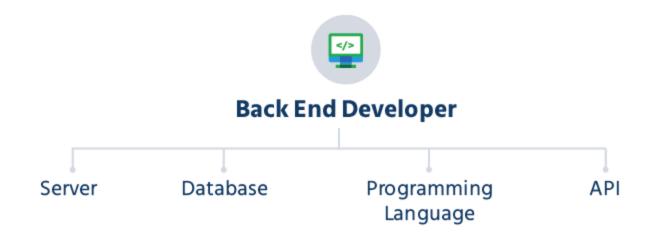




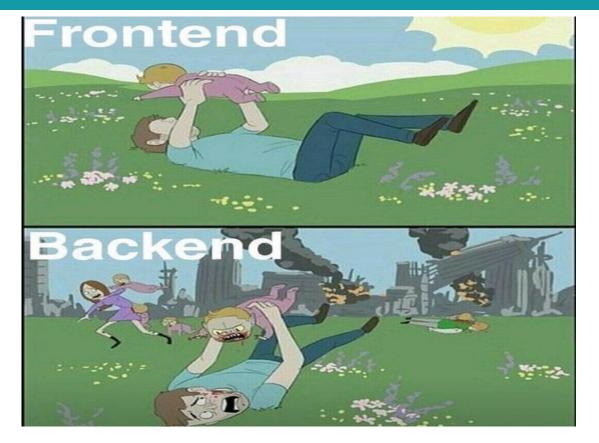
Top Backend Programming Languages



Introduction



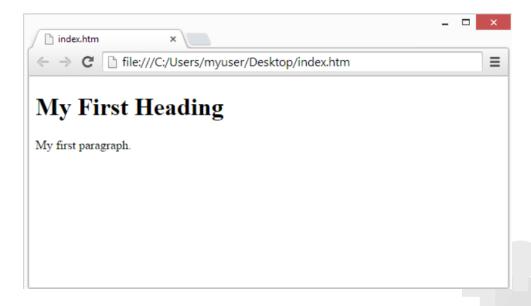






HTML (Hypertext Markup Language) is a text-based approach to describing how content contained within an HTML file is structured. This markup tells a web browser how to display text, images and other forms of multimedia on a webpage.

```
<!DOCTYPE html>
<html>
<head>
<title>Page Title</title>
</head>
<body>
<h1>This is a Heading</h1>
This is a paragraph.
</body>
</html>
```



- •The <!DOCTYPE html> declaration defines that this document is an HTML document
- •The <html> element is the root element of an HTML page
- •The <head> element contains meta information about the HTML page
- •The <title> element specifies a title for the HTML page (which is shown in the browser's title bar or in the page's tab)
- •The <body> element defines the document's body, and is a container for all the visible contents, such as headings, paragraphs, images, hyperlinks, tables, lists, etc.
- •The <h1> element defines a large heading
- •The element defines a paragraph

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

<h1>This is a Heading</h1>
This is a paragraph.
</body>
</html>
```

What is an HTML Element? An HTML element is defined by a start tag, some content, and an end tag:

<tagname> Content goes here... </tagname>

The HTML **element** is everything from the start tag to the end tag:

<h1>My First Heading</h1>My first paragraph.

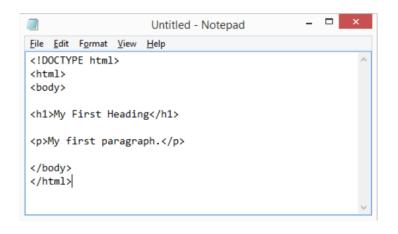


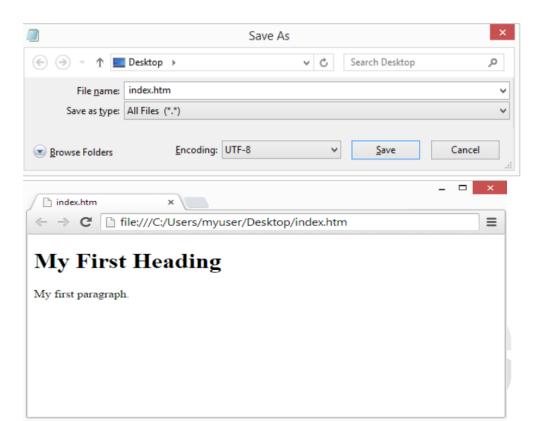
HTML Page Structure Below is a visualization of an HTML page structure:

	>	
<tit< th=""><th>tle>Page title</th><th></th></tit<>	tle>Page title	
/heac	d>	
body:	>	
		1
	<h1>This is a heading</h1>	
	This is a paragraph.	
	This is another paragraph.	



HTML Using Notepad or TextEdit







HTML Documents

All HTML documents must start with a document type declaration: <!DOCTYPE html>.

The HTML document itself begins with <html> and ends with </html>.

The visible part of the HTML document is between <body> and </body>.

HTML Headings

HTML headings are defined with the $\langle h1 \rangle$ to $\langle h6 \rangle$ tags.

<h1> defines the most important heading. <h6> defines the least important heading:

<!DOCTYPE html>

<html>

<body>

<h1>This is heading 1</h1>

<h2>This is heading 2</h2>

<h3>This is heading 3</h3>

<h4>This is heading 4</h4>

<h5>This is heading 5</h5>

<h6>This is heading 6</h6>

</body>

This is heading 1

This is heading 2

This is heading 3

This is heading 4

This is heading 5

This is heading 6



HTML Paragraphs

HTML paragraphs are defined with the tag:

```
<!DOCTYPE html> <html>
```

<body>

This is a paragraph.

This is another paragraph.

</body>

</html>

This is a paragraph.

This is another paragraph.





HTML Links

HTML links are defined with the <a> tag:

```
<!DOCTYPE html>
<html>
<body>
<h2>HTML Links</h2>
HTML links are defined with the a tag:
<a href="https://www.w3schools.com">This is a link</a>
</body>
</html>
```

HTML Links

HTML links are defined with the a tag:

This is a link





HTML Images

HTML images are defined with the tag.

The source file (src), alternative text (alt), width, and height are provided as attributes:

```
<!DOCTYPE html>
<html>
<body>
<h2>HTML Images</h2>
HTML images are defined with the img tag:
<img src="w3schools.jpg" alt="W3Schools.com" width="104" height="142">
</body>
</html>
```



How to View HTML Source

Have you ever seen a Web page and wondered "Hey! How did they do that?" View HTML Source Code:

Click CTRL + U in an HTML page, or right-click on the page and select "View Page Source". This will open a new tab containing the HTML source code of the page.

Inspect an HTML Element:

Right-click on an element (or a blank area), and choose "Inspect" to see what elements are made up of (you will see both the HTML and the CSS). You can also edit the HTML or CSS on-the-fly in the Elements or Styles panel that opens.



Empty HTML Elements

HTML elements with no content are called empty elements.

The
br> tag defines a line break, and is an empty element without a closing tag:

HTML is Not Case Sensitive

HTML tags are not case sensitive: <P> means the same as .
The HTML standard does not require lowercase tags, but W3C **recommends** lowercase in HTML, and **demands** lowercase for stricter document types like XHTML.



HTML Attributes

- •All HTML elements can have attributes
- •Attributes provide additional information about elements
- •Attributes are always specified in the start tag
- •Attributes usually come in name/value pairs like: name="value"

The href Attribute

The <a> tag defines a hyperlink. The href attribute specifies the URL of the page the link goes to:



The href Attribute

The <a> tag defines a hyperlink. The href attribute specifies the URL of the page the link goes to:

```
<!DOCTYPE html>
<html>
<body>
<h1>My First Heading</h1>
My first paragraph.
<a href="https://www.youtube.com/">youtube</a>
</body>
</html>
```

My First Heading

My first paragraph.

<u>youtube</u>



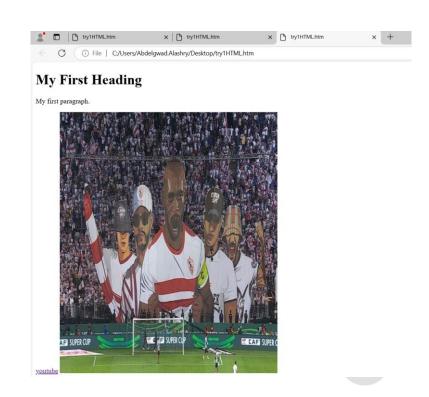
HTML Images

HTML images are defined with the tag.

The source file (src), alternative text (alt), width, and height are provided as attributes

The src, alt, width, and height are attributes.

```
try1HTML - Notepad
File Edit Format View Help
<!DOCTYPE html>
<html>
<body>
<h1>My First Heading</h1>
My first paragraph.
<a href="https://www.youtube.com/">youtube</a>
<img src="Zamalek.jfif" alt="Zamalek " width="500" height="600">
</body>
</html>
```





The style Attribute

The style attribute is used to add styles to an element, such as color, font, size, and more

```
This is a red paragraph.
```

The style Attribute

The style attribute is used to add styles to an element, such as color:

This is a red paragraph.

The lang Attribute

You should always include the lang attribute inside the html> tag, to declare the language of the Web page. This is meant to assist search engines and browsers.

```
<!DOCTYPE html>
<html lang="en-US">
<body>
...
</body>
</html>
```

- •All HTML elements can have attributes
- •The href attribute of <a> specifies the URL of the page the link goes to
- •The src attribute of specifies the path to the image to be displayed
- •The width and height attributes of provide size information for images
- •The alt attribute of provides an alternate text for an image
- •The style attribute is used to add styles to an element, such as color, font, size, and more
- •The lang attribute of the <html> tag declares the language of the Web page
- •The title attribute defines some extra information about an element



Each HTML heading has a default size. However, you can specify the size for any heading with the style attribute, using the CSS font-size property

```
<!DOCTYPE html>
<html>
<body>
<h1 style="font-size:100px;">Heading 1</h1>
You can change the size of a heading with the style attribute, using the font-size property.
</body>
</html>
```

Heading 1

</body> </html>

```
<!DOCTYPE html>
<html>
<body>
>
This paragraph
contains a lot of lines
in the source code,
but the browser
ignores it.
>
This paragraph
contains
             a lot of spaces
in the source
                 code,
but the
          browser
ignores it.
>
The number of lines in a paragraph depends on the size of the browser window. If you resize the
browser window, the number of lines in this paragraph will change.
```

This paragraph contains a lot of lines in the source code, but the browser ignores it.

This paragraph contains a lot of spaces in the source code, but the browser ignores it.

The number of lines in a paragraph depends on the size of the browser window. If you resize the browser window, the number of lines in this paragraph will change.



HTML Horizontal Rules

The <hr>> tag defines a thematic break in an HTML page, and is most often displayed as a horizontal rule.

The <hr> element is used to separate content (or define a change) in an HTML page:

```
<!DOCTYPE html>
<html>
<body>
<h1>This is heading 1</h1>
This is some text.
<hr>
<h2>This is heading 2</h2>
This is some other text.
<hr>
<h2>This is heading 2</h2>
This is some other text.
<hr>
<h2>This is heading 2</h2>
This is some other text.
<h2>This is some other text.

<pr
```

```
<h1>This is heading 1</h1>
This is some text.
<hr>
<h2>This is heading 2</h2>
This is some other text.
<hr>
```

This is heading 1

This is some text.

This is heading 2

This is some other text.

This is heading 2

This is some other text.



HTML Line Breaks

The HTML

defines a line break.
Use

if you want a line break (a new line) without starting a new paragraph:

This is
p>ragraph
vith line breaks.

This is a paragraph with line breaks.



The HTML Element

The HTML element defines preformatted text.

The text inside a element is displayed in a fixed-width font (usually Courier), and it preserves both spaces and line breaks

```
<
```

My Bonnie lies over the ocean.

My Bonnie lies over the sea.

My Bonnie lies over the ocean.

Oh, bring back my Bonnie to me.

My Bonnie lies over the ocean.

My Bonnie lies over the sea.

My Bonnie lies over the ocean.

Oh, bring back my Bonnie to me.

Tag	Description
<u></u>	Defines a paragraph
<u><hr/></u>	Defines a thematic change in the content
<u> </u>	Inserts a single line break
<pre><</pre>	Defines pre-formatted text

HTML Styles

- •Use the style attribute for styling HTML elements
- •Use background-color for background color
- •Use color for text colors
- •Use font-family for text fonts
- •Use font-size for text sizes
- •Use text-align for text alignment



Background Color

The CSS background-color property defines the background color for an HTML element.

<body style="background-color:powderblue;">

This is a heading

This is a paragraph.



Text Alignment

The CSS text-align property defines the horizontal text alignment for an HTML element:

```
<!DOCTYPE html>
<html>
<body>

<h1 style="text-align:center;">Centered Heading</h1>
Centered paragraph.
</body>
</html>
```

Centered Heading

Centered paragraph.





Text Size

The CSS font-size property defines the text size for an HTML element:

```
<!DOCTYPE html>
<html>
<body>

<h1 style="font-size:300%;">This is a heading</h1>
This is a paragraph.
</body>
</html>
```

This is a heading

This is a paragraph.



HTML Formatting Elements

Formatting elements were designed to display special types of text:

- Bold text
- Important text
- <i> Italic text
- Emphasized text
- <mark> Marked text
- <small> Smaller text
- Deleted text
- <ins> Inserted text
- <sub> Subscript text
- <sup> Superscript text



HTML and Elements

The HTML element defines bold text, without any extra importance.

```
<!DOCTYPE html>
<html>
<body>
This text is normal.
<b>This text is bold.</b>
</body>
</html>
```

This text is normal.

This text is bold.



HTML

```
<!DOCTYPE html>
<html>
<body>
This text is normal.
<i>This text is italic.</i>

</body>
</html>
```

This text is normal.

This text is italic.

```
<!DOCTYPE html>
<html>
<body>
Do not forget to buy <mark>milk</mark> today.
</body>
</html>
```

Do not forget to buy milk today.

HTML

```
HTML Comment Tag
                                       <!-- This is a comment -->
  <!-- Write your comments here -->
                                       This is a paragraph.
                                       <!-- Remember to add more information here -->
Hide Content
This is a paragraph.
                                            Hide a section of HTML code:
<!-- <p>This is another paragraph  -->
                                            This is a paragraph.
                                            <!--
This is a paragraph too.
                                            Look at this cool image:
                                            <img border="0" src="pic trulli.jpg"</pre>
                                            alt="Trulli">
Hide a part of a paragraph:
                                            -->
This <!-- great text --> is a
                                            This is a paragraph too.
paragraph.
```



HTML Colors

//h+ml>

```
<!DOCTYPE html>
<html>
<body>
<h3 style="color:Tomato;">Hello World</h3>
Lorem ipsum dolor sit amet, consectetuer 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.
</body>
</html>
<!DOCTYPE html>
<html>
<body>
<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>
</body>
```

Hello World

Lorem ipsum dolor sit amet, consectetuer adipiscing elit, sed dia aliquam erat volutpat.

Ut wisi enim ad minim veniam, quis nostrud exerci tation ullamo consequat.

Hello World

Hello World

Hello World



Color Names

In HTML, a color can be specified by using a color name:







Color Values

In HTML, colors can also be specified using RGB values, HEX values, HSL values, RGBA values, and HSLA values.

The following three <div> elements have their background color set with RGB, HEX, and HSL values:

```
rgb(255, 99, 71)
```

#ff6347

hsl(9, 100%, 64%)

HTML

```
<!DOCTYPE html>
<html>
<html>
<body>

Same as color name "Tomato":
<h1 style="background-color:rgb(255, 99, 71);">rgb(255, 99, 71)</h1>
<h1 style="background-color:#ff6347;">#ff6347</h1>
<h1 style="background-color:hs1(9, 100%, 64%);">hs1(9, 100%, 64%)</h1>

Same as color name "Tomato", but 50% transparent:
<h1 style="background-color:rgba(255, 99, 71, 0.5);">rgba(255, 99, 71, 0.5)</h1>
<h1 style="background-color:rgba(255, 99, 71, 0.5);">rgba(255, 99, 71, 0.5)</h1>
<h1 style="background-color:hs1a(9, 100%, 64%, 0.5);">hs1a(9, 100%, 64%, 0.5)</h1>

In addition to the predefined color names, colors can be specified using RGB, HEX, HSL, or even transparent colors using RGBA or HSLA color values.
</body>
```

Same as color name "Tomato":

rgb(255, 99, 71)

#ff6347

hsl(9, 100%, 64%)

Same as color name "Tomato", but 50% transparent:

rgba(255, 99, 71, 0.5)

hsla(9, 100%, 64%, 0.5)

In addition to the predefined color names, colors can be specifie RGBA or HSLA color values.

HTML

https://www.w3schools.com/html/html_colors_hex.asp

https://www.w3schools.com/html/html_colors_hsl.asp

https://www.w3schools.com/html/html_colors_rgb.asp





HTML Tables

```
<!DOCTYPE html>
<body>
 <h1>This is a Heading</h1>
 This is a paragraph.
   Company
   Contact
   Country
  Alfreds Futterkiste
   Maria Anders
   Germany
  Centro comercial Moctezuma
   Francisco Chang
   Mexico
  </body>
```

This is a Heading

This is a paragraph.

 Company
 Contact
 Country

 Alfreds Futterkiste
 Maria Anders
 Germany

 Centro comercial Moctezuma Francisco Chang
 Mexico

https://www.w3schools.com/html/html_tables.asp

HTML

Tag	Description
	Defines a table
<u>></u>	Defines a header cell in a table
<u></u>	Defines a row in a table
<u></u>	Defines a cell in a table
<caption></caption>	Defines a table caption
<colgroup></colgroup>	Specifies a group of one or more columns in a table for formatting
<u><col/></u>	Specifies column properties for each column within a <colgroup> element</colgroup>
<thead></thead>	Groups the header content in a table
	Groups the body content in a table
<tfoot></tfoot>	Groups the footer content in a table



HTML Lists

```
<!DOCTYPE html>
<html>
<body>
<h2>An Unordered HTML List</h2>
<l
 Coffee
 Tea
 Milk
<h2>An Ordered HTML List</h2>
<01>
 Coffee
 Tea
 Milk
</body>
</html>
```

An Unordered HTML List

- Coffee
- Tea
- Milk

An Ordered HTML List

- 1. Coffee
- 2. Tea
- 3. Milk



HTML List Tags

Tag	Description
<u></u>	Defines an unordered list
<u></u>	Defines an ordered list
<u></u>	Defines a list item
<u><dl></dl></u>	Defines a description list
<u><dt></dt></u>	Defines a term in a description list
<u><dd></dd></u>	Describes the term in a description list

A Description List

Coffee

- black hot drink

Milk

- white cold drink



HTML Page Title

Every web page should have a page title to describe the meaning of the page.

The <title> element adds a title to your page:

```
<!DOCTYPE html>
<html>
<head>
        <title>HTML Tutorial</title>
</head>
<body>

The content of the document.....

</body>
</html>
```



HTML Styles - CSS

What is CSS?

Cascading Style Sheets (CSS) is used to format the layout of a webpage.

With CSS, you can control the color, font, the size of text, the spacing between elements, how elements are positioned and laid out, what background images or background colors are to be used, different displays for different devices and screen sizes, and much more!

Using CSS

CSS can be added to HTML documents in 3 ways:

- •Inline by using the style attribute inside HTML elements
- •Internal by using a <style> element in the <head> section
- •External by using a link> element to link to an external CSS file

The most common way to add CSS, is to keep the styles in external CSS files.



Inline CSS

An inline CSS is used to apply a unique style to a single HTML element. An inline CSS uses the style attribute of an HTML element.
The following example sets the text color of the <h1> element to blue, and the text color of the element to red:

Example

```
<h1 style="color:blue;">A Blue Heading</h1>
A red paragraph.
<!DOCTYPE html>
<html>
<body>
<h1 style="color:blue;">A Blue Heading</h1>
A red paragraph.
</body>
```

A Blue Heading

A red paragraph.

Internal CSS

An internal CSS is used to define a style for a single HTML page.

An internal CSS is defined in the <head> section of an HTML page, within a <style> element.

The following example sets the text color of ALL the <h1> elements (on that page) to blue, and the text color of ALL the elements to red. In addition, the page will be displayed with a "powderblue" background color:

```
<!DOCTYPE html>
<html>
<head>
<style>
body {background-color: powderblue;}
   {color: blue;}
    {color: red;}
</style>
</head>
<body>
<h1>This is a heading</h1>
This is a paragraph.
</body>
</html>
```

```
<!DOCTYPE html>
<html>
<head>
<style>
body {background-color: powderblue;}
h1 {color: blue;}
p {color: red;}
</style>
</head>
<body>
<h1>This is a heading</h1>
This is a paragraph.
</body>
</html>
```

This is a heading

This is a paragraph.





External CSS

An external style sheet is used to define the style for many HTML pages.

To use an external style sheet, add a link to it in the <head> section of each HTML page:

Example

The external style sheet can be written in any text editor. The file must not contain any HTML code, and must be saved with a .css extension. Here is what the "styles.css" file looks like:

```
"styles.css":
body {
   background-color: powderblue;
}
h1 {
   color: blue;
}
p {
   color: red;
}
```

Link to External CSS

Link to External CSS

External style sheets can be referenced with a full URL or with a path relative to the current web page.

Example

This example uses a full URL to link to a style sheet:

```
<link rel="stylesheet" href="https://www.w3schools.com/html/styles.css">
```

Example

This example links to a style sheet located in the html folder on the current web site:

```
<link rel="stylesheet" href="/html/styles.css">
```

Example

This example links to a style sheet located in the same folder as the current page:

```
<link rel="stylesheet" href="styles.css">
```