Introduction to HTML

Objectives

At the end of this chapter you will be able to

- Define HTML.

- Differentiate between interpreted and programming languages.

- List the features of HTML.

- List different tags and their use

- Construct a simple web page using basic tags.

Client-Server Model

Two processes (possibly networked):

- The client
  - Sends requests to the server
  - Blocks until reply is received
- The server
  - Processes requests from clients
  - Never blocks
  - Can reply to several clients simultaneously

Markup Languages

- Markup:
  - Embedded codes in documents
  - Codes are called `tags'
  - Codes
    - Describe the structure documents
    - Include instructions for processing
- Markup language:
  - Computer language for describing syntax of tags
  - May be used with other tools to specify rendering

HyperText Mark-Up Language (HTML)

- The programming language used to create documents for display on the World Wide Web.

- Relatively easy to learn

- Quite powerful in what can be done using HTML

- Requires a browser to view the document.

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What is HTML?

- *The definition of HTML is **HyperText Markup Language**.*
    - *HyperText* is the method by which one can move around on the web — by clicking on special text called **hyperlinks** which bring up the next page.
    - *Markup* is what **HTML tags** do to the text inside them. They mark it as a certain type of text (*italicised* text, for example).
    - HTML is a *Language*, as it has code-words and syntax like any other language.
- HTML is a subset of SGML (Standard Generalized Markup Language).

History

- **Tim Berners-Lee** is known as the father of HTML.
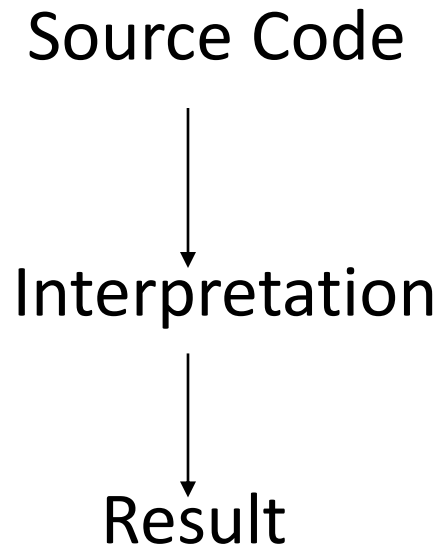
First Page!!!

- The first webpage
  - was discovered by **Tim Berners-Lee** who was researcher at **CERN** (the European Organization for Nuclear Research).
  - went live on **August 6, 1991.**
  - used for sharing the documents through the internet by using limited simple text and FTP (File Transfer Protocol). It is convenient for the workspace and acceptable in browsers.

- HTML is derived from SGML **(Standard Generalized Markup Language).**
- The term **SGML** denotes that it is a markup language document and set of tags, it is based on DTD (document type definition).

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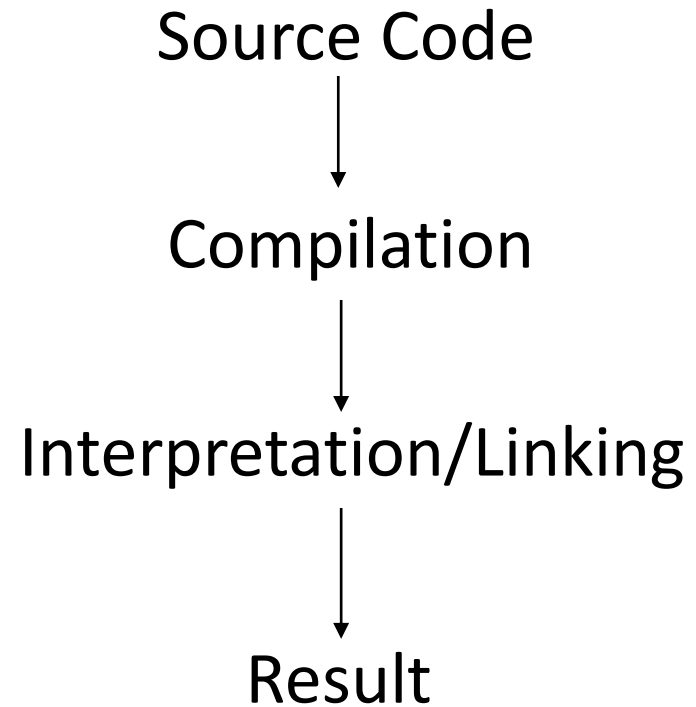| HTML 1.0	was released in 1993 with the intention of sharing information that can be readable and accessible via web browsers. But not many of the developers were involved in creating websites. So the language was also not growing
HTML 2.0	published in 1995, which contains all the features of HTML 1.0 along with that few additional features, which remained as the standard markup language for designing and creating websites until January 1997 and refined various core features of HTML
HTML 3.0	where Dave Raggett who introduced a fresh paper or draft on HTML. It included improved new features of HTML, giving more powerful characteristics for webmasters in designing web pages. But these powerful features of new HTML slowed down the browser in applying further improvements.
HTML 4.01	which is widely used and was a successful version of HTML before HTML 5.0, which is currently released and used worldwide. HTML 5 can be said for an extended version of HTML 4.01, which was published in the year 2012.

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First Page!!!

```
<html>
<head>
<title>My First Page</title>
</head>
<body>
<h1>First Heading</h1>
<p> First Paragraph.
I am writing in para
</p>
</body>
</html>
```

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Interpreted and Programming Languages

Source Code

↓

Interpretation

↓

Result

Source Code

↓

Compilation

↓

Interpretation/Linking

↓

Result

For example HTML, BASIC

For example C, C++

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HTML Features

- **HTML features -**
  - HTML is a tagged language/Mark up
    - easy
  - Used to create web pages and web app.
  - HTML is static
  - HTML is an interpreted language
  - On any platform
  - Case insensitive

HTML Tags

- HTML Tags are like keywords which defines that how web browser will format and display the content
  - a web browser can distinguish between an HTML content and a simple content
- Three main parts: opening tag, content and closing tag.
- But some HTML tags are unclosed tags.
- When a web browser reads an HTML document, browser reads it from top to bottom and left to right.

HTML

- Defines the structure of the content on the web page
- Anatomy of a tag

<p class = "c1"> I am learning HTML</p>

element

favorite website

content

attributes

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Building blocks

- ## Tags
  - An HTML tag surrounds the content and apply meaning to it. It is written between < and > brackets
- ## Attribute
  - An attribute in HTML provides extra information about the element, and it is applied within the start tag. An HTML attribute contains two fields: name & value.

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Layout of HTML Files

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

Head Section

Body Section
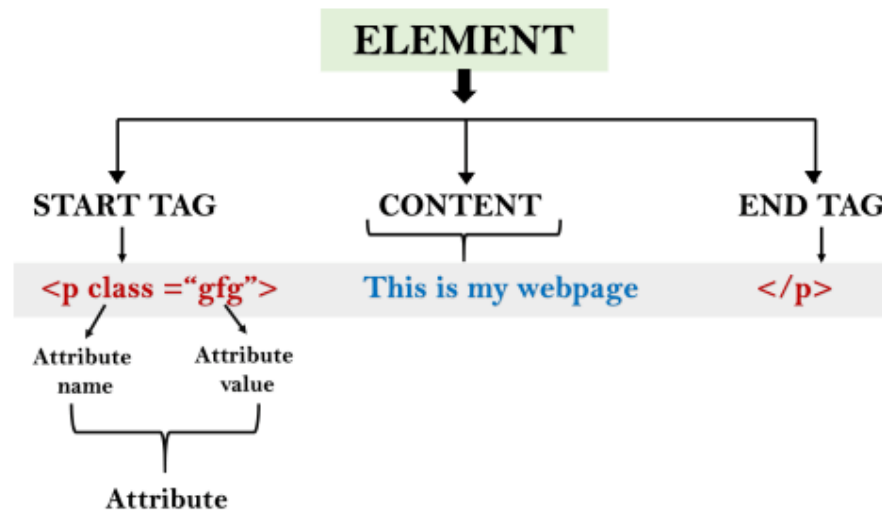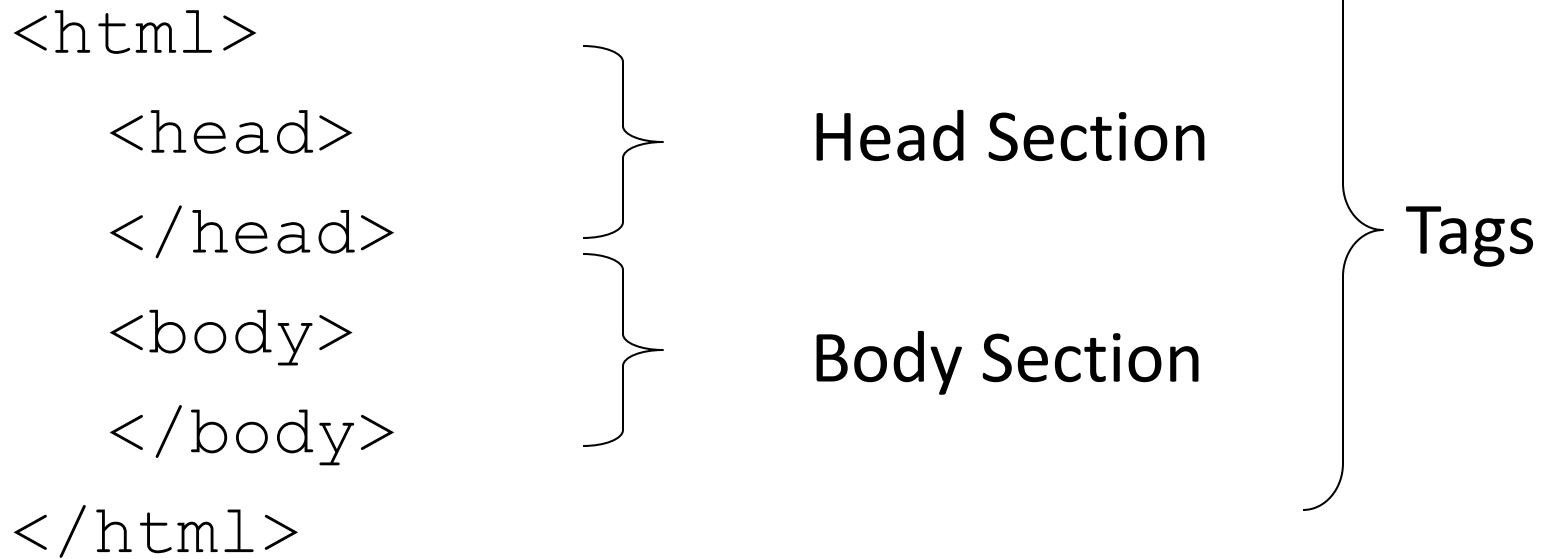
Tags

Tags / Elements

- **Block level elements**
    - form a visible block on a page
    - usually structural elements on the page
    - Cannot be nested in inline elements but can be nested in another block-level element
    - Example – paragraphs, lists, navigation menus
- **Inline elements**
    - contained within block-level elements
    - Surround small parts of document's content
    - Will not cause newline to appear
    - Examples – anchor, strong to create emphasis

Elements

firstsecondthird
<p>fourth</p>
 <p>fifth</p>
<p>sixth</p>

O/P

Firstsecondthird
fourth
fifth
Sixth

Void elements

- consist of a single tag typically used to insert/embed something in the document

```
<img src="https://raw.mycontent.com/sub/flo-icon.png" alt="Flower" />
```

Attributes

<p class = "c1"> I am learning HTML</p>

- Contain extra information about the element
- Will not appear in the content

- What should it have?
  - A space between it and the element name
  - name, followed by an equal sign
  - value wrapped with opening and closing quote marks

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Anatomy of HTML doc

```html
<!DOCTYPE html>
<html lang="en-US">
  <head>
    <meta charset="utf-8" />
    <title>My test page</title>
  </head>
  <body>
    <p>This is my page</p>
  </body>
</html>
```

<meta charset="utf-8">

- The <meta> element. This element represents metadata.
- The charset attributes sets the character set for your document to UTF-8, which includes most characters from the vast majority of human written languages.
- The page can handle any textual content it might contain.

HTML Tags

- Unclosed HTML Tags
  - **\<br\> -** for break line
  - **\<hr\> -** for Horizontal Rule

- HTML Meta Tags
  - DOCTYPE, title, link, meta and style

- HTML Text Tags
  - \<p\>, \<h1\>, \<h2\>, \<h3\>, etc.

- HTML Link Tags
  - \<a\> and \<base\>

HTML Tags

- HTML Image and Object Tags
  - <img>, <area>, <map>, etc.
- HTML List Tags
  - , <ol>, <li>, etc.
- HTML Table Tags
  - table, tr, td, th, etc.
- HTML Form Tags
  - form, input, textarea, select, etc.
- HTML Scripting Tags
  - script

Container tag

- Container tags can be nested

- For example,

    - `<tag1>`
        - » `<tag2>`
    - `.  .  .`
    - `</tag2>`
        - » `</tag1>`

Formatting Tags

- Text level formatting tags

Tag	Meaning
`<b>`	Bold Contents
`<big>`	Increased Font Size
`<i>`	Italic Contents

- Paragraph or block level formatting tags

  <p align = "center">
    This text will appear centered and bold.
  </p>

Simple Web Page

```
<html>
  <head>
    <title>A web page</title>
  </head>
  <body>
  <h1> The first section</h1>
    <p align = "left">
    <font = "verdana" size = 8 color = "red">
      My first web page
    </p>
<hr>
  <h2> The second section</h2>
   <pre>
     This is preformatted
     text.
</pre>
    <font = "verdana" size = 5 color = "teal">
      My first web page
    </p>
  <h3> The third section</h3>
   <p align = "center">
    <font = "verdana" size = 3 color = "maroon">
      My first web page
    </p>
  </body>
</html>
```

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First Web Page
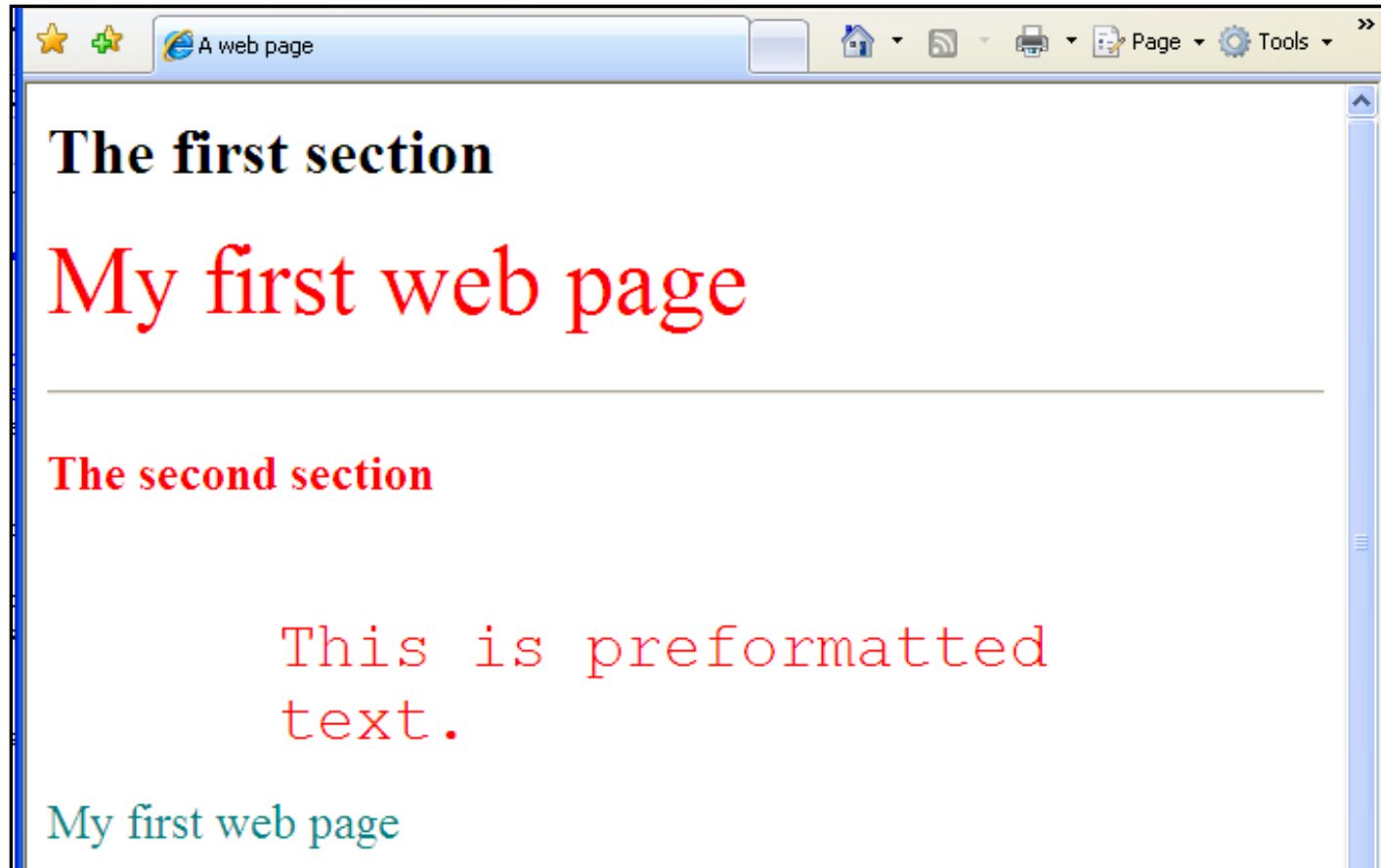
Whitespace in HTML

```
<p>I love Dogs</p>

<p>Dogs       are
     faithful.</p>
```

- The HTML parser reduces each sequence of whitespace to a single space when rendering the code.

- Why is it used?

    - readability

Including special characters

- characters <, >,",' and & are special characters
- How to include them?

Literal character	Character reference equivalent
<	<
>	>
"	"
'	'
&	&

Check the difference….

<p>In HTML, you define a paragraph using the <p> element.</p>

<p>In HTML, you define a paragraph using the <p> element.</p>

O/P

In HTML, you define a paragraph using the
element.
In HTML, you define a paragraph using the <p> element.

Comments…

- Browsers ignore comments
- Invisible to the users
- Purpose
  - include notes in the code (logic related)
  - Readability
  - Maintainability of code

```
<p>This is simple para</p>

<!-- <p>I am inside comment</p> -->
```

What is the O/P?

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What is in the head?

- Not displayed in the browser
- Web browsers use information contained in the head to render the HTML document correctly

- What can it contain?
    - <title> - represents the overall title of the HTML document
        - Used to bookmark
    - Links to CSS
    - Script
    - Other metadata - author

How is title diff. from <h1>?

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<meta>

- Attributes
  - Name - specifies the type of meta element it is; what type of information it contains.
  - Content - specifies the actual meta content

- Searching in search engines easier!!!

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HTML document

- main job of HTML is to give text structure so that a browser can display an HTML document the way its developer intends
- Why to structure?
  - Quick glance
  - Easy headings (search engines use headings)
  - Styling it using CSS
  - Interactive using JavaScript
- So tags are available
  - <p>
  - <h1>, <h2> ……<h6>
  - etc.

Need of headings and paragraphs

- Why is structured content required?
  - For reading experience

- Heading Tags
  - <h1> ……. <h6>
  - Each header element represents a different level of content in the document
  - Headings and sub-headings

Example

Heading

```
<!DOCTYPE html>
<html>
<body>
<h1>Heading no. 1</h1>
<h2>Heading no. 2</h2>
<h3>Heading no. 3</h3>
<h4>Heading no. 4</h4>
<h5>Heading no. 5</h5>
<h6>Heading no. 6</h6>
</body>
</html>
```

Heading no. 1

Heading no. 2

Heading no. 3

Heading no. 4

Heading no. 5

Heading no. 6

HTML Paragraphs

- A paragraph always starts on a new line, and browsers automatically add some white space (a margin) before and after a paragraph

- The browser will automatically remove any extra spaces and lines when the page is displayed

```
<p>
This paragraph
multiple lines,
but the browser
ignores it.
</p>
```

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```
<p>
    Monday's child is fair of face
    Tuesday's child is full of grace
    Wednesday's child is full of woe
    Thursday's child has far to go....
  </p>
```

```
<pre>
  Monday's child is fair of face
   Tuesday's child is full of grace
   Wednesday's child is full of woe
   Thursday's child has far to go....
  </pre>
```

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Why semantics?

- Relevant HTML element to be used

Formatting Tags

- for better look and feel
- Two types
  - Physical Tags – for visual appearance to the text
  - Logical Tags – for adding some logical or semantic value to the text
    - emphasize certain words to alter the meaning of a sentence
    - Help screen readers

Examples 🙂

I am glad you weren't late.
I am *glad* you weren't *late*.

This liquid is **highly toxic**.
I am counting on you. **Do not** be late!

Logical Markup

- ## Logical markup:
  - ### Describes parts of document
  - ### Does not specify how to render

- ## Example:
  - `This is <strong>very</strong> important`

This is *very* important

<b> and

- <b>
  - a physical tag which display text in bold font

-
  - displays the content in bold font and informs the browser about its logical importance

Example

<p>This liquid is highly toxic.</p>
<p>I am counting on you. Do not be late!</p>

This liquid is **highly toxic**.
I am counting on you. **Do not** be late!

<i> and <em>

- <i>
  - display the enclosed content in italic font

```
<p> <i>Write Your First Paragraph in italic text.</i></p>
```

- <em>
  - logical element, which will display the enclosed content in italic font, with added semantics importance

```
<p><em>keyword1</em>, which is displayed in italic font.
><em>keyword1</em>, </p>
```

Example

`<p>I am <em>glad</em> you weren't <em>late</em>.</p>`

I am *glad* you weren't *late*.

Nesting them…

<p>This liquid is highly toxic — if you drink it, you may die.</p>

Marking the text

- <mark> tag

<!DOCTYPE>

<html>

<body>

<h2> marking the word <mark> HELLO</mark> in the text</h2>

</body>

</html>

marking the word <mark>HELLO</mark> in the text

\<b>, \<i>, \<u>

- When CSS was not there, these tags were used.

- Affected the presentation and not the semantics – presentational elements

- Logical mark-up used from SEO and accessibility point of view

When to use?

- <u>\<i\></u> - foreign words, taxonomic designation, technical terms, a though

- <u>\<b\></u> - keywords, product names, lead sentence

- <u>\<u\></u> - proper name, misspelling

Underline and Strikethrough

<p> The word <u> Happy Birthday</u></p>

<p> The word <strike> NOT DONE </strike> </p>

The word <u>Happy Birthday</u>

The word ~~NOT DONE~~

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Superscript and subscript

```html
<!DOCTYPE>
<html>
<body>
<p>Molecular formula of Oxygen is O<sub>2</sub></p>
<p> Anay stood 1<sup>st</sup> in class</p>
</body>
</html>
```

O/P

Molecular formula of Oxygen is O_2

Anay stood 1st in class

Deleted and Inserted text

<!DOCTYPE>

<html>

<body>

<p> ~~Delete this line.~~<ins>Write another line.</ins></p>

</body>

</html>

~~Delete this line.~~<u>Write another line.</u>

Larger and smaller text

```
<!DOCTYPE>
<html>
<body>
<p>Hello <big>This is BIG</big></p>
</body>
</html>
```

```
<!DOCTYPE>
<html>
<body>
<p>Hello <small>This is SMALL</small></p>
</body>
</html>
```

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The </br>

```
<!DOCTYPE html>
<html>
   <head>
         </head>
 <body>
     <h2> Use of line break with paragraph tag</h2>
        <p><br>Monday's child is fair of face
            <br>Tuesday's child is full of grace
            <br>Wednesday's child is full of woe
              <br>Thursday's child has far to go....
          </p>
   </body>
</html>
```

The <hr>

<!DOCTYPE html>
<html>
 <head>

        </head>
 <body>
  <h2> Adding horizontal line . . .</h2>
    <p> Writing above ….<hr> it will start a new paragraph.
    </p>
 </body>
</html>

<address> tag

```
<!DOCTYPE html>
<html>
  <head>
        </head>
  <body>
    <p>Address Tag</p>
    <address> You can contact us on <a href="
">shilpamahangade16@gmail.com</a>
    <br> You can also visit at: <br>Flat no 101, XYZ Apartment, PQR
Road, Pune.
    </address>
  </body>
</html>
```

Address Tag

You can contact us on *shilpamahangade16@gmail.com*
You can also visit at:
Flat no 101, XYZ Apartment, PQR Road, Pune.

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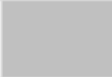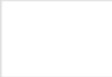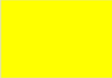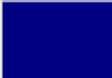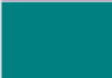
HTML Colors

- For good look and feel
- colors on page level using <body> tag
  - bgcolor
  - text
  - alink
  - link
  - vlink

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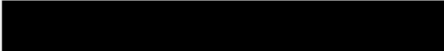
HTML Colors

- Coding methods - can be specified using
    - Color name
    - Hex codes
    - Color decimal or percentage values using RGB() values

W3C Standard 16 Colors

Here is the list of W3C Standard 16 Colors names and it is recommended to use them.

■	Black	■	Gray	■	Silver	■	White
■	Yellow	■	Lime	■	Aqua	■	Fuchsia
■	Red	■	Green	■	Blue	■	Purple
■	Maroon	■	Olive	■	Navy	■	Teal

Color	Color HEX
■	#000000
■	#FF0000
■	#00FF00
■	#0000FF
■	#FFFF00
■	#00FFFF
■	#FF00FF
■	#C0C0C0

Color	Color RGB
■	rgb(0,0,0)
■	rgb(255,0,0)
■	rgb(0,255,0)
■	rgb(0,0,255)
■	rgb(255,255,0)
■	rgb(0,255,255)
■	rgb(255,0,255)
■	rgb(192,192,192)
■	rgb(255,255,255)

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- <body text = "blue" bgcolor = "green">

- <font color = "white">

- <table bgcolor = "black">

- <body text = "#0000FF" bgcolor = "#00FF00">

- body text = "rgb(0,0,255)" bgcolor = "rgb(0,255,0)">

- <font color = "rgb(255,255,255)">

Browser Safe Colors

- 216 colors which are supposed to be safest and computer independent colors

- Vary from hexa code 000000 to FFFFFF and they will be supported by all the computers having 256 color palette.

Want to view source code?

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HTML Links

- Are hyperlinks

- Just not text, can be an image or any other element

- By default, links will appear as follows in all browsers:
  - An unvisited link is underlined and blue
  - A visited link is underlined and purple
  - An active link is underlined and red

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HTML links

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

<h2>HTML Links</h2>
<p>HTML links:</p>

<a href="https://www.google.com">open google</a>

</body>
</html>
```

HTML Links

- open google

- Absolute or Relative URL can be specified

- Attribute – target
  - _self - Default. Opens the document in the same window/tab as it was clicked
  - _blank - Opens the document in a new window or tab
  - _parent - Opens the document in the parent frame
  - _top - Opens the document in the full body of the window

```
<p>The image below is a link. Try to click on it.</p>
<a href="default.asp"><img src="smiley.gif" alt="HTML tutorial"
style="width:42px;height:42px;">
</a>
```

```
<p><a href="mailto:sabc@gmail.com">Send email</a></p>
```

```
<a href="https://www.google.com" title="Google ..">Visit our HTML Tutorial</a>
```

HTML Images

beautify as well as to depict many complex concepts in simple way on your web page.

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

<h2>HTML Links</h2>
<p>HTML links:</p>

<img src="images/google.jpg" alt="google.com" width="104" height="142">

</body>
</html>
```

border = 3
Align = "left"

Background image

```
<p style="background-image: url('img_girl.jpg');">
Text here
Text here

</p>
```