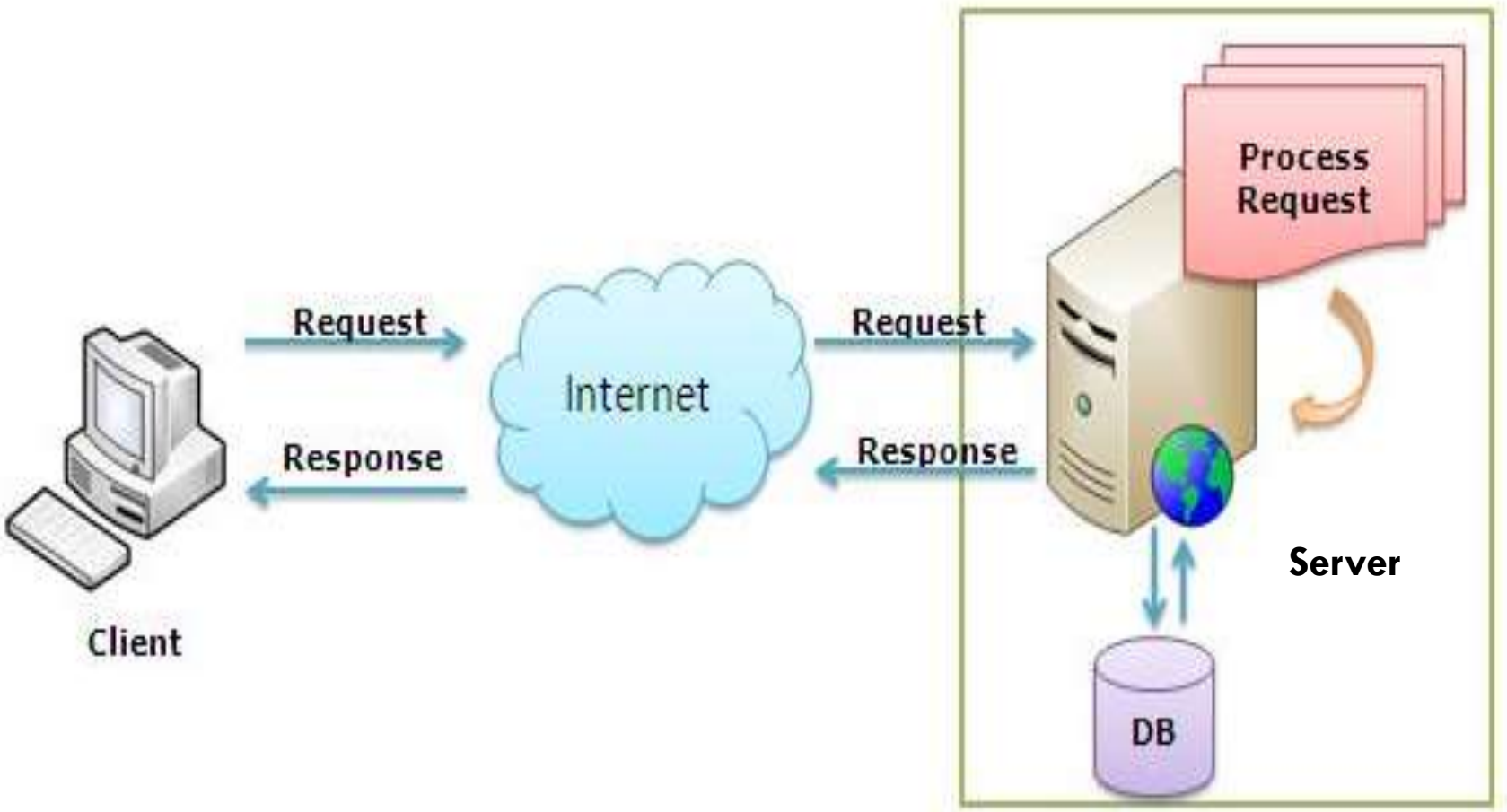
INTRODUCTION TO WEB DESIGN AND HTML

Client/Server Architecture



Web Client/ Web Server

Web Server

- Web server **receives a client request, process the request** and **give response to the client**.
- Allows to host the web sites

Web Client

- A web client is an application that communicates with a web server, using Hypertext Transfer Protocol (HTTP)
- **Web browser** is a software that acts as **a web client.**

Clients & Servers Example

Clients (Browser)

- Internet Explorer
- Firefox
- Mozilla
- Netscape
- Opera
- Amaya
- AOL
- MSN

Servers

- Apache
- **IIS** Web Server.
- Litespeed server
- Google Web server(GWS)
- Oracle iplanet WebServer

Web Essentials

- **“Web”**- short for “**World Wide Web**”
- A web page is a simple text file written in a markup language (called **HTML**)
- A website is a group of HTML files that are stored on a hosting computer which is permanently connected to the internet
- **URL** - *Uniform Resource Locator* - used to indicate a resource on the Internet
- Home page -The main page on a particular Web site or index page

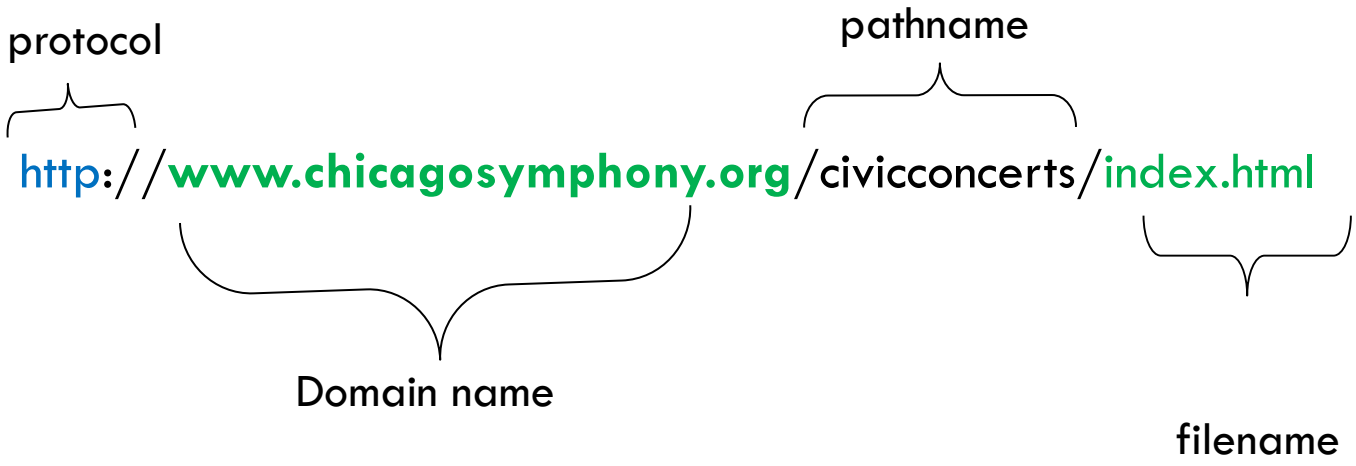
How the browser interacts with the servers ?

- User enters the URL(Uniform Resource Locator) of the website or file. The Browser then requests the DNS(DOMAIN NAME SYSTEM) Server.
- DNS Server lookup for the address of the WEB Server.
- DNS Server responds with the IP address of the WEB Server.
- Browser sends over an HTTP/HTTPS request to WEB Server's IP (provided by DNS server).
- Server sends over the necessary files of the website.
- Browser then renders the files and the website is displayed. This rendering is done with the help of DOM (Document Object Model) interpreter, CSS interpreter and JS Engine collectively known as the JIT or (Just in Time) Compilers.

Domain Name, URL's and IPs

- Uniform Resource Locator (URL):
  - http://www.microsoft.com/faqs.html
- Domain name: The specific **address of a computer on the Internet**
  - microsoft.com
- Internet protocol (IP) address
  - 192.168.1.1

Structure of a Uniform Resource Locators



http => Hypertext Transfer Protocol

Mapping IP to Domain Name

Domain Name System – a mapping between the human-readable name (domain name) of a host and its IP address

http://www.kongu.edu/department/CSE/index.html

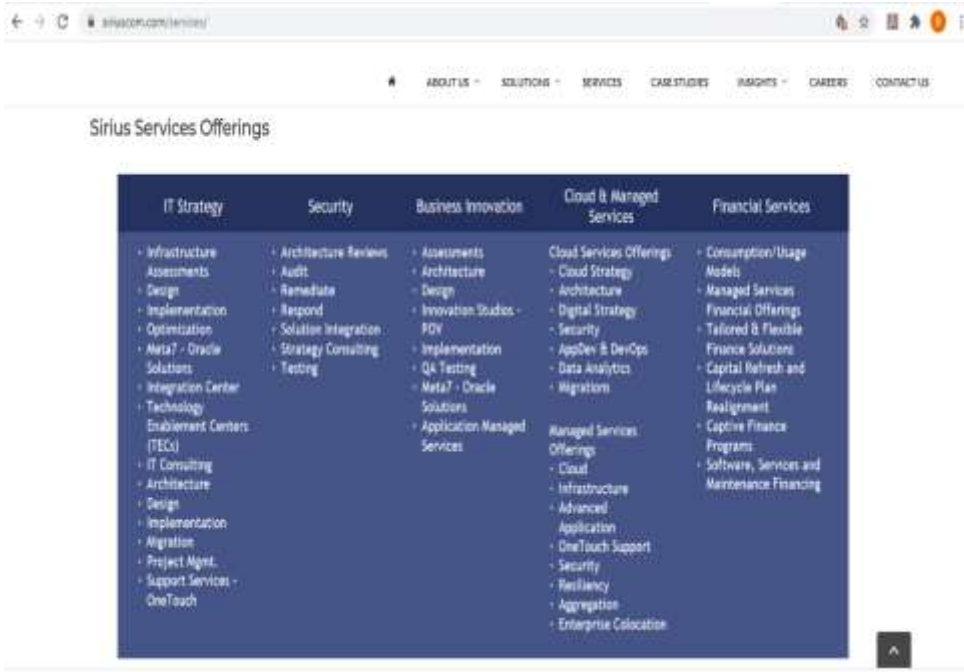
- **http: – specifies the protocol**
- **www.kongu.edu – specifies the host name / domain name**
- **/department/CSE/index.html– specifies the path of the document on the host**

Internet Use

- Send e-mail messages.
- Send (upload) or receive (down load) files between computers.
- Participate in discussion groups, such as mailing lists and newsgroups.
- Surfing the web.
- Social media etc..

Web Page - The Making of a Good Design

Content is important, but content alone will not make your site work.



Good Design is:

- Understandable
- Interesting
- Easy to use
- Uniform in look and feel
- Done from a visitor's point

  WYSIWYW (What You See Is What You WANT)

Technologies & Tools

- Markup Languages
  - HTML, XHTML, XML, XSLT, etc....
- Cascading Style Sheets (CSS)
- Scripting languages
  - Client-side: javascript, VBScript
  - Server-side: perl, NodeJS, php, JSP, Servlet etc....
- Web creation and editing software
  - Notepad, FrontPage, Flash, Site Builder etc..
- Frameworks
  - Angular JS
  - React JS

Web Page Vs Website

- A Web page is a document in the World Wide Web that is identified uniquely by a uniform resource locator (URL) and is displayed in a web browser
- Called as Pages

- A collection of related web pages located under a single domain name.
- Called as Web Sites

HTML-Hyper Text Markup Language

- To ***Create Web pages.***
- Uses ***tags,*** to tell the Web browser software how to display the text contained in the document
- HTML tags are ***not case sensitive***
- HTML documents are described by HTML tags
- ***File Extension*****:** .html, .htm, .xhtml
- ***Tools:***
  - Notepad , Notepad++[any text editor]
  - Web Browsers (Internet Explorer, Firefox, Chrome, etc..)

HTML – Fundamentals

Document Structure

< HTML >

<Head> <!- optional tag - - >

<Body>

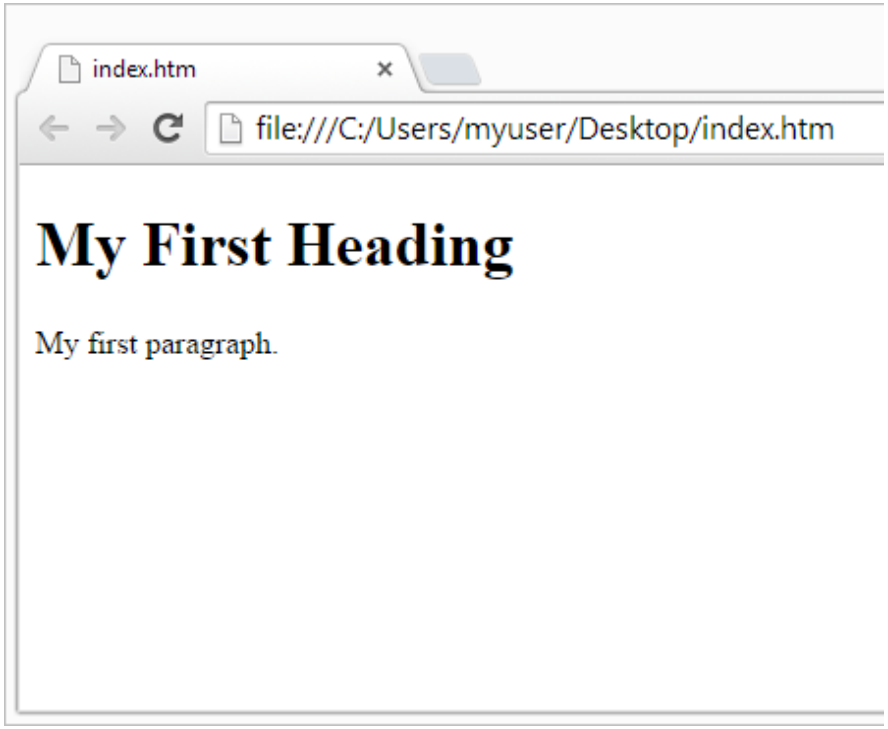
< / HTML>

HTML – Basic Structure

```
<html>

    <head>  <! - - optional tag- ->
        <title> The title of your html page </title>
    </head>

    <body>
        <! - - your web page content and markup  - ->
    </body>

</html>
```

Example

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

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

</body>
</html>
```



Description

- The **<!DOCTYPE html>** declaration defines this document to be HTML5
- The text between **<html>** and **</html>** **describes an HTML document**
- The text between **<head>** and **</head>** provides **information about the document**
- The text between **<title>** and **</title>** provides a title for the document
- The text between **<body>** and **</body>** describes the visible **page content**
- The text between **<h1>** and **</h1>** describes a **heading**
- The text between ** ** and ** ** describes a **paragraph**

HTML - Comment lines

- Comments are not displayed in the browser
- Starts with <!--
- Ends with -->
- Example:

```
<!--This is a comment. -->
```

HTML Tags

- HTML tags are **keywords** (tag names) surrounded by **angle brackets**:
- Syntax: <tagname>content goes here...</tagname>
- HTML tags normally come **in pairs** like and
- 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 **forward slash** inserted before the tag name

HTML Heading Tag

- HTML headings are defined with the **<h1>** to **<h6>** tags
- <h1> defines the most important heading
- <h6> defines the least important heading
- Example:

```
<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>
```

HTML ATTRIBUTES

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

```
<body bgcolor=“green” >
        <p>  hai </p>
</body>
```

HTML colors- Attribute Values

- **color_name:** It sets the background color by using the color name. For example “red”.
- **hex_number:** It sets the background color by using the color hex code. For example “#0000ff”.
- **rgb_number:** It sets the background color by using the RGB code. For example: “RGB(0, 153, 0)” .

<BODY bgcolor=“*blue*”>

<BODY bgcolor=“rgb(255,0,0)” >

<BODY bgcolor=“*#0000FF*”>

https://htmlcolorcodes.com/

HTML -Colors

Color is the combination of red, green and blue

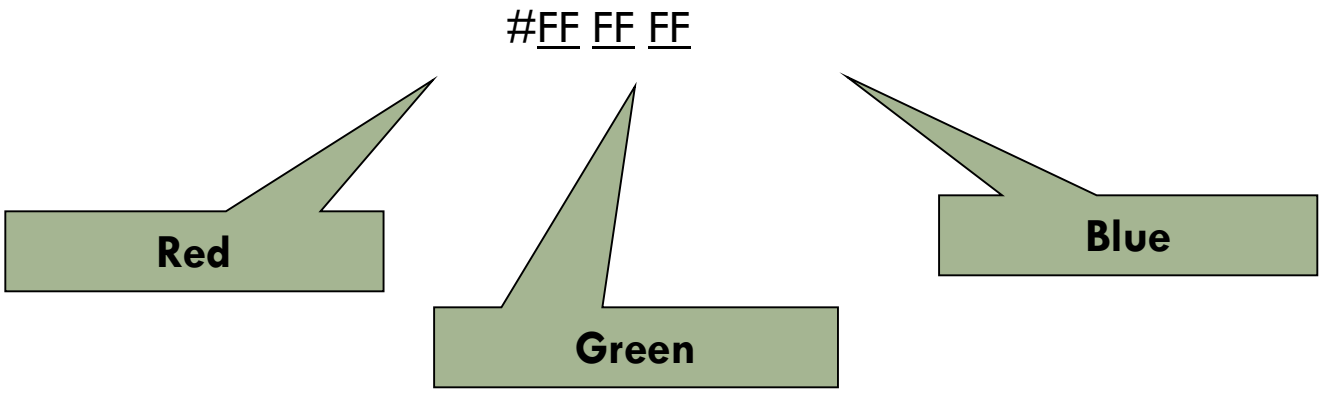
color = “red” (Browser compatibility issues)

color=“rgb(122,255,0)”

color = “#FF0000”

values vary from 00 to FF (hexadecimal)

0,1,2,3,4,5,6,7,8,9,a,b,c,d,e,f



HTML Links- anchor tag

- HTML links are defined with the **anchor** tag<a>

Example

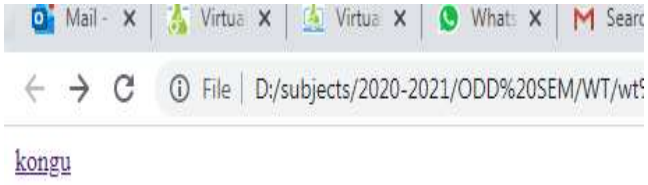
Test.html

```
<a href="http://www.kongu.ac.in"> kongu</a>
```

- The link's destination is specified in the **href attribute**

Example output

- Test.html



HTML Links

Test.html

```
<body>
   <a href="bio.html"> Read my BIO </a>
<body>
```

bio.html

```
<body>
 Welcome to web Page
</body>
```

<anchor > - Target attribute value

Target="value"

Value can be

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

Hypertext links

 BiO DATA

- Creates new window for the page

Bio Data

- Opens page in the same tab

HTML Images

- HTML images are defined with the **<img>** tag
- The source file (**src**), alternative text (**alt**), and size (**width** and **height**) are provided as **attributes**
- **alt:** Alternate text is used when the image cannot be displayed
- **Example:**

HTML Element-<img>

- **Images from local folder**
  - <img src="image1.jpg" alt="Image here" width="100" height="150">

  (OR)
- **Images from different folder**
  - <img src="/images/html5.gif" alt="HTML5 Icon" width="28px" height="128px">
- **Images from other servers**
  - <img src="https://www.kongu.ac.in/images/logo.jpg" alt="KEC LOGO">

Image as hyper link

```
<html>
<body>

<a  href= "flower.html">
<img src="flower.jpg" width="905" height="622"/ >
</a>

</body>
</html>
```

The title Attribute

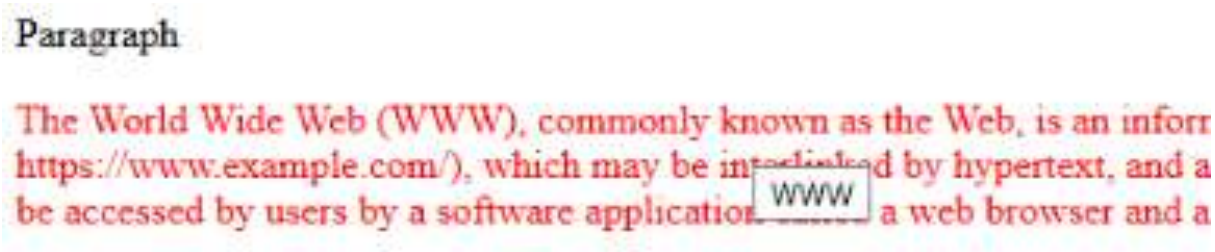
- **title** attribute is added to the ** ** element
- The value of the title attribute will be displayed as a tooltip when you move the mouse over the paragraph
- Ex:

** **

Kongu Engineering College

** **

```
<!DOCTYPE html>
<html>
<head> Paragraph</head>
<body>
<p title="WWW" >
The World Wide Web (WWW),
commonly known as the Web</p>
```



Nested HTML Elements

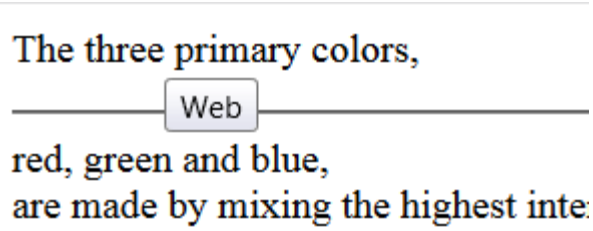
- HTML elements can be nested (elements can contain elements)
- <h2>My first paragraph</h2>

HTML Empty Tags

-
 --- line break
- <hr> --- horizontal rule

Horizontal Rule and break tag

- The **<hr> tag** defines a thematic break in an HTML page
- It is most often displayed as a horizontal rule
- **
 tag:**
  - To display in next line in web page
  - No ending tag




```
<html>
<body>
<p title="Web"> The three primary colors, <hr> red, green and blue, <br> are made </p>
</body>
</html>
```

HTML Display

- With HTML, we cannot change the output by adding extra spaces or extra lines in your HTML code.
- The browser will remove any extra spaces and extra lines when the page is displayed
- Ex:

```
<p>
This paragraph
contains        a lot of spaces
in the source        code,
but the        browser
ignores it.
</p>
```

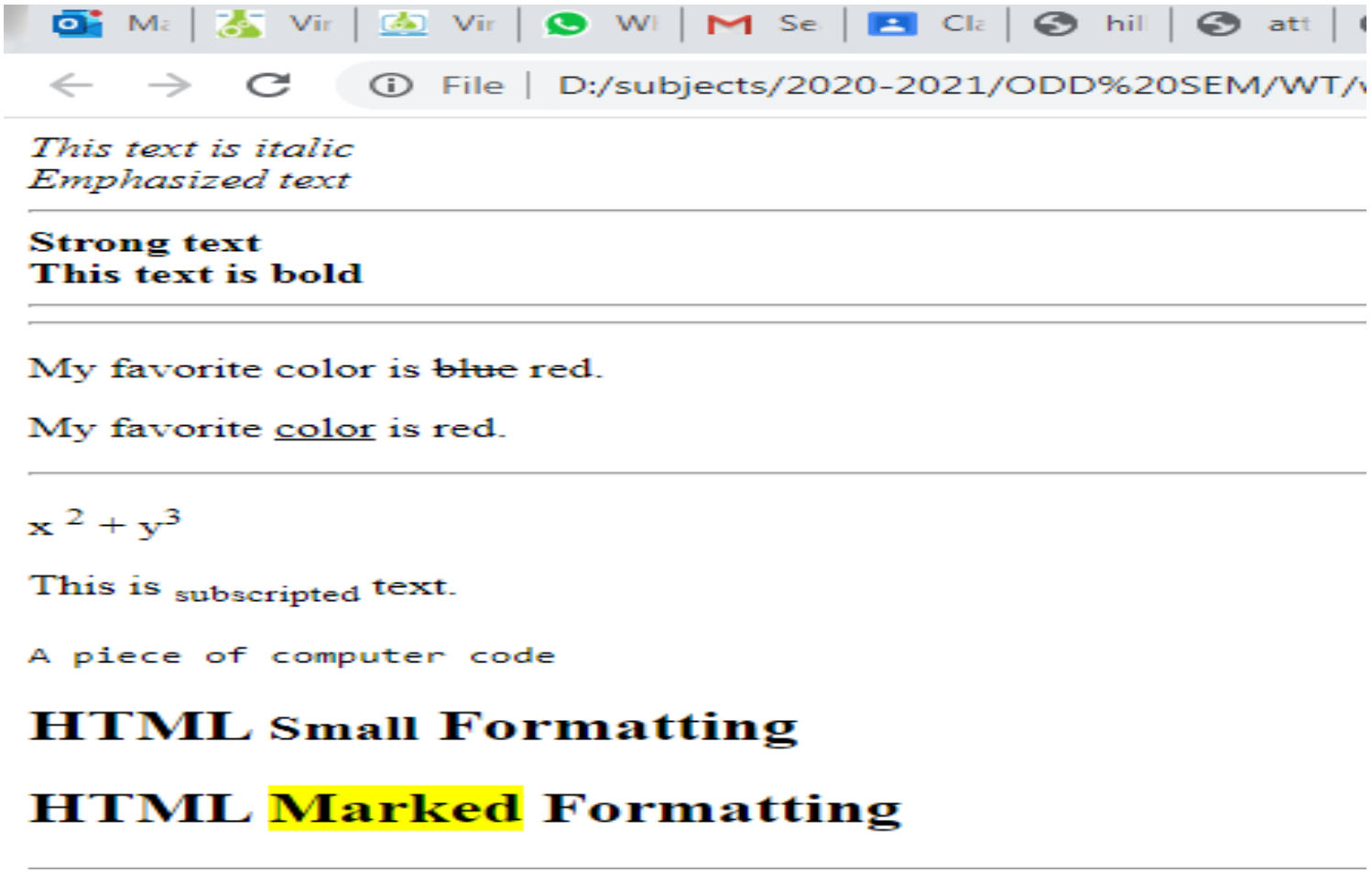
HTML <pre> Element

- The HTML <pre> element defines preformatted text.
- The text inside a <pre> element is displayed in a fixed-width font (usually Courier), and it preserves both spaces and line breaks
- <pre> </pre>
- Ex: Poem – line by line

HTML Formatting Elements

- HTML also defines special **elements** for defining text with a special **meaning**.
- HTML uses elements like <b> and <i> for formatting output, like **bold** or *italic* text
  - <b> - Bold text
  - - Important text
  - <i> - Italic text
  - - Emphasized text
  - <mark> - Marked text
  - <small> - Small text
  - <del> - Deleted text
  - <ins> - Inserted text
  - <sub> - Subscript text
  - <sup> - Superscript text

Output of Formatting tags



HTML Lists

- **Unordered List**
  - Item
  - Item
  - Item
  - Item
- **Ordered List**
  1. Item
  2. Item
  3. Item
  4. Item

HTML Lists

Unordered list

```
<ul type="square">
   <li>apples</li>
   <li>bananas</li>
   <li>grapes</li>
   <li>strawberries</li>
</ul>
```

Ordered list

```
<ol type='i' start='2'>
   <li>apples</li>
   <li>bananas</li>
   <li>grapes</li>
   <li>strawberries</li>
</ol>
```

HTML Lists

Unordered list

- apples
- bananas
- grapes
- strawberries

Ordered list

II. apples
III. bananas
IV. grapes
V. strawberries

Unordered HTML List- type attributes

- An unordered list starts with the **<ul>** tag
- Each list item starts with the **<li>** tag.
- The list items will be marked with bullets (small black circles) by default

Value	Description
disc	Sets the list item marker to a bullet (default)
circle	Sets the list item marker to a circle
square	Sets the list item marker to a square
none	The list items will not be marked

Ordered HTML List type attributes

- An ordered list starts with the **<ol>** tag
- Each list item starts with the **<li>** tag
- The list items will be marked with numbers by default

TYPE	DESCRIPTION
type="1"	The list items will be numbered with numbers (default)
type="A"	The list items will be numbered with uppercase letters
type="a"	The list items will be numbered with lowercase letters
type="I"	The list items will be numbered with uppercase roman numbers
type="i"	The list items will be numbered with lowercase roman numbers

HTML Elements-Ordered List

```
<h2>Ordered List</h2>

<ol type="1">
   <li>Coffee</li>
   <li>Tea</li>
   <li>Milk</li>
</ol>
<ol type="A">
   <li>Coffee</li>
   <li>Tea</li>
   <li>Milk</li>
</ol>
<ol type="i">
   <li>Coffee</li>
   <li>Tea</li>
   <li>Milk</li>
</ol>
<ol type="a">
   <li>Coffee</li>
   <li>Tea</li>
   <li>Milk</li>
</ol>
<ol type="I">
   <li>Coffee</li>
   <li>Tea</li>
   <li>Milk</li>
</ol>
```

Ordered List

1. Coffee
2. Tea
3. Milk

A. Coffee
B. Tea
C. Milk

i. Coffee
ii. Tea
iii. Milk

a. Coffee
b. Tea
c. Milk

I. Coffee
II. Tea
III. Milk

How to design a nested list?

1. Coffee
2. Tea
    - Black tea
    - Green tea
3. Milk

Nested HTML Lists

- List can be nested - lists inside lists
- Example:

```
<ol>
  <li>Coffee</li>
  <li>Tea
    <ul>
    <li>Black tea</li>
    <li>Green tea</li>
    </ul>
  </li>
  <li>Milk</li>
</ol>
```

HTML Tables

- An HTML table is defined with the **<table>** tag.
- Each table row is defined with the **<tr>** tag
- A table header is defined with the **<th>** tag. By default, table headings are bold and centered.
- A table data/cell is defined with the **<td>** tag

HTML Table tags

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

HTML TABLES

- <table>
  - Style, border….
- <tr> --- Table row
- <td> --- Table data
  - Attribute— rowspan, colspan
  - text, images, lists, other tables, etc.
- <th> --- Table header
  - Attribute— colspan ,rowspan

<thead>, <tbody>, <tfoot>

```
<table border = "2">
    <caption><strong>Table of Fruits and Their Prices</strong></caption>

    <thead>
        <tr>
        <th>Fruit</th>
        <th>Price</th>
        </tr>
    </thead
    <tbody>
        <tr>
            <td>Apple</td>
            <td>100</td>
        </tr>
        <tr>
            <td>Orange</td>
            <td>50</td>
        </tr>
    </tbody>
    <tfoot>
        <tr>
        <th>Total</th>
        <th>150</th>
        </tr>
    </tfoot>
</table>
```

ROWSPAN

- **Cell that spans two rows (Merged tow rows)**

```
<tbody>
        <tr>
        <td>Apple</td>
        <td>100</td>
        <td rowspan="2">Total:150</td>
        </tr>

        <tr>
        <td>Orange</td>
        <td>50</td>
        </tr>
  </tbody>
```

Table of Fruits and Their Prices

Fruit	Price	Total
Apple	100	Total:150
Orange	50	

COLSPAN

Cell that spans two columns (Merged tow columns)

```
<tfoot>
        <tr>
        <th colspan="3">Total:150</th>
        </tr>
  </tfoot
```

Table of Fruits and Their Prices

Fruit	Qty	Price
Apple	5kg	100
Orange	2kg	50
Total:150		

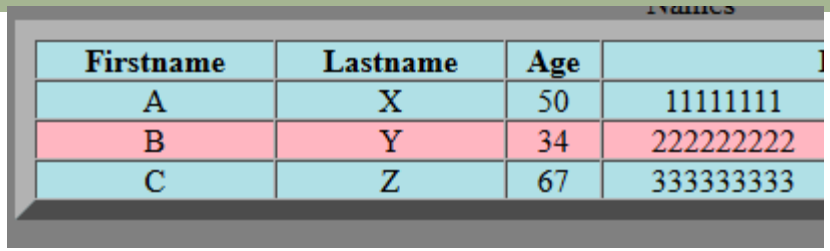
Colgroup

- Set the background color of particular columns with the <colgroup> and <col> tags

```
<table border="1">
<colgroup>
<col span="2" style="background-color:red">
<col style="background-color:yellow">
</colgroup>
<tr>
<th>ISBN</th>
<th>Title</th>
<th>Price</th>
</tr>
<tr>
<td>3476896</td>
<td>My first HTML</td>
<td>$53</td>
</tr>
</table>
```

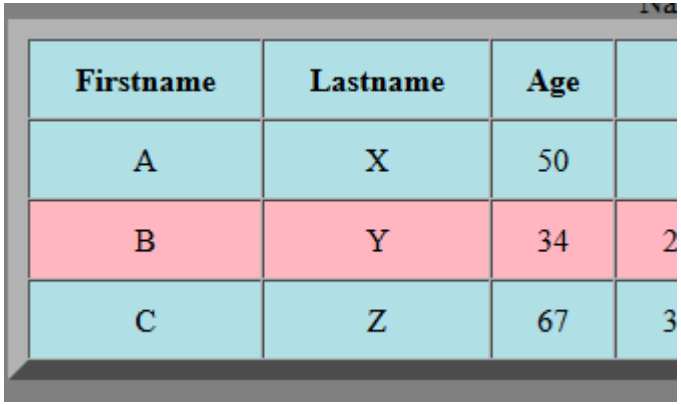
ISBN	Title	Price
3476896	My first HTML	$53

CELL PADING vs CELL SPACING

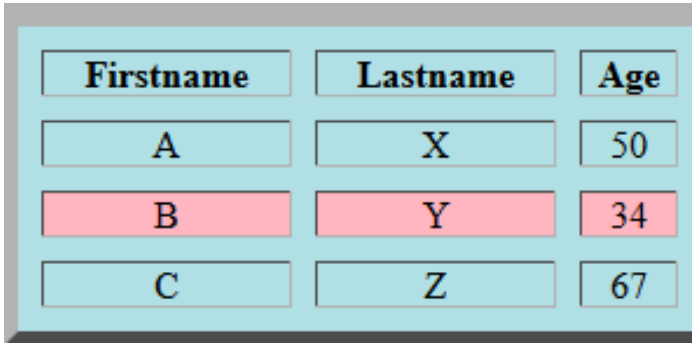


Firstname	Lastname	Age	
A	X	50	11111111
B	Y	34	222222222
C	Z	67	333333333

- CELL PADING: Spacing between text and cell



Firstname	Lastname	Age	
A	X	50	
B	Y	34	2
C	Z	67	3

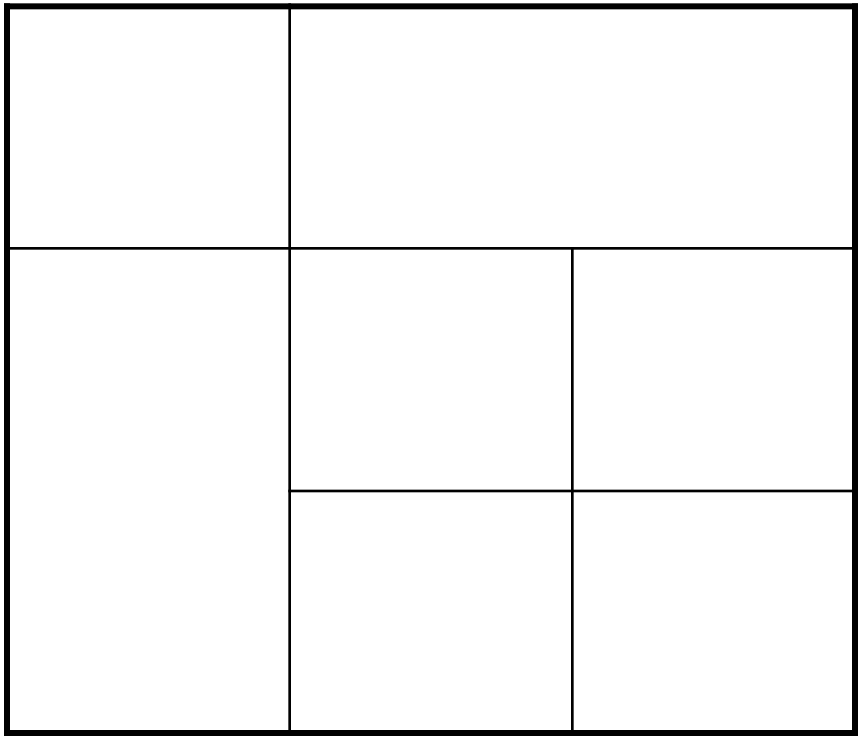


Firstname	Lastname	Age
A	X	50
B	Y	34
C	Z	67

- CELL SPACING: Spacing between two cells

Question

Design a table like this



HTML-Internal Linking[bookmarking]

Used to create linking or book marking within a page

Page should exceed more than one page

Example:

```
<body>
<h1 id = "books">my favourite books</h1>
<p><a href = "#languages">Go to Favorite languages</a></p>
        <ul>
         ……..

<h1 id = "languages">My Favorite languages</h1>
<p><a href = "#books">Go to Favorite books</a></p>
        <ol>
        ……..
```

Media Tags

- Multimedia on the web is sound, music, videos, movies, and animations.
- Multimedia comes in many different formats. It can be almost anything you can hear or see, like images, music, sound, videos, records, films, animations, and more.
- Multimedia Formats :Multimedia files have formats and different extensions like: .wav, .mp3, .mp4, .mpg, .wmv, and .avi.
- Common Video Formats – MP4, WebM, and Ogg

Media Tags

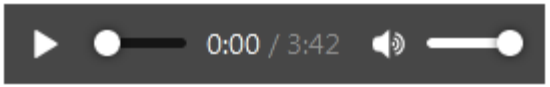
HTML5 offers new elements for media content:

Tag	Description
<audio>	Defines sound content
<video>	Defines a video or movie
<source>	Defines multiple media resources for <video> and <audio>
<embed>	Defines a container for an external application or interactive content (a plug-in)
<track>	Defines text tracks for <video> and <audio>

Media Tags - <audio>

- The HTML <audio> element is used to play an audio file on a web page.
- The controls attribute adds audio controls, like play, pause, and volume.

```
<audio controls>
<source src="sample.mp3" type="audio/mp3">
</audio>
```

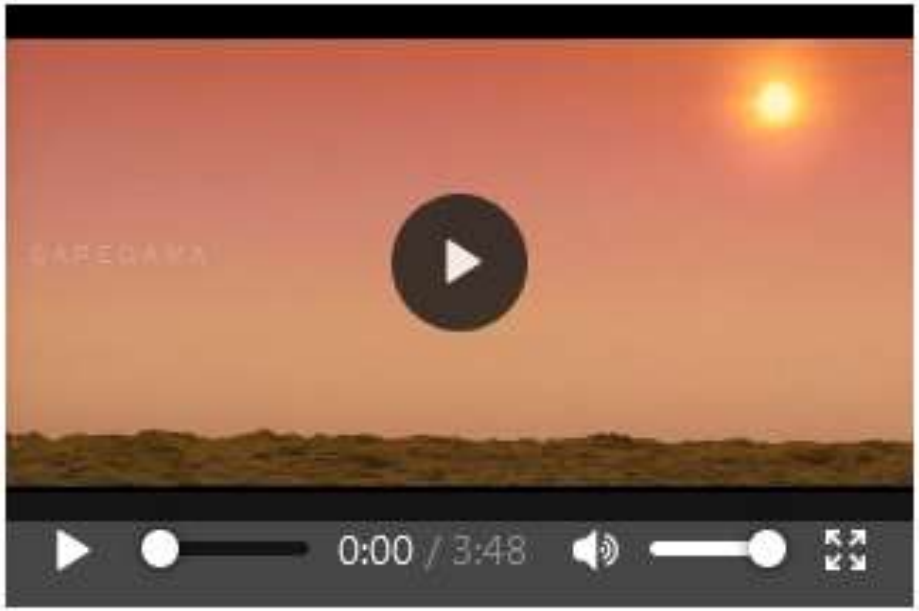


Media Tags - <video>

- The HTML <video> element is used to play an video file on a web page.
- The controls attribute adds video controls, like play, pause, and volume.
- Autoplay – (does not supported in all browser)

```
<video width="320" height="240" controls>
  <source src="movie.mp4" type="video/mp4">
</video>
```

Video Tag- example



Special characters in HTML

Symbol	Description	Character entity reference
HTML5 character entities		
&	ampersand	`&`
'	apostrophe	`&apos;`
>	greater-than	`>`
<	less-than	`<`
"	quote	`&quot;`
Other common character entities		
non-breaking space		` `
©	copyright	`&copy;`
—	em dash	`&mdash;`
–	en dash	`&ndash;`
¼	fraction 1/4	`&frac14;`
½	fraction 1/2	`&frac12;`
¾	fraction 3/4	`&frac34;`
…	horizontal ellipsis	`&hellip;`
®	registered trademark	`&reg;`
§	section	`&sect;`
™	trademark	`&trade;`

Special characters in HTML

```
<body>
    <p>&amp;</p>
    <p>&gt;</p>
    <p>&lt;</p>
    <p>&quot;</p>
    <p>&apos;</P>
    <p>&frac14;</p>
    <p>&copy;All rights reserved</p>
    <p><del>Strike through the line</del></p>
    <p>1<sup>2</p>
    <p>&frac34;</P>
    <p>100&frasl;30</p>
    <p>3<sub>4</p>
</body>
```

&

>

<

"

'

¼

©All rights reserved

~~Strike through the line~~

1^2

¾

100⁄30

3_4

HTML Quotations and Citation Elements

- <q></q>
  - Inserts quotation marks "…."
- <abbr></abbr>
  - Abbreviation title can be given - gives useful information to browsers.
- <address></ address>
  - Contact information - displayed *italic,* adds *line break*
- <cite></ cite>
  - To define the title of creative work- usually italics
- <bdo></bdo>
  - Bi-directional override.
  - Used to override the current direction.

Form

- The <form> tag is used to create an HTML form for user input.
- The <form> element can contain one or more of the following form elements:
- <input>
- <label>
- <textarea>
- <button>
- <select>

Syntax:

<form> Form Content... </form>

label

- The <label> tag defines a label for all elements
- The for attribute of <label> must be equal to the id attribute of the related element to bind them together. A label can also be bound to an element by placing the element inside the <label> element.

```
<form action="/action_page.php">
<label for="name">NAME</label>
<input type="text" name="name" size="25" maxlength="5"><br>
</form>
```

Input tag

- The <input> tag specifies an input field where the user can enter data

Syntax

<input type = "value" .... />

Attributes:

Value : The initial value of the control used for all input tag

Type: Type of form control

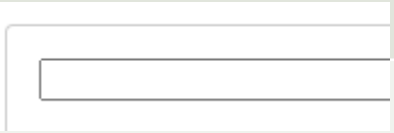
Name: Name of the form control. Submitted with the form as part of a name/value pair

Minlength: Minimum length (number of characters) of value. Used in text, search, email, password

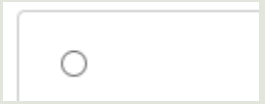
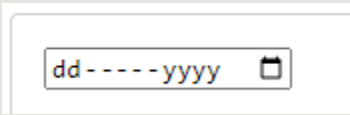
Size: Size of the control -Used in text, search, email, password

Checked: Whether the command or control is checked -Used in checkbox, radio

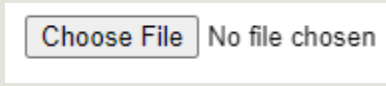
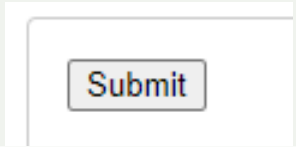
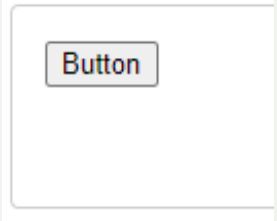
Input tag types

Type	Description	Basic Examples
text	The default value. A single-line text field. Line-breaks are automatically removed from the input value.	
number	A control for entering a number. Displays a spinner and adds default validation. Displays a numeric keypad in some devices with dynamic keypads.	
email	A field for editing an email address. Looks like a text input, but has validation parameters and relevant keyboard in supporting browsers and devices with dynamic keyboards.	
password	A single-line text field whose value is obscured. Will alert user if site is not secure.	

Input tag types

Type	Description	Basic Examples
radio	A radio button, allowing a single value to be selected out of multiple choices with the same name value.	
checkbox	A check box allowing single values to be selected/deselected.	
date	A control for entering a date (year, month, and day, with no time). Opens a date picker or numeric wheels for year, month, day when active in supporting browsers.	
search	A single-line text field for entering search strings. Line-breaks are automatically removed from the input value. May include a delete icon in supporting browsers that can be used to clear the field. Displays a search icon instead of enter key on some devices with dynamic keypads.	

Input tag types

Type	Description	Basic Examples
file	A control that lets the user select a file. Use the accept attribute to define the types of files that the control can select.	
submit	A button that submits the form.	
reset	A button that resets the contents of the form to default values. Not recommended.	
button	A push button with no default behavior displaying the value of the value attribute, empty by default.	

ıple

```
<html>
<head>
<title>Feedback</title>
</head>
<body>
<form>
<!--search tag-->
search<input type="search" name="search"><br><br>
<!--label tag-->
<label for="name">NAME</label>
<!--text-->
<input type="text" name="name" size="25" maxlength="5"><br>
<!--radio button-->
<input type="radio" name="gender" checked >male
<input type="radio" name="gender" > female <br><br>
<!--checkbox-->
<input type="checkbox" name="hobbies" >gardening <br>
<input type="checkbox" name="hobbies" >singing<br>
<input type="checkbox" name="hobbies" >dancing<br>
<input type="checkbox" name="hobbies" >playing<br><br>
<!--file-->
upload file<input type="file" name="idcard" accept="img/text"><br>
<br>
<input type="submit" name="ok" value="ok">
<input type="reset" name="reset" >
<input type="button" name="button" value="click" ><br><br>
<!--button-->
<button type="button">Click Me!</button>
</form>
</body> </html>
```

output

search

NAME

male female

gardening
singing
dancing
playing

upload file Choose File No file chosen

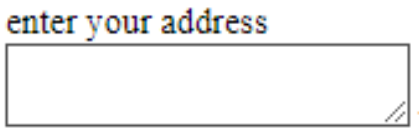
ok Reset click

Click Me!

Text area

- The <textarea> tag defines a multi-line text input control.
- The <textarea> element is often used in a form, to collect user inputs like comments or reviews.
- The size of a text area is specified by the cols and rows attributes
- The name attribute is needed to reference the form data after the form is submitted

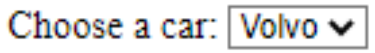
```
<!--textarea-->
enter your address<br>
<textarea name="address" row="5" column="50">
</textarea>
```



select

- The <select> element is used to create a drop-down list.
- The <select> element is most often used in a form, to collect user input.
- The name attribute is needed to reference the form data after the form is submitted
- The <option> tags inside the <select> element define the available options in the drop-down list.

```
<label for="cars">Choose a car:</label>
<select name="cars" id="cars">
        <option value="volvo">Volvo</option>
    <option value="saab">Saab</option>
</select>
```



button

- The <button> tag defines a clickable button.
- Inside a <button> element you can put text (and tags like <i>, <b>, , <br>, <img>, etc.). That is not possible with a button created with the <input> element!
- Always specify the type attribute for a <button> element, to tell browsers what type of button it is.
- Example

```
<button type="button">Click Me!</button>
```

Container <Div> & <Span> tag

- HTML Block (DIV) and Inline (SPAN) Elements
- <DIV>
  - defines a division or a section in an HTML document
  - used as a container for HTML elements - which is then styled with CSS or manipulated with JavaScript
  - easily styled by using the class or id attribute
  - example

```
<div>
<p>Hello! This is a paragraph.</p>
</div>
```

<Span>

- an inline container used to mark up a part of a text, or a part of a document
- easily styled by CSS or manipulated with JavaScript using the class or id attribute
- much like the element, but is a block-level element and is an inline element.

Example

```
<p>this is a <span>span tag span></</p>
```

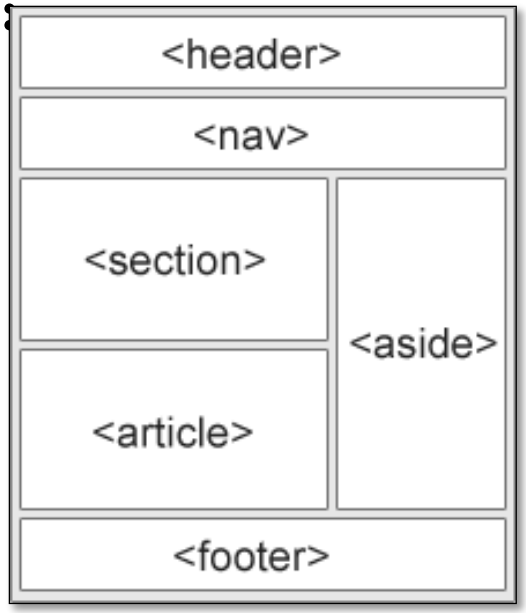
Semantic elements

- Semantic elements have meaningful names which tells about type of content. For example header, footer, table, … etc.
- Examples of **non-semantic** elements:

 and - Tells nothing about its content.

- Examples of **semantic** elements:

<form>, <table>, and <article> - Clearly defines its content.



Semantic tags

<header>

- The <header> element represents a container for introductory content or a set of navigational links. It may contain heading or topic of the page

<nav>

- The <nav> element defines a set of navigation links.

<section>

- It represents the section of the document.

<article>

The <article> element specifies independent, self-contained content. It may contain User comments, Product cards, Newspaper articles

Semantic tags

<main>

- This specifies the main page content and should be unique.

<aside>

- The <aside> element defines some content aside from the content it is placed in (like a sidebar).

<footer>

The <footer> element defines a footer for a document or section. It may contain authorship information

copyright information, contact information, sitemap etc

```html
<!DOCTYPE html>
<html>
<body>
<header>
<h2>header</h2>
    <h1>semantic tag </h1>
</header>
<h2>nav</h2>
<nav>
  <a href="/html/">HTML</a> |
  <a href="/css/">CSS</a> |
  <a href="/js/">JavaScript</a> |
</nav>
<section>
<h2>Section </h2>
<h3>Example of semantic tag</h3>
<p>each element is a container</p>
</section>
<article>
<h2>article</h2>
    <p>it doesnot reflect any change in web page</p>

</article>
<footer>
    <p>Footer </p>
    <p><a href="mailto:petter@example.com">hege@example.com</a></p>
</footer>
</body>
</html>
```

CASCADING STYLE SHEET

CSS

- **Html**

  Used for marking up information to be rendered in a browser.

- **CSS- Cascading Style Sheet**

  1. Specifies the *presentation of elements on a web page (e.g., fonts,* spacing, sizes, colors, positioning) *separately from the document's structure and content*

  2. CSS can be added to HTML documents in 3 ways

     a) Inline b)Embedded or internal c) External

Introduction

- CSS stands for Cascading Style Sheets
- Style sheet language used to describe the presentation of a document written in HTML or XML
- how HTML elements are to be displayed on screen, paper, or in other media
- Colors, fonts, alignment, borders, backgrounds, spacing, margins, etc…
- It can control the layout of multiple web pages all at once
- Advantage
  - Reusability
  - Separate the content and presentation

CSS vs. just HTML

- What can we do with CSS that we can't do with HTML?
  - Control of backgrounds.
  - Set font size to the exact height you want.
  - Highlight words, entire paragraphs, headings or even individual letters with background colors.
  - Overlap words and make logo-type headers without making images.
  - Precise positioning.
  - Linked style sheets to control the look of a whole website from one single location.

HTML & CSS Code

- To set red color as the background color of a webpage

HTML

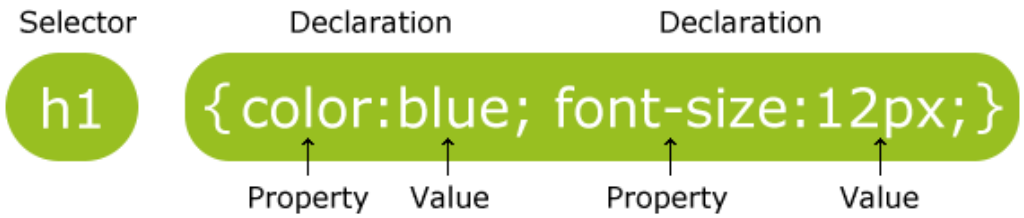
```
<body bgcolor="#FF0000">
```

CSS

```
body {background-color: #FF0000;}
```

How to write CSS?

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



- Selector
  - HTML element tags (examples: p, h2, body, img, table)
  - class and ID names
- Property (examples: color, font-size)
- Value (examples: red, 14pt)

```
selector {property: value;}
```

What HTML tag(s) does the property apply to (e.g. "body")

The property could for example be the background color ("background-color")

The value of the property background color could be red for example ("#FF0000")

Basic Structure of a Style

- Each definition contains:
  - A property
  - A colon
  - A value
  - A semicolon to separate two or more values
  - Can include one or more values

- h1 {font-size:12pt; color:red}

Example:

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

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

Type of CSS

- **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 of using CSS is using external style sheet.

Inline Style sheet

Used to apply a unique style to a single HTML element

```
<html>
 <head>
    <title>Inline Style Sheet</title>
 </head>

 <body>
    <p>Text with no style</p>
    <p style = "font-size:20pt;font-family: Times New Roman;
    color: green;">Text with style</p>
</body>
</html>
```

Text with no style

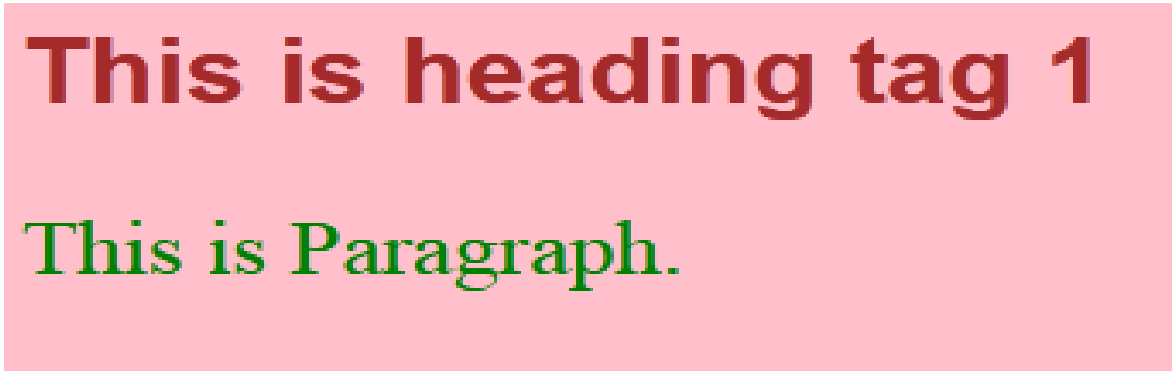
Text with style

Embedded/ Internal Style sheet

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

```
<html>
<head>
 <title>Embedded Style Sheet</title>
   <style type = "text/css">
        body {background-color:pink;}
        h1{font-family:Arial; color:brown;}
        p{font-size:20pt; color:green;}
   </style>
</head>

<body>
   <h1 >This is heading tag 1</h1>
   <p>This is Paragraph.</p>
</body>
</html>
```

Embedded/ Internal Style sheet



External Style Sheet

- Used to define the style for entire website
- The style sheet is written in separate file stored with .css extension
- To use an external style sheet, add a link to it in the <head> section of each HTML page

Style.css

```
body {background-color:grey;}
h1{font-family:Arial; color:darkblue;}
p{font-size:30pt; color:green;}
```

External Style Sheet

External.html

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

<body>
    <h1 >This is heading</h1>
    <p>This is Paragraph</p>

</body>
</html>
```

External Style Sheet

<link> rel Attribute

Specifies the relationship between the current document and the linked document

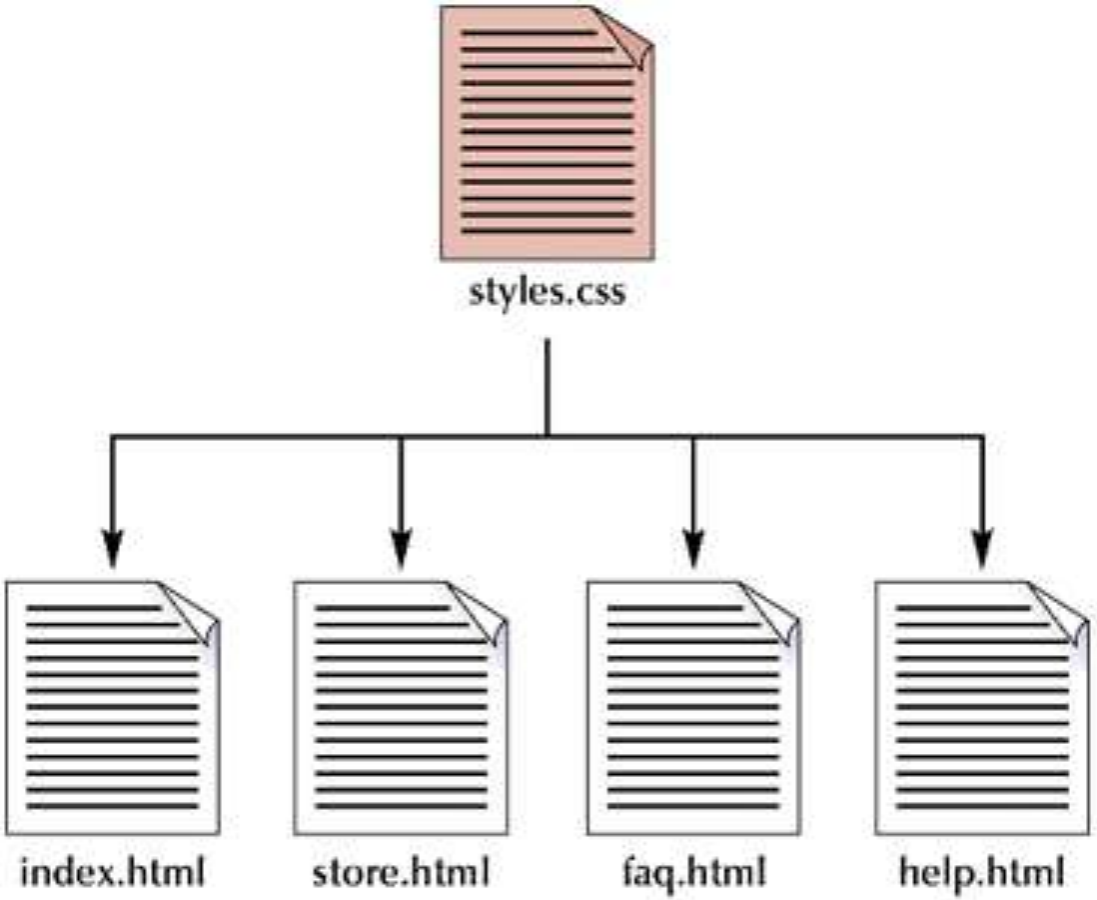
<link rel =“style sheet”>

Refers the imported document is CSS style sheet

<link> type Attribute

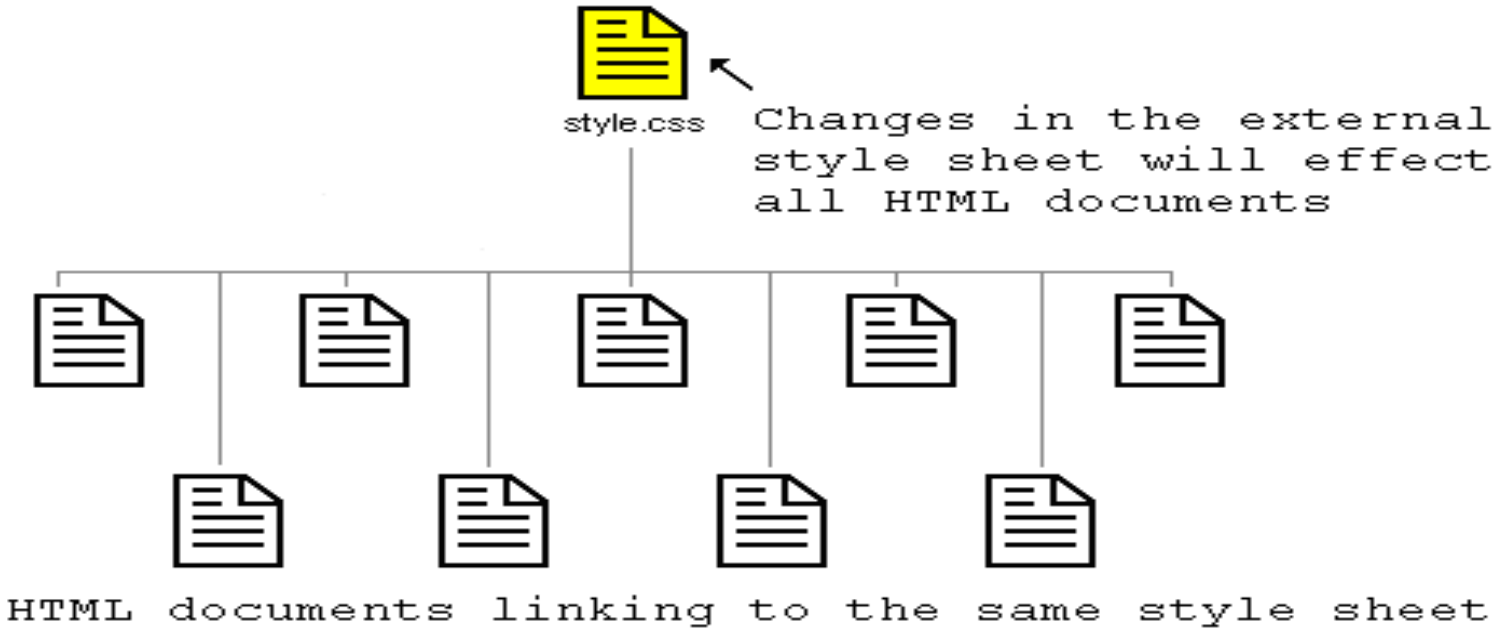
- Specifies the Internet media type of <style> tag
- It identifies the content between the <style> and </style> tags.
- The default value is "text/css", which indicates that the content is CSS.

Applying a single style sheet to multiple documents



Advantages of External Style Sheet

- Saves Time
- can change the look of an entire website by changing just one file



CSS Inheritance: - which style prevails when several are present?

- Inline (local) overrides internal & external styles
- Internal style sheet overrides external styles

CSS Selectors

- CSS selectors are used to "find" (or select) HTML elements based on their element name, id, class, attribute, and more
- Types
  - Simple selectors (select elements based on name, id, class)
    - Element name selector
    - Element id selector
    - Element class selector
    - Universal selector
    - Grouping Selectors
  - Pseudo-class selectors (select elements based on a certain state)
    - :hover

CSS Simple Selectors

Selector	Example	Example description
.class	.intro	Selects all elements with class="intro"
#id	#firstname	Selects the element with id="firstname"
*	*	Selects all elements
element	p	Selects all <p> elements
element,element,..	div, p	Selects all elements and all <p> elements

CSS Universal Selector - Example

```
<!DOCTYPE html>
<html>
<head>
<style>
* {
  text-align: center;
  color: blue;
}
</style>
</head>
<body>

<h1>Hello world!</h1>

<p>This is an example of universal selector </p>
<h1>Hello!</h1>
<i>Good Going!</i>

</body>
</html>
```

Universal selector - applies to all the elements in the page

Hello world!

This is an example of universal selector

Hello!

Good Going!

CSS Selectors - Example

```
<!DOCTYPE html>
<html>
<head>
<style>
p {   text-align: center;   color: red;   }

#text {    text-align: left;   color: blue; }

.styl {    text-align: right;   color: green; }

h1, em, b {  background-color: lightblue; color: green;}
</style>
</head>

<body>
<p>This is an example for simple element selector</p>

<p id="text">This is an example for simple id selector</p>

<p class="styl">This is an example for simple class selector</p>

<h1>This is an example for Grouping selector </h1>

<em>This is an example for Grouping selector </em>

<b>This is an example for Grouping selector </b>
</body>
</html>
```

element selector

id selector

class selector

grouped selector

This is an example for simple element selector

This is an example for simple id selector

This is an example for simple class selector

This is an example for Grouping selector

This is an example for Grouping selector **This is an example for Grouping selector**

Text properties

Color

- The **color** property is used to set the color of a text. The color is specified by:
- a color name - "red"
- a HEX value - "#ff0000"
- an RGB value - "rgb(255,0,0)“

Example:

```
h1 {
  color: green;
}
```

text-align :Specifies the horizontal alignment of text

- text-align : left | center | right | justify

Example:

```
h1 {
  text-align: center;
}
```

Text properties

text-transform:

This property controls the capitalization of text Specifies the kind of text decoration to be used (underline, overline, etc.)

text-transform: capitalize|uppercase|lowercase

Example: h2 { text-transform: lowercase;

}

font

font-family:

.p1 {

font-family: "Times New Roman";

font-size: 30px;

}

Backgrounds

background-color:applies background color

Example: background-color: lightblue;

background-image: set the background image

background-image: “images/css.jpg”

background-postion: Sets the starting position of a background image

Value:

- left top |left center|left bottom|right top
- (*xpos ypos*)

background-position: 10% 40%;

background-position: 10px 40px;

Background-shorthand Property

- It does not matter if one of the property values is missing, as long as the other ones are in this order

```
body {
  background-color: #ffffff;
  background-image: url("img_tree.png");
  background-repeat: no-repeat;
  background-position: right top;
}
```

or

```
body {
  background: #ffffff url("img_tree.png") no-repeat right top;
}
```

<Div> & <Span> tag

- HTML Block (DIV) and Inline (SPAN) Elements
- <DIV>
  - defines a division or a section in an HTML document
  - used as a container for HTML elements - which is then styled with CSS or manipulated with JavaScript
  - easily styled by using the class or id attribute
- <Span>
  - an inline container used to mark up a part of a text, or a part of a document
  - easily styled by CSS or manipulated with JavaScript using the class or id attribute
  - much like the element, but is a block-level element and is an inline element.

HTML Block and Inline Elements

- Block Elements

<address>
<blockquote>

<fieldset>
<figcaption>
<figure>
<footer>
<form>
<h1>-<h6>
<header>
<hr>

<nav>

<p>
<pre>
<section>
<table>
<tfoot>

<video>

Inline Elements

<a>
<abbr>
<acronym>
<b>
<bdo>

<button>
<cite>
<code>
<dfn>

<i>
<img>
<sub>
<sup>
<input>
<kbd>
<label>
<map>
<object>
<output>
<q>
<script>
<select>
<small>

<textarea>
<time>

HTML Tag

```
<head>
<style>
.myDiv {
  background-color: lightblue;
  text-align: center;
}
</style>
</head>

<body>
    <div class="myDiv">
    <h2>This is a heading in a div element</h2>
    <p>This is some text in a div element.</p>
    </div>
    <p>This is some text outside the div element.</p>
</body>
```

This is a heading in a div element

This is some text in a div element.

This is some text outside the div element.

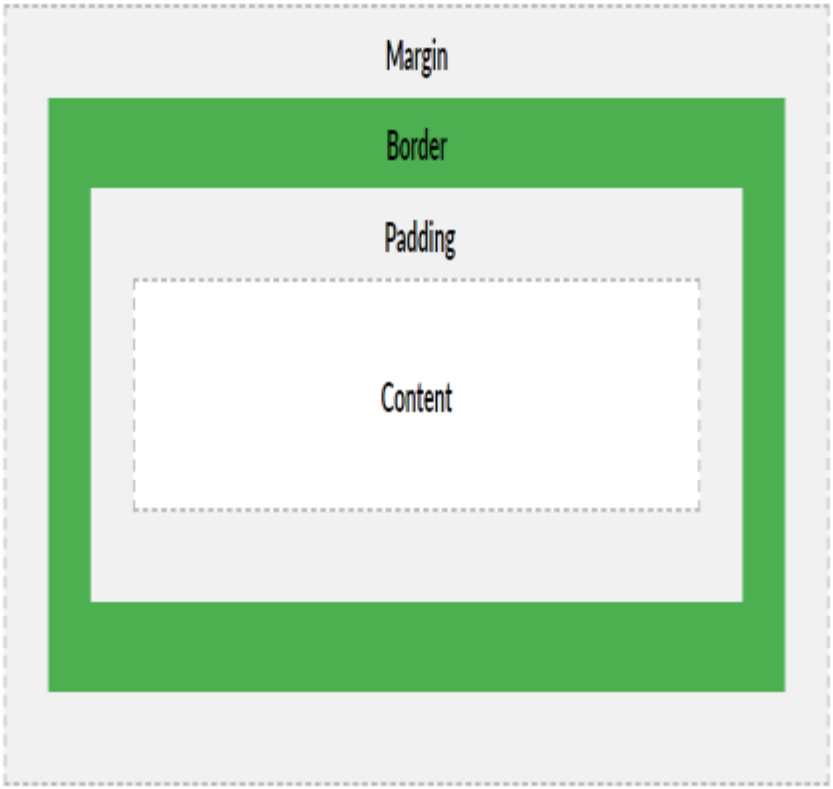
HTML Tag

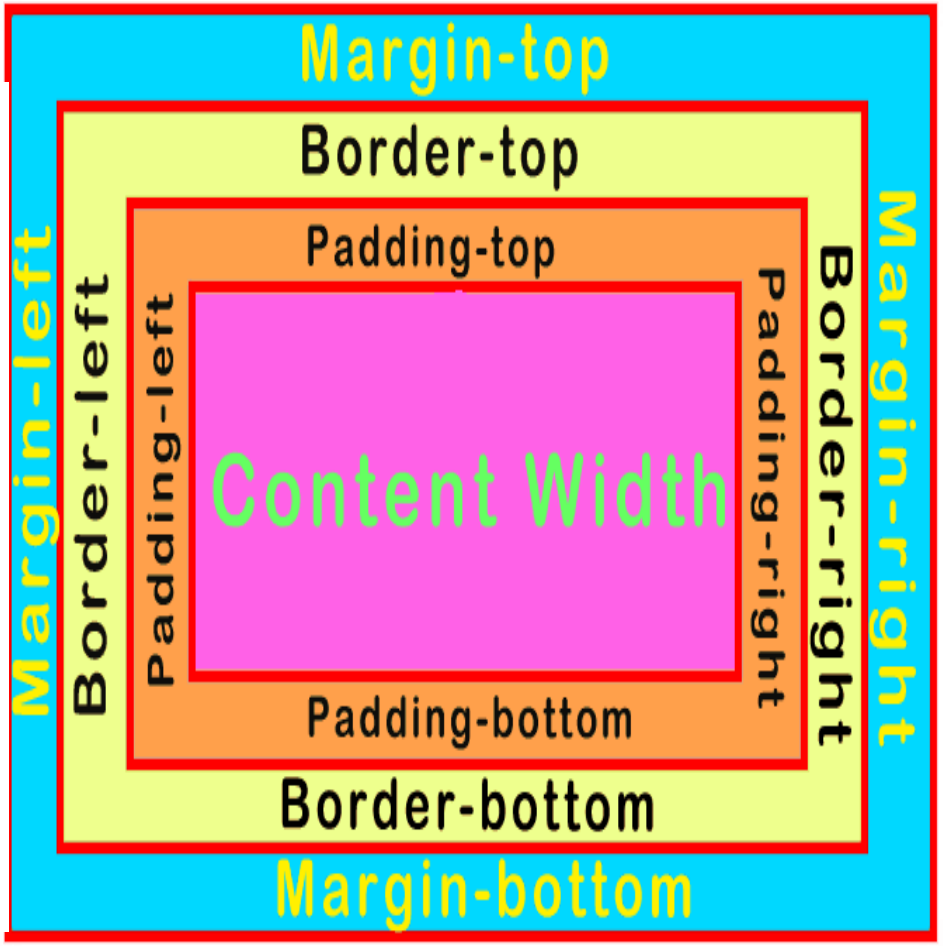
```
<!DOCTYPE html>
<html>
<body>

<h1>The span element</h1>

<p>The text is in <span style="color:blue;font-weight:bold">blue</span> color.
This text is in <span style="color:green;font-weight:bold">green</span>
color.</p>

</body>
</html>
```

CSS Box Model

- All HTML elements can be considered as boxes
- CSS box model is essentially a box that wraps around every HTML element.
- It consists of
  - Content - The content of the box, where text and images appear
  - Padding - Clears an area around the content. The padding is transparent
  - Border - A border that goes around the padding and content
  - Margin - Clears an area outside the border. The margin is transparent

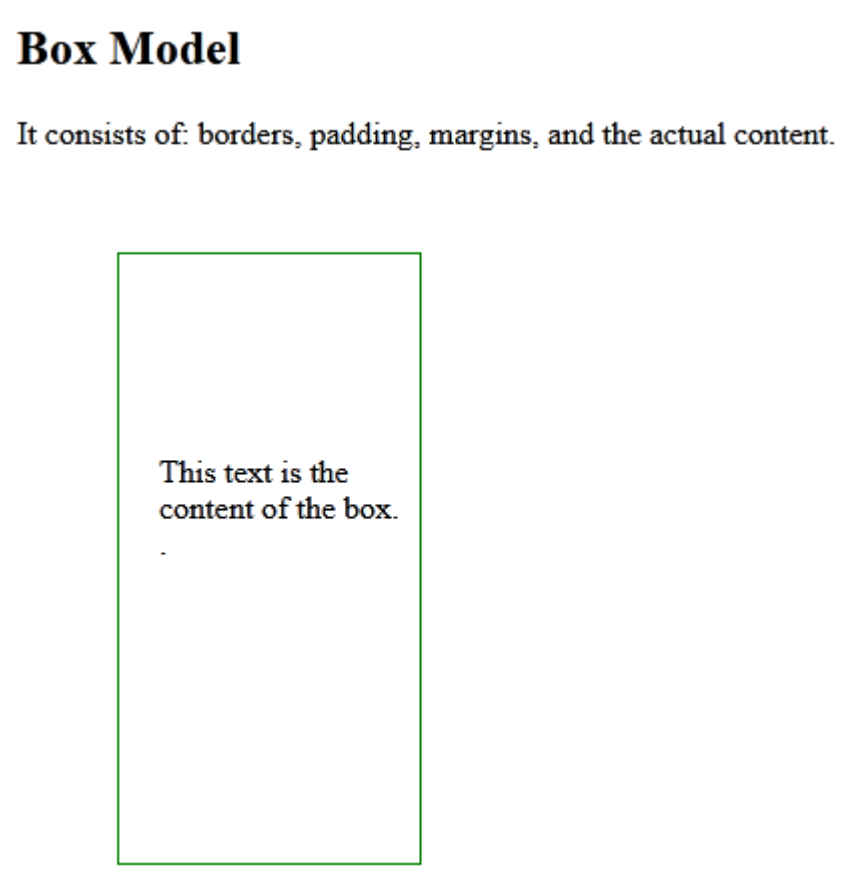
BOX MODEL


Margin
Border
Padding
Content


Margin-top
Border-top
Padding-top
Content Width
Padding-bottom
Border-bottom
Margin-bottom
Margin-left
Border-left
Padding-left
Padding-right
Border-right
Margin-right

BOX- Margin and Padding

```
<style>
div {

    padding-top:90px;
    padding-right:10px;
    padding-left:20px;
    padding-bottom:150px;



    margin-top: 50px;
    margin-right: 20px;
    margin-left: 50px;
    margin-right: 50px;
}
```



MARGIN PROPERTY

CSS `margin` properties are used to create space around elements, outside of any defined borders.

```
margin:10px
margin-top:5px
margin-right:10px
margin-bottom:10px
margin-left:10px
```

PADDING PROPERTY

Padding properties are used to generate space around contents

Shorthand property

```
padding:  2px ;
padding-left::2px ;
padding-right:2px ;
padding-bottom:2px;
padding-top:2px ;
```

BORDER PROPERTY

Shorthand property

border: 2px solid pink

border-left::2px solid pink
border-right:2px solid pink
border-bottom:2px solid pink
border-top:2px solid pink

The `border` property is a shorthand property

- `border-width`
- `border-style` (required)
- `border-color`

border-width:2px
border-style:solid
border-color:pink

border-left **border-left-width** **border-left-color** **border-left-style**	**border-right** **border-right-width** **border-right-color** **border-right-style**	**border-bottom:** **border-bottom-width** **border-bottom-color** **border-bottom-style**	**border-top** **border-top-width** **border-top-color** **border-top-style**

CSS Border Style

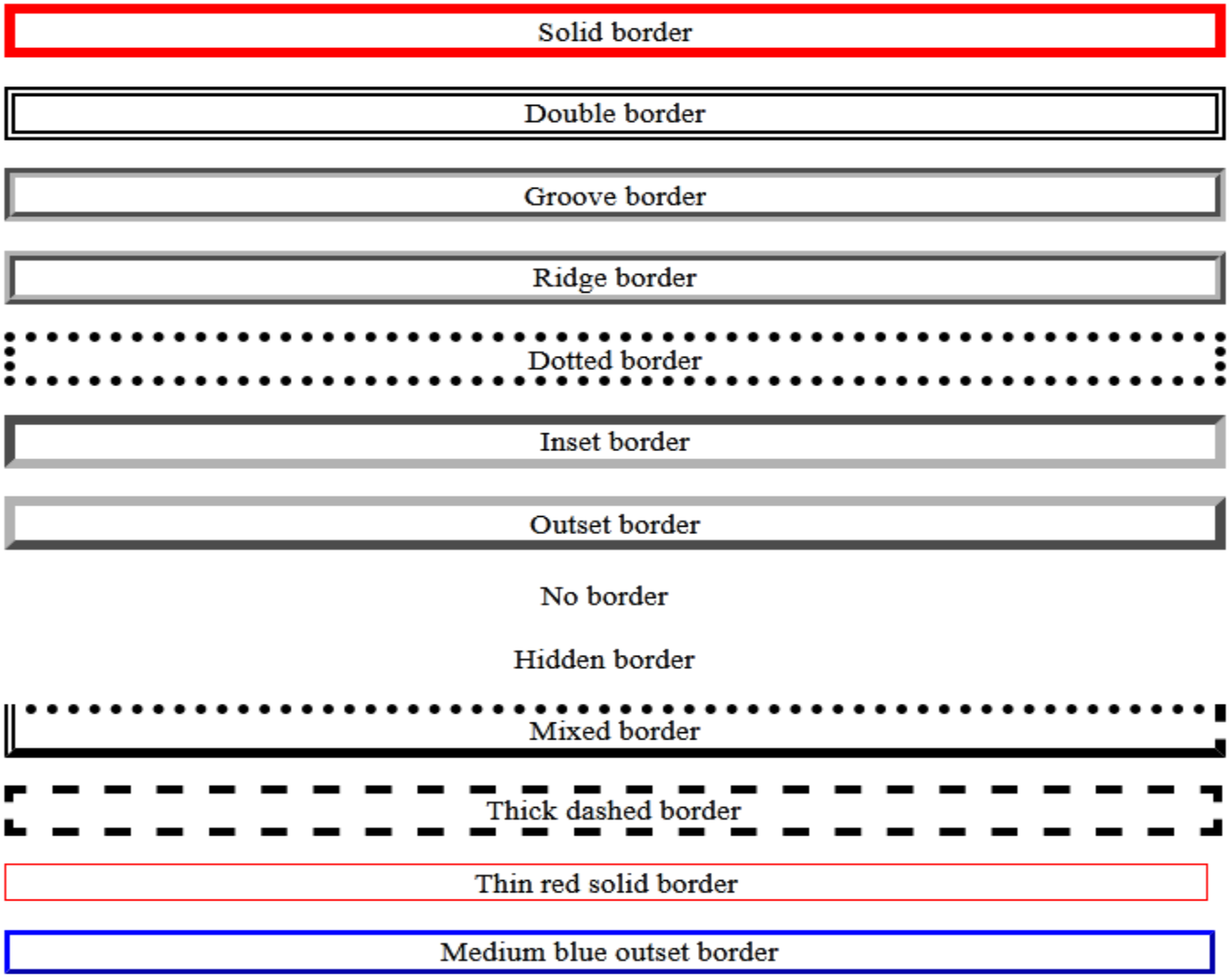
```
<style type = "text/css">
    div { text-align: center;width: 50%;
        border-width: 6px; }
    .thick { border-width: thick; }
    .medium { border-width: medium; }
    .thin { border-width: thin; }
    .solid { border-style: solid; }
    .double { border-style: double; }
    .groove { border-style: groove; }
    .ridge { border-style: ridge; }
    .dotted { border-style: dotted; }
    .inset { border-style: inset; }
    .outset { border-style: outset; }
    .dashed { border-style: dashed; }
    .none{border-style: none;}
    .hidden{border-style: hidden;}
    .mix {border-style: dotted dashed solid double;}
    .red { border-color: red; }
    .blue { border-color: blue; }
```

CSS Border Style

Combined class of solid and red

```
<body>
    <p><div class = "solid red">Solid border</div></p>
    <p><div class = "double">Double border</div></p>
   <p><div class = "groove">Groove border</div></p>
    <p><div class = "ridge">Ridge border</div></p>
    <p><div class = "dotted">Dotted border</div></p>
   <p><div class = "inset">Inset border</div></p>
   <p><div class = "outset">Outset border</div></p>
   <p><div class = "none">No border</div></p>
   <p><div class = "hidden">Hidden border</div></p>
   <p><div class = "mix">Mixed border</div></p>

   <p><div class = "thick dashed">Thick dashed border</div></p>
   <p><div class = "thin red solid">Thin red solid border</div></p>
   <p><div class = "medium blue outset">Medium blue outset border</div>
</body>
```

CSS Border Style

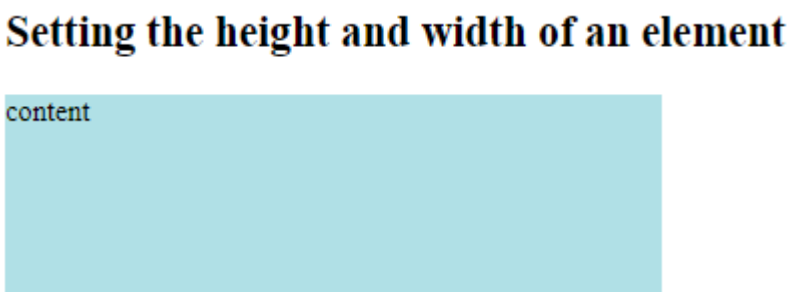


Height and width property

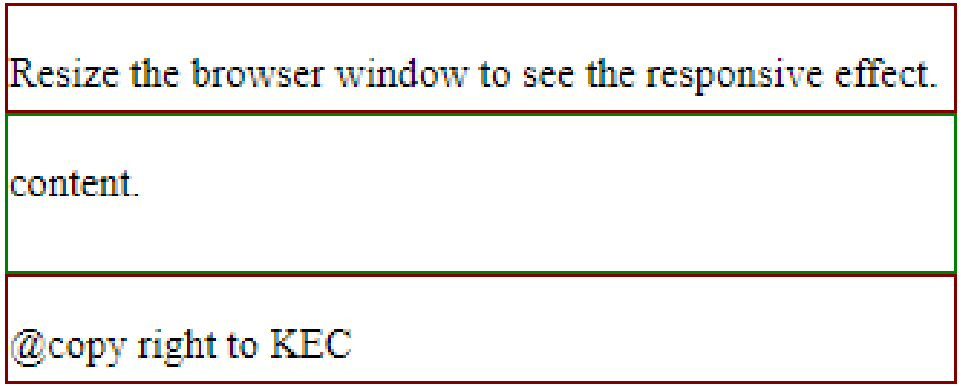
- The height and width properties are used to set the height and width of an element.
- It sets the height/width of the area inside the padding, border, and margin of the element.
- Value can be
  - Length-Defines the height/width in px, cm, etc.
  - % - Defines the height/width in percent of the containing block

Example

```
<!DOCTYPE html>
<html>
<head>
<style>
div {
  height: 150px;
  width: 50%;
  background-color: powderblue;
}
</style>
</head>
<body>

<h2>Setting the height and width of an element</h2>

<div>content</div>

</body>
</html>
```



```
<!DOCTYPE html>
<html >
<head>
<style>
.header, .footer{
   height:100px;
  border:1px solid maroon;
  width:100%;
}
.content{
   height:400px;
  border:1px solid green;
}
}
</style>
</head>

<body>
<header class="header">
<p>Resize the browser window to see the responsive effect.</p>
</header>
<section class="content">
<p>content.</p>
</section>
<footer class="footer">
<p>@copy right to KEC</p>
</footer>
</body>
</html>
```

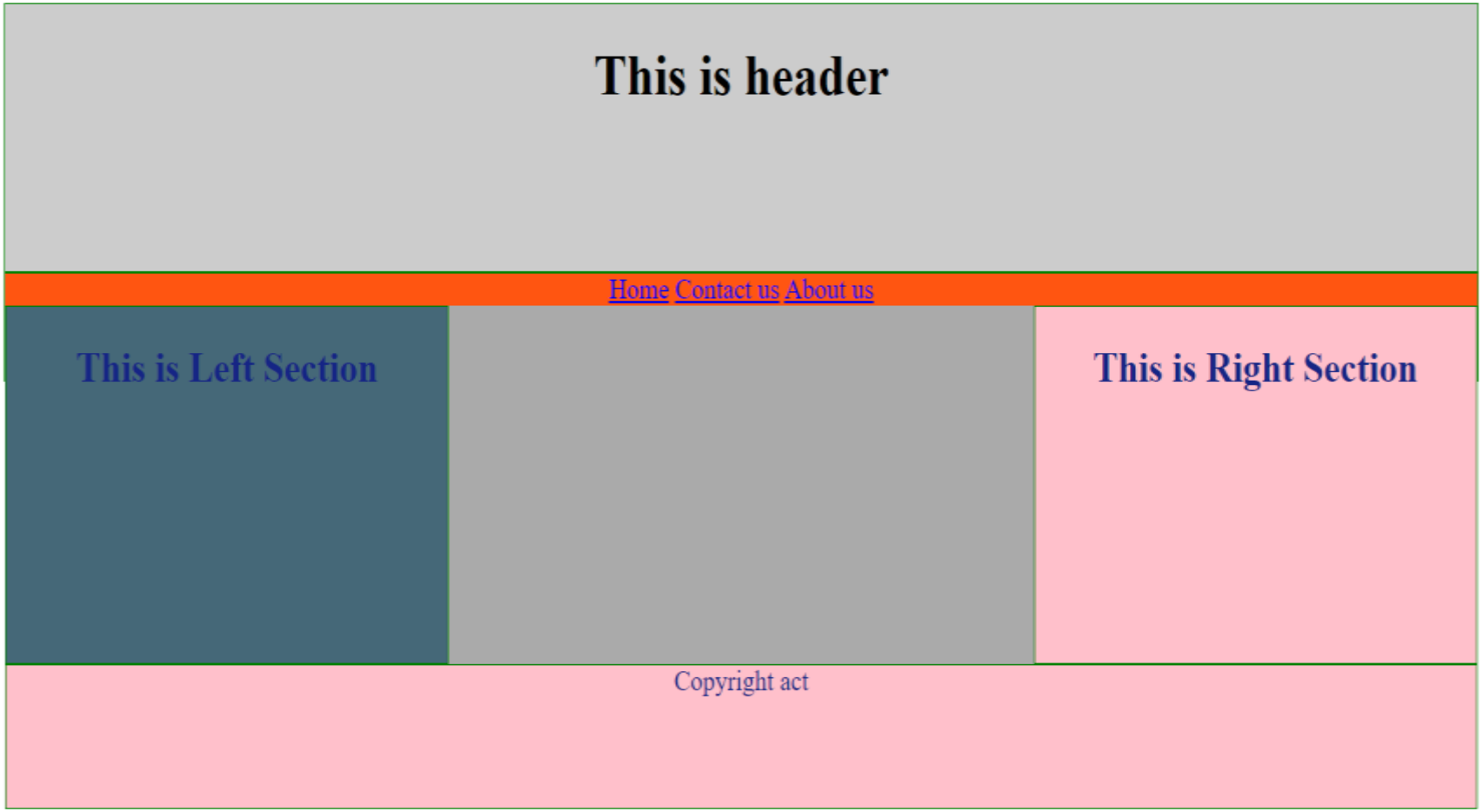


Additional example-

```
<html>
<style>
.wrap{
    width:960px;
    height:auto;
    border:10px red;
    margin: 0 auto;
}
.header{
    height:150px;
    background:#cccccc;
    text-align:center;
          border:1px solid green;
}
.nav{
    height:60px;
    background:#ff5511;
    color:#152585;
    text-align:center;
          border:1px solid green;
}
.container{
     background:#aaaaaa;
 }
.left{
     width:30%;
     height:200px;
     float:left;
     background:#456878;
      border:1px solid green;
 }
.right{
     width:30%;
     height:200px;
     float:right;
     background:pink;
          border:1px solid green;
 }
.footer{
     height:80px;
     background:pink;
     border:1px solid green;
}
.clear{
     clear:both;
}
</style>
```

```
<body>
   <div class="wrap">
       <div class="header"> <h1> This is header </h1></div>

       <div class="nav">
           <a href="#">Home</a>
           <a href="#">Contact us</a>
           <a href="#">About us</a>
       <div>

       <div class="container">
          <div class="left"> <h2> This is Left Section </div>
          <div class="Right"> <h2> This is Right Section </div>
          <div class="clear"> </div>
       </div>

       <div class="footer"> Copyright act</div>
    </div>
</body>
</html>
```

Output


This is header
Home Contact us About us
This is Left Section
This is Right Section
Copyright act