

WEB PROGRAMMING

LECTURE - 01

INTRODUCTION TO WEB PROGRAMMING

- Web technology refers to the various **tools**, programming **languages**, and **techniques** used to create, develop, and manage websites, web applications, and web services.

It encompasses:

- **Front-end:** HTML, CSS, JS
- **Back-end:** PHP, Node.js, Python, Ruby, Java, C#, Go
- **Databases** interaction: SQL (MySQL, PostgreSQL, SQLite, MS SQL Server), NoSQL (MongoDB, Firebase, Cassandra, CouchDB)
- **Server Management:**
 - Apache, Nginx – Web servers that host websites.
 - Cloud Computing (AWS, Google Cloud, Azure) – Cloud-based hosting solutions

INTRODUCTION TO WEB PROGRAMMING (CONT.)

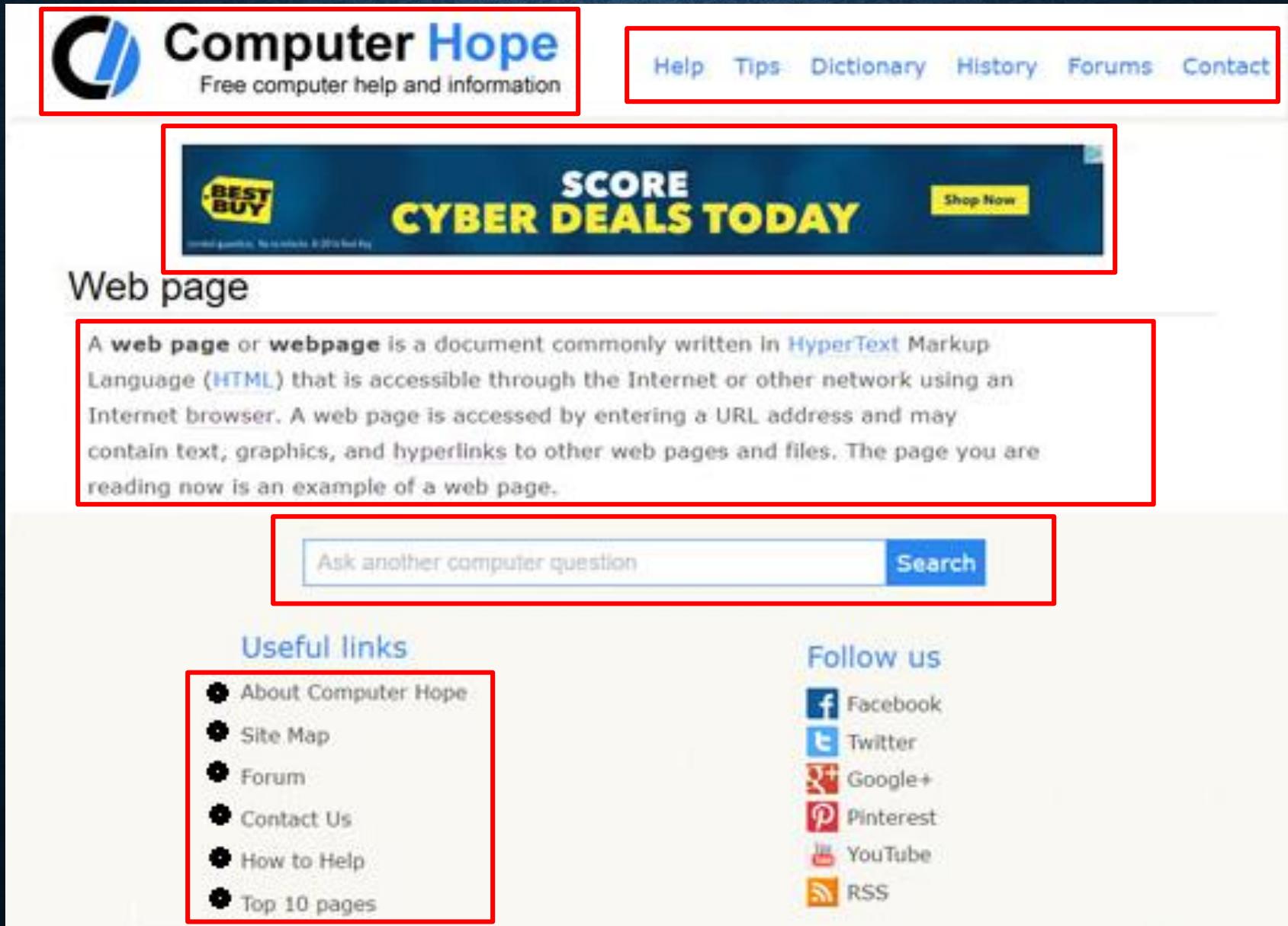
- **Protocols & Standards:**
 - HTTP/HTTPS – Protocols for data transfer on the web.
 - REST & GraphQL – APIs for web **services communication**.
 - WebSockets – For **real-time communication** between the server and client.
- **Web Security Technologies**
 - SSL/TLS Encryption – Ensures secure communication over the internet.
 - OAuth, JWT – Authentication and authorization methods.
 - Firewalls & Anti-DDoS Protection – Prevent hacking and cyber threats

GOING TO LEARN

The front-end technology

HTML

A SIMPLE WEB PAGE



The image shows a screenshot of the Computer Hope website. At the top left is the Computer Hope logo with the tagline "Free computer help and information". At the top right is a navigation bar with links for Help, Tips, Dictionary, History, Forums, and Contact. Below the navigation bar is a banner for Best Buy with the text "SCORE CYBER DEALS TODAY" and a "Shop Now" button. The main content area is titled "Web page" and contains a paragraph about what a web page is. Below this is a search bar with the placeholder "Ask another computer question" and a "Search" button. At the bottom left is a "Useful links" sidebar with links to About Computer Hope, Site Map, Forum, Contact Us, How to Help, and Top 10 pages. At the bottom right is a "Follow us" section with links to Facebook, Twitter, Google+, Pinterest, YouTube, and RSS.

Web page

A **web page** or **webpage** is a document commonly written in [HyperText Markup Language \(HTML\)](#) that is accessible through the Internet or other network using an Internet browser. A web page is accessed by entering a URL address and may contain text, graphics, and hyperlinks to other web pages and files. The page you are reading now is an example of a web page.

Ask another computer question [Search](#)

Useful links

- [About Computer Hope](#)
- [Site Map](#)
- [Forum](#)
- [Contact Us](#)
- [How to Help](#)
- [Top 10 pages](#)

Follow us

- [!\[\]\(7e0d6a31a51eb3952a6a6daebf7e401c_img.jpg\) Facebook](#)
- [!\[\]\(67f2870f14660d0c1a2612f703dff40d_img.jpg\) Twitter](#)
- [!\[\]\(f8bb5cf81f1458854fa051ea367dd4d6_img.jpg\) Google+](#)
- [!\[\]\(abba236d415e988a44fd320623ba9ff7_img.jpg\) Pinterest](#)
- [!\[\]\(689ac614b9c1588a3a22680f05acca3f_img.jpg\) YouTube](#)
- [!\[\]\(a0eb3c6c24908e2ffb06a6e01c517ab5_img.jpg\) RSS](#)

CODE IN HTML

```
1 <!DOCTYPE html>
2 <html lang="en">
3 <head>
4     <meta charset="UTF-8">
5     <meta name="viewport" content="width=device-width, initial-scale=1.0">
6     <title>Computer Hope</title>
7     <style>@import url('https://fonts.googleapis.com/css2?family=Open+Sans:wght@400;700;800;900&display=swap');</style>
93 </head>
94 <body>
95     <div class="header">
96         <h1>Computer <span>Hope</span></h1>
97     </div>
98     <div class="nav">
99         <a href="#">Help</a>
100        <a href="#">Tips</a>
101        <a href="#">Dictionary</a>
102        <a href="#">History</a>
103        <a href="#">Forums</a>
104        <a href="#">Contact Us</a>
105    </div>
106    <div class="banner">
107        <h2>Computer Hope</h2>
108        <h3>SCORE CYBER DEALS</h3>
109    </div>
110    <div class="content">
111        <h2>Web Page</h2>
112        <p>A <b>web page</b> is a document that is accessible via the Internet. It is a collection of text, images, and other multimedia elements that are presented in a structured format. Web pages are typically created using HTML (HyperText Markup Language) and are stored on servers that can be accessed by web browsers. They are used for a variety of purposes, such as providing information, advertising products or services, and facilitating e-commerce transactions. Web pages can be viewed on any device with an internet connection, making them a versatile and widely used form of communication and information sharing. </p>
113        <div class="search">
114            <input type="text" placeholder="Ask another computer question..." />
115            <button>Search</button>
116        </div>
117        <div class="links">
118            <div class="useful-links">
119                <h3>Useful Links</h3>
120                <ul>
121                    <li><a href="#">About Computer Hope</a></li>
122                    <li><a href="#">Site Map</a></li>
123                    <li><a href="#">Forum</a></li>
124                    <li><a href="#">Contact Us</a></li>
125                    <li><a href="#">How to Help</a></li>
126                    <li><a href="#">Top 10 Pages</a></li>
127                </ul>
128            </div>
129            <div class="follow-us">
130                <h3>Follow Us</h3>
131                <ul>
132                    <li><a href="#">Facebook</a></li>
133                    <li><a href="#">Twitter</a></li>
134                    <li><a href="#">Google+</a></li>
135                    <li><a href="#">Pinterest</a></li>
136                    <li><a href="#">YouTube</a></li>
137                    <li><a href="#">RSS</a></li>
138                </ul>
139            </div>
140        </div>
141    </div>
142
```

HTML

- HTML5 is the latest version of it.
- Written by Tim Berners-Lee in 1993.
- Document name ends with .htm or .html extension.
- HTML is a markup language that defines the structure of information by using a variety of tags and attributes that are designed to display text, image, links and other information into a Web documents.
- **Tags example:** html, head, title, body, h1,..,h6, p, div, a, img, ol, form, input, label, option, table
- **Attributes example:** width, height, id, class, placeholder, src, href, colspan, rowspan



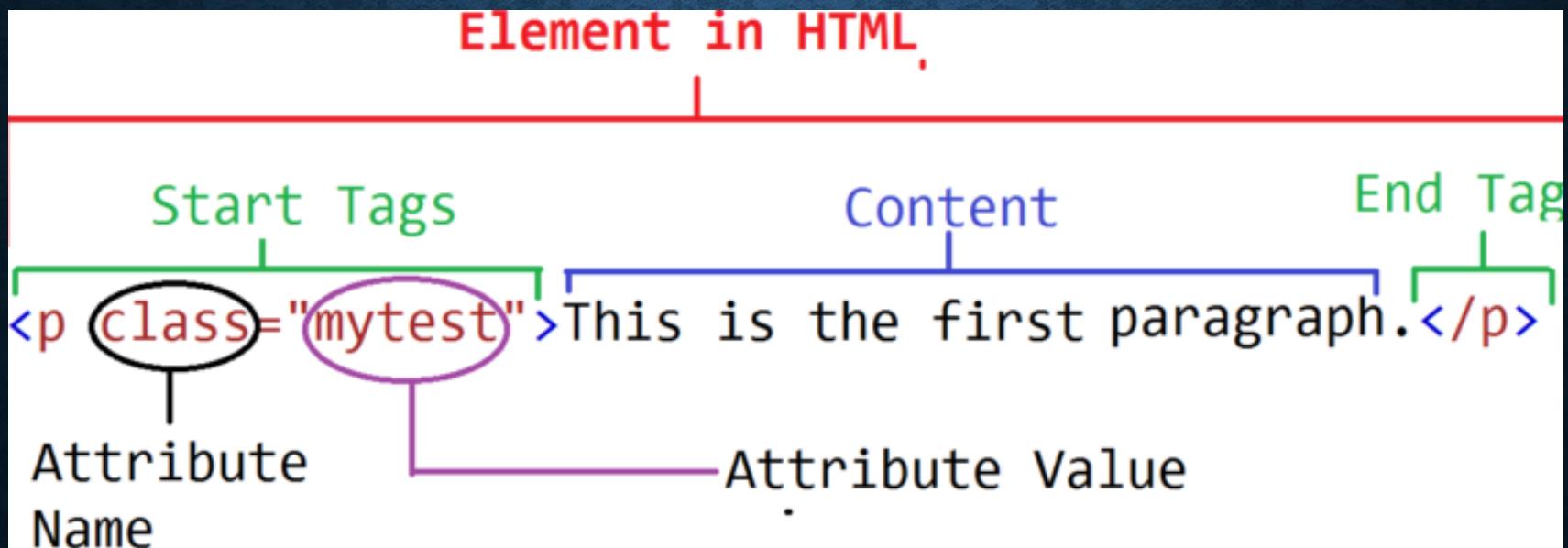
ELEMENTS/TAGS

TAGS

- HTML tags basically include the **tag name** enclosed by **angle brackets** (< >). For example, <HTML>
- Most tags are **used in pairs**, a begin tag and an end tag, for example <TITLE>...</TITLE>.
- Elements having no content are called **empty tag** which does **not** require **end tags**. For example, **img, br, hr, input, link, source, area** etc.

AN ELEMENT IN HTML

- Elements includes **opening**, **ending** tag and its **content** which acts as a **building block** of an HTML document



A DOCUMENT IN HTML

```
<!DOCTYPE html>
```

```
<HTML>
```

```
  <HEAD>
```

```
  </HEAD>
```

```
<BODY>
```

CONTENT

```
  </BODY>
```

```
</HTML>
```

STRUCTURE OF AN HTML DOCUMENT

```
<html>

  <HEAD>

    <TITLE>My First HTML Page</TITLE>

    ...

  </HEAD>

  <body>

    <h3>Welcome to My Site</h3>

    ...

  </body>

</html>
```

HEAD TAG

- **<HEAD> ... </HEAD>** - The head of an HTML document is like the **front matter** or **cover page** that **describe** the page about.
- This tag contains all the **meta information** about the HTML document.
- The following elements are related to the **<HEAD>** element:
 - **<BASE>** Allows the base address of HTML document to be specified
 - **<LINK>** Indicates relationships between documents
 - **<META>** Specifies document information usable by server/clients.
 - **<STYLE>** Specifies styles within the document when used by browsers that support use of style sheets
 - **<TITLE>** Specifies the title of the document
 - **<SCRIPT>** Specifies the script

BODY TAG

- **<BODY> ... </BODY>** - The body of an HTML document
- It contains all the **text, images, links and other contents we see in the browser** while browse a website.

<BODY>

paragraph(p), image (img), heading (h), link (a), division (div), span, address, section and other tags

</BODY>

BASIC TEXT FORMATTING

HEADER TAG

- HTML defines **six levels** of heading.
- The **highest level** of headings is **<H1>**, followed by **<H2>...<H6>**.

```
<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>  
</html>
```

This is heading 1

This is heading 2

This is heading 3

This is heading 4

This is heading 5

This is heading 6

PARAGRAPHS: <P>...</P>

- The paragraph element **indicates a paragraph** of text.
- Browsers automatically add some **white space** (a margin) **before and after** a paragraph.

<body><p>In coding HTML tags you can use capital letters, lower case, or a combination of both. For easy editing it is recommended that you use capital letters for most purposes and lower case letters for special cases.</p>

<p>Browsers treat white spaces in HTML documents as a single blank space; defining the layout of your web page with the necessary white space requires the use of the appropriate tags. </p></body>

Output

In coding HTML tags you can use capital letters, lower case, or a combination of both. For easy editing it is recommended that you use capital letters for most purposes and lower case letters for special cases.

Browsers treat white spaces in HTML documents as a single blank space; defining the layout of your web page with the necessary white space requires the use of the appropriate tags.

< BR / >

- **Line Breaks** are given Using the `< br / >` Element
- Example

```
<P>Mary had a little lamb<BR/>It's fleece was white as  
snow<BR/><BR/>Everywhere that Mary went<BR/>  
She was followed by a little lamb.
```

```
</p>
```

Output

```
Mary had a little lamb  
It's fleece was white as snow  
  
Everywhere that Mary went  
She was followed by a little lamb.
```

PRESENTATIONAL ELEMENTS

- These are used to **format the text** in the page like word processor.
- Used to make text **bold**, **italic**, or **underlined** etc.
- The tags elements for presentation are ****, **<i>**, **<u>**, **<s>**, **<sub>**, **<sup>**, **<big>**, **<small>** etc.

PRESENTATIONAL ELEMENTS EXAMPLE

HTML Code

```
<html>
<body>
<h1>This is Presentational Elements</h1>
<p><i>This is an italic paragraph.</i> </p>
<p><b>This is a bold or strong
paragraph.</b></p>
<p><u>This is a underlined
paragraph.</u> </p>
<p><s>This is a striked paragraph.</s>
</p>
<p><tt>This is teletype paragraph.</tt>
</p>
<p>This is 31<sup>st</sup> Jamuary.</p>
<p>This is H<sub>2</sub>O i.e.
Warer.</p>
<p><big>This is big font.</i> </p>
<p><small>This is small font.</small> </p>
</body>
</html>
```

This is Presentational Elements

This is an italic paragraph.

This is a bold or strong paragraph.

This is a underlined paragraph.

~~This is a striked paragraph.~~

This is teletype paragraph.

This is 31st Jamuary.

This is H₂O i.e. Warer.

This is big font.

This is small font.

ATTRIBUTES

ATTRIBUTE AND VALUES

- **Attribute**

- The attribute defines additional properties of the HTML tag.
- For example, the `<table>` tag has several attributes including **align**, **border**, **height**, **width**, etc.

- **Values**

- A value is a **string** that provides description or **characteristics of attribute** of an element.

ATT. IN <HR>

- Insert a **Horizontal line**
- A Horizontal Rule element is a divider between sections of text such as a full width horizontal rule or equivalent graphic.
 - **<HR ALIGN=left | right | center>** Set to display centered, left, or right aligned. (use width along with it)
 - **<HR COLOR=#rrggb>** Specifying of the hard rule color
 - **<HR NOSHADE>** Specify that the horizontal rule should not be shaded at all.
 - **<HR SIZE=10px>** Specifies how thick the rule will be, in pixels
 - **<HR WIDTH=15px>** Specify an exact width in pixels

CORE HTML ATTRIBUTES

- **Style:** The **style** attribute is used to add style sheet information directly to a tag.

```
<p style="font-size: 18pt; color: red;">
```

This is the first paragraph of text.

```
</p>
```

- **Title:** The **title** is used to provide advisory text about an element or its contents.

```
<p title="Introductory paragraph">
```

This is the first paragraph of text.

```
</p>
```

HTML STYLE ATTRIBUTE

Tags	Description
<center>	Defines centered content
 and <basefont>	Defines HTML fonts
<s> and <strike>	Defines strikethrough text
<u>	Defines underlined text

Attributes	Description
Align	Defines the alignment of text
Bgcolor	Defines the background color
Color	Defines the text color

CORE HTML ATTRIBUTES

- **Id:** The **id** attribute is used to set a unique name for an element in a document.

```
<p id="FirstParagraph"> This is the first paragraph  
of text.</p>
```

- **Class:** The **class** attribute is used to indicate the class or classes that a tag might belong to.

```
<p id="FirstParagraph" class="important">  
This is the first paragraph of text.  
</p>
```

- More on these later ...

PHRASE ELEMENTS

PHRASE ELEMENTS

- Some of the elements in this section are displayed in a manner **similar to the Presentational Elements**.
- But they are **not just for presentational** purposes; they also **describe something** about their content.
- **** and **** for emphasis
- **< cite >** and **< q >** for quotations and citations
- **< abbr >**, **< acronym >**, and **< dfn >** for abbreviations, acronyms, and key terms
- **< address >** for addresses

PHRASE ELEMENTS(CONT..)

- *Example*

```
<address>
Written by <a
href="mailto:webmaster@example.com">Jon
Doe</a>.<br>
Visit us at:<br>
Example.com<br>
Box 564, Disneyland<br>
USA
</address>
```

Written by Jon Doe.
Visit us at:
Example.com
Box 564, Disneyland
USA

PHRASE ELEMENTS(CONT..)

- **Font**

- Font tag supports different types of font, size, colors etc. its attributes are:
 - SIZE= “value”
 - FACE= “name”
 - COLOR = “color name”

- **Example**

```
<p><font size="5" face="arial" color="red">  
This paragraph is in Arial, size 5, and in red text color.  
</font></p><p>  
<font size="3" face="verdana" color="blue">  
This paragraph is in Verdana, size 3, and in blue text color.  
</font></p>
```

The font element is deprecated in HTML 4. Use CSS instead!

PHRASE ELEMENTS(CONT..)

- **Preformatted text <PRE>...</PRE>**

- It allows the browser to show as formatted between <pre> and </pre>.
- Example

```
<pre>
```

This is P R E F O R M A T T E D

T

E

X

T

SPACES are ok! So are

RETURNS!

```
</pre>
```

PHRASE ELEMENTS(CONT..)

- **<div>..</ div >**

- The `<div>` tag defines a **division or a section** in an HTML document.
- The `<div>` tag is used to **group block-elements** to format them with **styles**.
- By default, browsers always place a **line break** before and after the `<div>` element. However, this can be changed with CSS.
- Example

```
<div style="color:#00FF00">
  <h3>This is a header</h3>
  <p>This is a paragraph.</p>
</div>
```

PHRASE ELEMENTS(CONT..)

- **..**

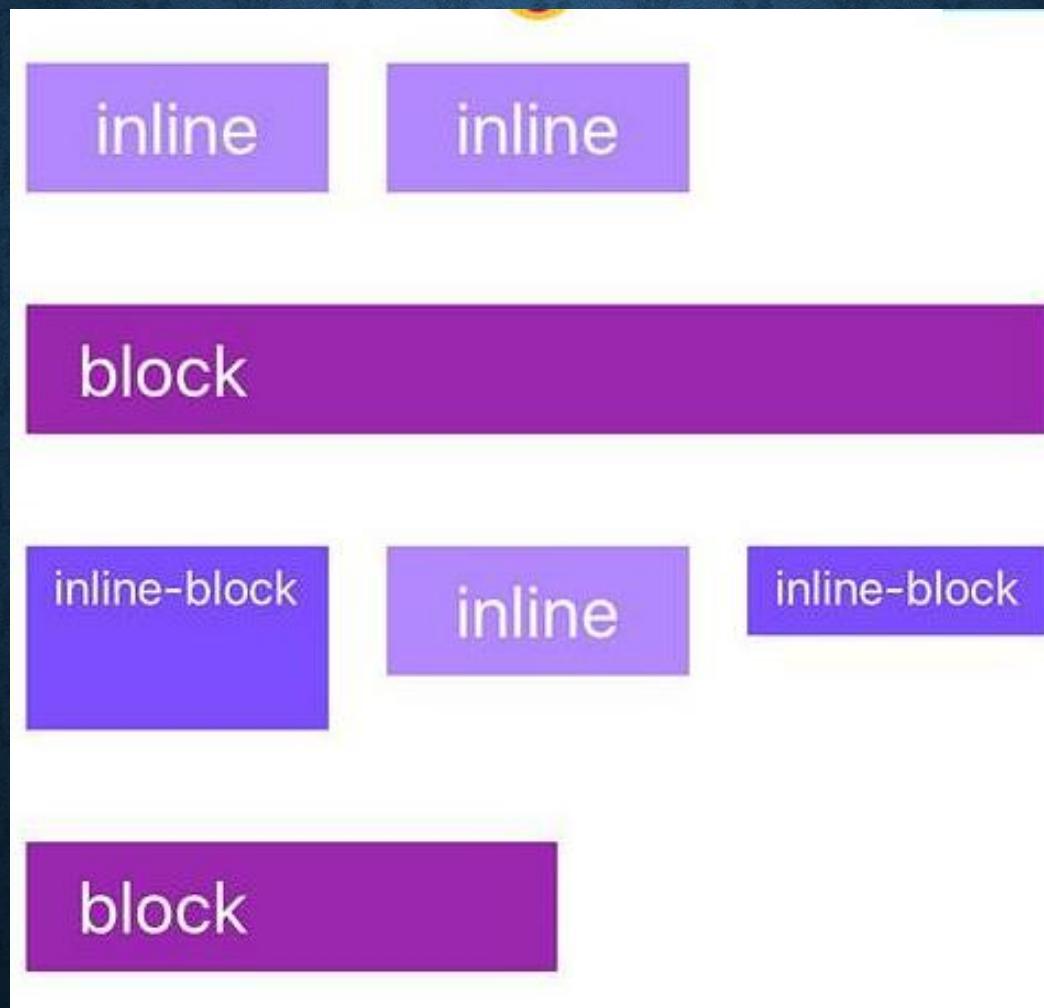
- The `` tag is used to **group inline-elements** in a document.
- The `` tag provides **no visual change** by itself. The `` tag provides a way to add a hook to a part of a text or a part of a document.
- When the text is hooked in a `` element you **can add styles** to the content, or manipulate the content with for example JavaScript.
- Example

```
<p>
```

My mother has

```
  <span style="color:lightblue;font-weight:bold">light blue</span>
  eyes and my father has
  <span style="color:darkolivegreen;font-weight:bold">dark
  green</span> eyes.</p>
```

BLOCK AND INLINE ELEMENTS



BLOCK AND INLINE ELEMENTS

- All the elements can fall into the following categories:
 - **Block - level elements**
 - < p > , < h1 > , < h2 > , < h3 > , < h4 > , < h5 > , < h6 > , < ul > , < ol > , < dl > , < pre > , < hr / > , and < address > elements are all block - level elements. They all start on their own new lines, and anything that follows them appears on its own new line, too.
 - **Inline elements**
 - **Inline-** elements can appear within sentences and **do not have to appear** on new lines of their own.
 - The < b > , < i > , < u > , < em > , < strong > , < sup > , < sub > , < big > , < small > , < ins > , < del > , < code > , < cite >
 - **Inline-Block**
 - **Inline-Block** Allows an inline element to set its width and height.

SPECIAL CHARACTERS

Result	Description	Entity Name	Entity Number
	non-breaking space	 	160
<	less than	<	60
>	greater than	>	62
&	ampersand	&	38
"	double quotation mark	"	34
'	single quotation mark (apostrophe)	'	39
¢	cent	¢	162
£	Euro	€	8364
©	copyright	©	169
®	registered trademark	®	174
£	pound	£	163
¥	yen	¥	165

XHTML

RULES OF HTML

- HTML is **not case sensitive**, XHTML is

Go boldly!

Go boldly!

Go boldly!

Go boldly!

- HTML/XHTML attribute **values may be case sensitive**

** and ** are not necessarily referencing the same image

RULES OF HTML

- HTML/XHTML is sensitive to a **single white space** character. The following markup will produce **same output**.

```
<b>T e s t o f s p a c e s</b><br />
```

```
<b>T   e   s   t   o   f   s   p   a   c   e   s</b><br />
```

```
<b>T  
e s
```

```
t o f s p   a c e s</b>
```

Output

T e s t o f s p a c e s
T e s t o f s p a c e s
T e s t o f s p a c e s

- Elements Should **Have Close Tags Unless Empty**

```
<p>This isn't closed.
```

```
<p>This is.</p>
```

```
<br></br>
```

```
<br />
```

- Tags with **no content** are called **empty tag**.

XHTML: THE RULES ENFORCED

- XML + HTML = XHTML
- You must have a **doctype indicator** and conform to its rules. For example, `<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">`
- You must have `<html>`, `<head>`, and `<body>` tag.
- `<title>` must come first in the `<head>` element.
- You have to **quote all attributes**, even simple ones such as `<p align= "left">`.

XHTML: THE RULES ENFORCED

- You must **nest your tags** properly, so `<i>` is okay `</i>`, but `<i>` is not `</i>`.
- **Empty tag** must close, so tags such as `<hr>` become `<hr />`.
- You must **lowercase** all tags and attribute names.
- That is, it is a **strict XHTML** page uses some different syntax and tags than HTML

END

Thank you