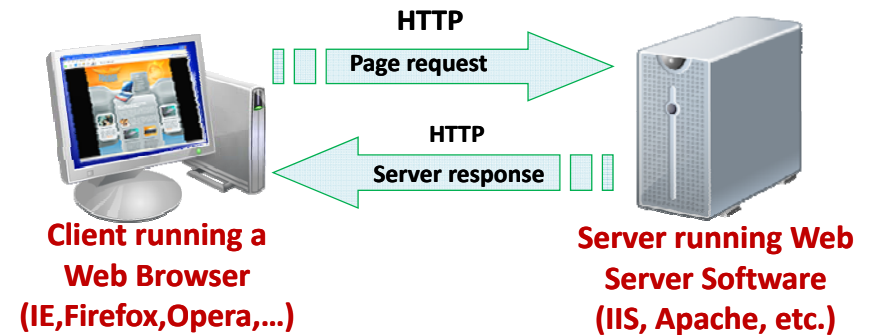




How the Web Works?

- WWW use classical client / server architecture
 - HTTP is text-based request-response protocol



2

Web site

- There are two kinds of web sites
 - Static web sites
 - Content of the web site is not changed.
 - Dynamic web sites
 - Content of the web site is changed dynamically.

3

What is a Web Page?

- Web pages are text files containing HTML
- HTML – Hyper Text Markup Language
 - A notation for describing
 - document structure (semantic markup)
 - formatting (presentation markup)
 - Looks (looked?) like:
 - A Microsoft Word document
- The markup tags provide information about the page content structure

4

Creating HTML Pages

- An HTML file must have an .htm or .html file extension
- HTML files can be created with text editors:
 - Notepad, Notepad ++, PSPad
- Or HTML editors (WYSIWYG Editors):
 - Microsoft FrontPage
 - Macromedia Dreamweaver
 - Netscape Composer
 - Microsoft Word
 - Visual Studio

5

HTML Structure

- HTML is comprised of “tags”
 - Begins with <html> and ends with </html>
- Tags are nested one inside another:

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

- HTML describes structure using two main sections: <head> and <body>

6

HTML Code Formatting

- The HTML source code should be formatted to increase readability and facilitate debugging.
 - Every block element should start on a new line.
 - Every nested (block) element should be indented.
 - Browsers ignore multiple whitespaces in the page source, so formatting is harmless.
- For performance reasons, formatting can be sacrificed

7

HTML – Fundamentals

Document Structure

< HTML >

Header

Body

< / HTML >

8

First HTML Page

```
<html>
  <head>
    <title>My First HTML Page</title>
  </head>
  <body>
    <p>This is some text...</p>
  </body>
</html>
```

9

HTML Tags

- HTML tags are **keywords** (tag names) surrounded by **angle brackets**:
`<tagname>content</tagname>`
- The first tag in a pair is the **start tag**, the second tag is the **end tag**
- The end tag is written like the start tag, but with a **slash** before the tag name

10

First HTML Page: Tags

```
<html>
  <head>
    <title>My First HTML Page</title>
  </head>
  <body>
    <p>This is some text...</p>
  </body>
</html>
```

Opening tag

Closing tag

An HTML element consists of an opening tag, a closing tag and the content inside.

11

First HTML Page: Header

- Provides extra information about the document
- Serving as a container for sections such as styles and global scripts.

```
<html>
  <head>
    <title>My First HTML Page</title>
  </head>
  <body>
    <p>This is some text...</p>
  </body>
</html>
```

HTML header

12

First HTML Page: Body

- This is where the visible content of a Web document appears.

```
<html>
  <head>
    <title>My First HTML Page</title>
  </head>
  <body>
    <p>This is some text...</p>
  </body>
</html>
```

HTML body

13

HTML Attributes

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

Ex:

```
<body bgcolor="yellow">
</body>
```

14

Paragraphs

- Paragraph Tags
 - Delimited by <p> and </p> tags
 - Paragraphs in HTML act much like the paragraphs in a word processor.
 - HTML automatically adds an **extra blank line** before and after a paragraph

```
<p>This is my first paragraph</p>
<p>This is my second paragraph</p>
```

15

Align paragraph

- <p> tag has align attribute
- Align can be right, left, center, justify
 - ex:

```
<p align="justify">
```

```
</p>
```

16

Headings

- Standard HTML tags allow six levels of headings, <h1> through <h6>.
- The higher the heading number, the smaller the heading.

```
<h1>Heading 1</h1>
<h2>Sub heading 2</h2>
<h3>Sub heading 3</h3>
```

17

Manual Break

- Uses the line break tag
 or

- **Inserts a line break** into a page before the paragraph break,
 - i.e. moves to the next line of text and is identified by the web browser much like pressing the Enter key when working with a word processor.

18

Preformatted Text

- Delimited by <pre> and </pre> tags
- This tag tells the user agent not to reformat the text within the <pre> block but to render it verbatim as it appears in the document.

19

List

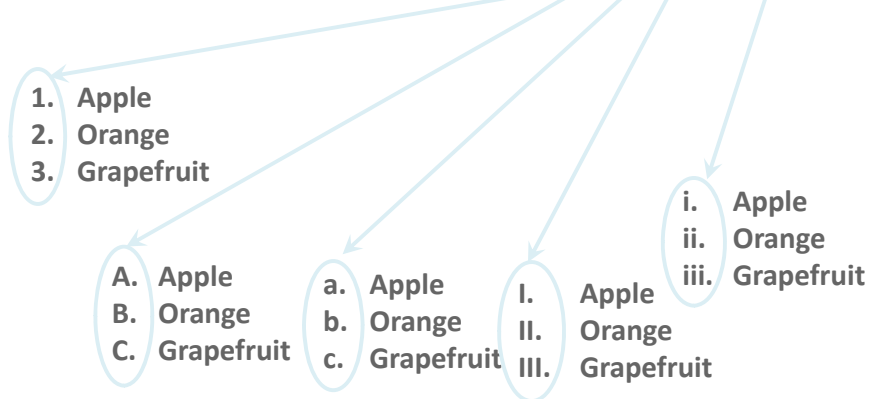
- **Ordered lists:**
 - **Lists whose elements must appear in a certain order.**
 - Each ordered list is encapsulated in ordered list tags (), and each item within the list is encapsulated in list item tags ().

```
<ol type="1">
  <li>Apple</li>
  <li>Orange</li>
  <li>Grapefruit</li>
</ol>
```

20

List...

- Attribute values for type are 1, A, a, I, or i



21

List...

- **Unordered lists:**

- Lists whose elements can appear in any order,
- Each unordered list is encapsulated in unordered list tags (), and each item within the list is encapsulated in list item tags ().

```
<ul type="disk">  
  <li>Apple</li>  
  <li>Orange</li>  
  <li>Grapefruit</li>  
</ul>
```

22

List...

- Attribute values for type are:

- disc, circle or square



23

List...

- **Definition lists:**

- Lists that contain two pieces of information a term and a definition of said term – for each list element.
- Each definition list is encapsulated in definition list tags (<dl>).
- The list items consist of a definition term (<dt>), each delimited by its own tag pair.

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List...

- Create definition lists using `<d1>`
 - Pairs of text and associated definition; text is in `<dt>` tag, definition in `<dd>` tag

```
<d1>
  <dt>HTML</dt>
  <dd>A markup language ...</dd>
  <dt>CSS</dt>
  <dd>Language used to ...</dd>
</d1>
```

- Renders without bullets
- Definition is indented

25






HTML Colors

- RGB (Red, Green, Blue)
- With HTML, RGB color values can be specified using this formula: `rgb(red, green, blue)`
- Each parameter (red, green, and blue) defines the intensity of the color between 0 and 255.

26

Hexadecimal Colors

- RGB values can also be specified using hexadecimal color values in the form:
 - #RRGGBB, where RR (red), GG (green) and BB (blue) are hexadecimal values between 00 and FF (same as decimal 0-255).
 - For example, #FF0000 is displayed as red, because red is set to its highest value (FF) and the others are set to the lowest value (00).

Color	HEX
	#FF0000
	#FFFF00
	#00FF00
	#00FFFF
	#0000FF

27

HTML Comment

- Comments are not displayed by the browser, but they can help document your HTML.
- With comments you can place notifications and reminders in your HTML:
- You can add comments to your HTML source by using the following syntax:
`<!-- Write your comments here -->`
Eg:
`<!-- This is a comment -->`
`<p>This is a paragraph.</p>`
`<!-- Remember to add more information here -->`

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Text and Text Formatting

- The Font tag
 - Delimited by and tags
 - tag is used to control font color (RGB value), font face (such as Times New Roman or Arial) and font size of text within documents.
 - The format of the tag is as follows:
** ...text...**

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Text Formatting...

- Text formatting tags modify the text between the opening tag and the closing tag
 - Ex. Hello makes "Hello" bold

	bold
<i></i>	<i>italicized</i>
<u></u>	<u>underlined</u>
	Sample ^{superscript}
	Sample _{subscript}
	strong
	<i>emphasized</i>
<pre></pre>	Preformatted text
<blockquote></blockquote>	Quoted text block
	Deleted text – strike through

30

HTML <abbr> for Abbreviations

- The HTML <abbr> element defines an abbreviation or an acronym.
- Marking abbreviations can give useful information to browsers, translation systems and search-engines.

Ex:

```
<p>Faculty of <abbr title="Allied Health Sciences">AHS</abbr> was inaugurated on 16th July 2007.</p>
```

31

Links

- A Uniform Resource Locator (URL) is the unique address of a resource (usually a document) on the Web.
- The URL addressing scheme allows user agents and other Internet-enabled programs to find documents and ask for their content.
- A typical URL has different parts.

http://www.pdn.ac.lk/symposium_environmental/



Protocol Domain name of the Server Location of resource on server machine

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Links...

- **Absolute path**

- Absolute paths contain all the relevant information to find the resource indicated by the URL.

E.g.

http://www.pgia.ac.lk/files/short_course/2016/28_03_2016.pdf

- **Relative paths**

- Relative paths contain information relative to the current document.

E.g. If the above document has a link to another document,

33

Links...

- The anchor tag (<a>) is used to provide links within Web documents to other documents or resources on the Internet.

- The anchor tag has the following format:

```
<a href="url_to_resource">textual_description_of_link</a>
```

Example

```
<a href="www.pdn.ac.lk" target="_blank">Visit UOP</a>
```

Would be appear as: [Visit UOP](#)

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HTML Links - The target Attribute

- The **target** attribute specifies where to open the linked document.

Ex:Visit UOP

Target Value	Description
_blank	Opens the linked document in a new window or tab
_self	Opens the linked document in the same frame as it was clicked (this is default)
_parent	Opens the linked document in the parent frame
_top	Opens the linked document in the full body of the window
framename	Opens the linked document in a named frame

35

Images

- The image tag () is used to insert images into Web documents.
- The tag has the following minimal syntax:

```

```
- The two parameters
 - src :**
define where to find the image (absolute or relative URL)
 - alt:**
define text to display if the user agent (browser) cannot display the image (or is set not to display images at all).

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Image Attributes

- Image size
 - The two attributes **width and height control the** physical image size.
 - The value can be specified as a pixel value or a percentage value.
- **Note:** changing the image display size, via tag attributes, does not alter the amount of data transmitted to the user, only the size at which it displays.
- Image alignment
 - The **align attribute controls the alignment of an** image.
- Image border
 - Only CSS styles can control margins and borders

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Image Maps

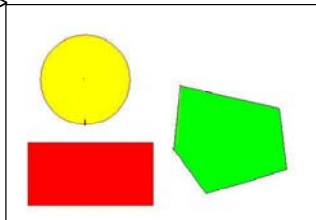
- Use the <map> tag to define an image-map.
- An image-map is an image with clickable areas.
- The name attribute of the <map> tag
 - Associated with the 's usemap attribute
 - Creates a relationship between the image and the map.
- The <map> tag contains a number of <area> tags,
 - That defines the clickable areas in the image-map:

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Image map...

```

  <map name="testmap">
    <area shape="rect" coords="33,28,227,126" href="rectangle.htm">
    <area shape="circle" coords="120,227,70" href="circle.htm">
    <area shape="poly" coords="270,214,260,116,309,46,433,85,
422,179" href="polygon.htm">
  </map>
```



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Tables

- Tables can be used to display tabular data, align elements in a form, or provide entire document layout structure.
- A table has rows, columns and cells.
 - E.g. A table with 4 columns and 2 rows

40

Creating HTML Table

- A table is created using the table tag `<table>`.
- Each row is created using the row tag `<tr>`.
- Each cell within a row is created using the `<td>` tag.

41

Table...

```
<table border="1">
  <tr>
    <td>row1,col1</td>
    <td>row1,col2</td>
    <td>row1,col3</td>
    <td>row1,col4</td>
  </tr>
  <tr>
    <td>row2,col1</td>
    <td>row2,col2</td>
    <td>row2,col3</td>
    <td>row2,col4</td>
  </tr>
</table>
```

1,1	1,2	1,3	1,4
2,1	2,2	2,3	2,4

42

Table...

- **Table width**
 - Table's size is specified by using the table **width attribute in the `<table>` tag.**
 - The value can be specified in pixels or as a percentage of the containing object.
- **Table borders**
 - The `<table>` tag's **border attribute can be used to control the width of the border surrounding the table.**
- **Table alignment**
 - This is controlled by using the **align attribute in the `<table>` tag.**
 - The align attribute supports three values: *left (default), right, and center.*
- **Header and caption**
 - Caption tag (`<caption>`) encapsulates the caption of a table.
 - `<th>` tag along with **scope**

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colspan and rowspan Attributes

- colspan
 - merge two or more columns into a single column.
- rowspan
 - merge two or more rows.

ex :

```
<table border="1">
  <tr> <th>Column 1</th>
      <th>Column 2</th>
      <th>Column 3</th>
  </tr>
  <tr> <td rowspan="2">Row 1 Cell 1</td><td>Row 1 Cell 2</td><td>Row 1 Cell 3</td></tr>
      <td>Row 2 Cell 2</td><td>Row 2 Cell 3</td></tr>
  <tr><td colspan="3">Row 3 Cell 1</td></tr>
</table>
```

Column1	Column 2	Column 3
Row 1 Cell 1	Row 1 Cell 2	Row 1 Cell 3
	Row 2 Cell 2	Row 2 Cell 3
Row 3 Cell 1		

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Formatting a Table

- Width/height of a row/column
 - Uses **width and height attribute tags**
 - The value can be specified in pixels or as a percentage.
- Background colors
 - The **bgcolor attribute specifies color for table, row, header, and cell tags.**
- Spanning columns and rows
 - The **colspan and rowspan attributes can be used to span cells across multiple columns and rows, respectively.**

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Cell Spacing and Padding

- Cell padding
 - This is the distance between a cell's content and its border.
 - Cell padding is controlled with the <table> tag's **cellpadding attribute** and can be specified in pixels and percentages.
- Cell Spacing
 - This is the distance between cells (i.e. the distance between a cell's border and neighboring elements' boundaries)
 - Cell spacing is controlled with the **cellspacing attribute and can be specified in pixels and percentages.**

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Forms

- HTML forms allow users to interact with Web documents by providing GUI controls for data entry.
- The HTML side of forms simply collects the data.

Order Processing Form

First Name:

Last Name:

Date of Birth:

Country

Sri Lanka

India

Bangladesh

Select The Item

Motherboard

Printer

Hard Disk

Occupation:

E-Mail Address:

Distance to the destination:

47

Forms...

- A form is inserted into a document by placing form fields with form (<form>) tags.
- The <form> tag has the following minimum format:
<form name="name_of_form" action="url_to_send_data" method="get|post">
 - The **action attribute provides a URL to a suitable form handler** that will process the form data accordingly.
 - The **method attribute specifies how the form data** should be passed to the handler, via GET or POST.
 - In addition, the <form> tag has several other attributes, such as, **accept, enctype and target.**

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Designing Forms

- The `<input>` tag is used to add input fields into a form.
- The ***type attribute in the <input> tag tells*** the user agent what type of field it signifies.
- The HTML requires that all input fields contain ***name and id attributes***.

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Types of Fields

Field type	Purpose
Text input boxes	Allow for the input of one line of text. Generally used for names, addresses, search terms, and so on.
Password input boxes	Similar to text box, but visually obscures data entered into the box by displaying asterisks or bullets.
Large text areas	This tag can accept up to 1024 characters and uses a multi-line text box for input.
Radio buttons	Defines one in a series of radio buttons. When one is selected, the others in the group are deselected, making the buttons mutually exclusive from each other.
List boxes	Allow a user to pick one or more textual items from a list.

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Types of Fields...

Field type	Purpose
Checkboxes	Checkboxes are very similar in definition to radio buttons; however, unlike radio buttons, multiple checkboxes can be selected from the same group.
Hidden fields	You can place additional, non-visible data in your forms using hidden fields. Hidden fields are used mostly for tracking data and the state of a process.
File fields	File fields allow files to be attached to form data and sent along with the data to the handler.
Submit and reset buttons	Submit and Reset buttons provide control mechanisms for users to submit the data entered to a handler and reset the form to its default state, respectively.

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```
<form name="form1" method="get" action="login.php">
  Name :<input type="text" name="uname" value=" "><br>
  Gender  Male :<input type="radio" name="gender" value="male">
           Female :<input type="radio" name="gender" value="female"><br>
  Country <select name="Country">
            <option>Sri Lanka</option>
            <option>India</option>
            <option>Bangladesh</option>
            <option>Pakistan</option>
          </select><br>
  Address : <input type="textarea" value="" name="textarea"><br>
  Hobby : Cricket<input type="checkbox" value="cricket" name="cricket">
          Football<input type="checkbox" value="cricket" name="cricket">
          Vallyball<input type="checkbox" value="cricket" name="cricket">
<br>
  Password<input type="password" value="" name="password"><br>
  <input type="submit" value="Submit" name="submit">
  <input type="reset" value="Reset" name="reset">
</form>
```

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Frames

- Frames enable a user agent window to be divided into defined areas, each capable of displaying different content that can be set to scroll independently from one another.
- The **<frameset>** tag defines how to divide the window into frames.
- However, frames have become an outdated construct and should not be used for the following reasons:
 - Frames are hard to code and are reasonably hard to manage.
 - Some platforms, for example mobile arena, does not support frames.
 - Frames are not compliant with XHTML standards,

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Frames...

```
<html>  
  <frameset cols="25%,*,25%">  
    <frame src="a.htm">  
    <frame src="b.htm">  
    <frame src="c.htm">  
  </frameset>  
</html>
```

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Frames...

```
<html>  
  <frameset rows="25%,*,*">  
    <frame src="a.htm">  
    <frame src="b.htm">  
  </frameset>  
</html>
```

55

Frames...

Attribute	Value	Description
name	text	Specifies the name of a frame
noresize	noresize	Specifies that a frame is not resizable
scrolling	Yes No auto	Specifies whether or not to display scrollbars in a frame
Frameborder	0 1	Specifies whether or not to display a border around a frame

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HTML Iframes

- An iframe is used to display a web page within a web page.
- The syntax for adding an iframe is:

```
<iframe src="URL"></iframe>
```

Example

```
<iframe width="100%" height="300px" src="iframe.html"
  name="iframe_a">
</iframe>
<p>
  <a href="http://www.pdn.ac.lk" target="iframe_a">UOP</a>
</p>
```

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HTML Styles - CSS

- CSS stands for **Cascading Style Sheets**
- Styling can be added to HTML elements in 3 ways:
 - Inline
 - using a **style attribute** in HTML elements
 - Internal
 - using a **<style> element** in the HTML <head> section
 - External
 - using one or more **external CSS files**

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Inline Styling (Inline CSS)

- **Inline styling** is used to apply a unique style to a single HTML element:
- Inline styling uses the **style** attribute.

Example

Changes the text color of the <h1> element to red:

```
<h1 style="color:blue;">This is a Blue Heading</h1>
```

59

Internal Styling (Internal CSS)...

- Used to define a style for one HTML page
- Defined in the **<head>** section of an HTML page, within a **<style>** element:

60

CSS...

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

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External Styling (External CSS)

- An external style sheet is used to define the style for many pages.
 - With an **external style sheet**, you can change the look of an entire web site by changing one file!
 - To use an external style sheet, add a link to it in the **<head>** section of the HTML page:
-

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External Styling (External CSS)...

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

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

63

External Styling (External CSS)...

- Here is how the "styles.css" looks:

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

h1
{
  color: blue;
}

p
{
  color:green;
}
```

64

CSS Fonts

- The CSS **color** property defines the text color to be used for the HTML element.
 - The CSS **font-family** property defines the font to be used for the HTML element.
 - The CSS **font-size** property defines the text size to be used for the HTML element.
-

65

```
<html>
<head>
<style>
h1 {
  color: blue;
  font-family: verdana;
  font-size: 300%;
}
p {
  color: red;
  font-family: courier;
  font-size: 160%;
}
</style>
</head>
<body>
<h1>This is a heading</h1>
<p>This is a paragraph.</p>
</body>
</html>
```

66

Box model

- Every HTML element has a box around it, even if you cannot see it.
- The CSS **border** property defines a visible border around an HTML element:

Example

```
p {
  border: 1px solid black;
}
```

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padding

- Defines a padding (space) inside the border:

Example

```
p {
  border: 1px solid black;
  padding: 10px;
}
```

68

margin

- Defines a margin (space) outside the border:

Example

```
p {  
  border: 1px solid black;  
  padding: 10px;  
  margin: 30px;  
}
```

69

id Attribute

- To define a special style for one special element, first add an id attribute to the element:
- Then define a style for the element with the specific id:

Example

```
#p01 {  
  color: blue;  
}
```

70

class Attribute

- To define a style for a special type (class) of elements, add a class attribute to the element:

```
<p class="error">I am different</p>
```

- Now you can define a different style for elements with the specific class:

Example

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

71

id vs class

- Use **id** to address a **single** element.
 - Use **class** to address **groups** of elements.
-

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HTML Block Elements

- A **block-level** element **always starts on a new line** and **takes up the full width** available (stretches out to the left and right as far as it can).
- The <div> element is a block-level element.

Examples of block-level elements:

- <div>
- <h1> - <h6>
- <p>
- <form>

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The <div> Element

- Used as a container for other HTML elements.
- No required attributes, but **style** and **class** are common.

```
<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>
```

74

HTML Inline Elements

- An inline element **does not start** on a **new line** and **only takes up as much width as necessary**.
- This is an inline element inside a paragraph.

Examples of inline elements:

-
- <a>
-

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The Element

- Used as a container for some text.
- The element has no required attributes, but **style** and **class** are common.

Ex:

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

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