Web Technology

- The methods by which computers communicate with each other through the use of markup languages and multimedia packages is known as **web technology**.

Web Technologies

- HTML
- XHTML
- CSS
- XML
- JavaScript
- VBSCRIPT
- DOM
- DHTML
- AJAX
- E4X
- WMLScript
- SQL
- ASP
- ADO
- PHP
- .NET
- SMIL
- SVG
- FLASH
- Java applets
- Java servlets
- Java Server Page

Internet and WWW

- Inter-network and World Wide Web
- Interlinked hypertext documents accessed using HTTP Protocol
- Client - Server architecture

What is Internet?

- The Internet is essentially a global network of computing resources. You can think of the Internet as a physical collection of routers and circuits as a set of shared resources.

Internet-Based Services

- **Email** – A fast, easy, and inexpensive way to communicate with other Internet users around the world.
- **Telnet** – Allows a user to log into a remote computer as though it were a local system.
- **FTP** – Allows a user to transfer virtually every kind of file that can be stored on a computer from one Internet-connected computer to another.
- **UseNet news** – A distributed bulletin board that offers a combination news and discussion service on thousands of topics.
- **World Wide Web (WWW)** – A hypertext interface to Internet information resources.

What is WWW?

- WWW stands for **W**orld **W**ide **W**eb.
- A technical definition of the World Wide Web is – All the resources and users on the Internet that are using the Hypertext Transfer Protocol (HTTP).
- In simple terms, The World Wide Web is a way of exchanging information between computers on the Internet

What is HTTP?

- HTTP stands for **H**ypertext **T**ransfer **P**rotocol. This is the protocol being used to transfer hypertext documents that makes the World Wide Web possible.
- A standard web address such as **Google.com** is called a URL and here the prefix **http** indicates its protocol

What is URL?

- URL stands for **U**niform **R**esource **L**ocator, and is used to specify addresses on the World Wide Web.
- A URL will have the following format −
  - **protocol://hostname/other_information**
- The protocol is followed by a colon, two slashes, and then the domain name. The domain name is the computer on which the resource is located.

What is Website?

- which is a collection of various pages written in HTML markup language.
- Each page available on the website is called a *web page* and first page of any website is called *home page* for that site.

What is Web Server?

- Every Website sits on a computer known as a Web server.
- This server is always connected to the internet.
- Every Web server that is connected to the Internet is given a unique address. For example, 68.178.157.132
- When you register a Web address, also known as a domain name, such as tutorialspoint.com you have to specify the IP address of the Web server that will host the site.
- **Examples of Web Servers**
  - Apache Tomcat
  - IIS
  - Glassfish

What is Web Browser?

- Web Browsers are software installed on your PC. To access the Web you need a web browsers.
- **Examples of Web Browsers**
  - Netscape Navigator,
  - Microsoft Internet Explorer
  - Mozilla Firefox.

What is ISP?

- ISP stands for **I**nternet **S**ervice **P**rovider. They are the companies who provide you service in terms of internet connection to connect to the internet.
- You will buy space on a Web Server from any Internet Service Provider. This space will be used to host your Website.
- **Examples of ISP Providers**
  - Reliance
  - Airtel
  - BSNL

Technologies- List of Technologies

- **Client Side Technologies**
  - HTML, CSS, JavaScript, VBScript
  - XHTML, DHTML, WML, AJAX
  - FLASH
- **Server Side Technologies**
  - ASP, PHP, Perl, JSP
  - ASP.NET, Java
  - MySQL, SQL Server, Access
- **Some More Advanced Technologies**
  - XML, XSLT, RSS, Atom
  - X-Path, XQuery, WSDL
  - XML-DOM, RDF
  - Ruby on Rails, GRAIL Framework
  - REST, SOAP

How to choose a Technology?

- **Depends on:**
  - What is the type of content?
  - Who is your audience?
  - Who will modify your content?
  - What are your Future Plans?
  - Availability of technology?
  - Your previous experience?
  - Portability and Data sharing

What is HTML?

- HTML stands for **H**yper **T**ext **M**arkup **L**anguage.
- This is the language in which we write web pages for any Website.
- This is a subset of Standard Generalized Mark-Up Language (SGML) for electronic publishing, the specific standard used for the World Wide Web.

What is Hyperlink?

- A hyperlink or simply a link is a selectable element in an electronic document that serves as an access point to other electronic resources.
- Typically, you click the hyperlink to access the linked resource.
- Familiar hyperlinks include buttons, icons, image maps, and clickable text links.

Web - Domain Names & Extension Types

- A domain name is the part of your Internet address that comes after "www". For example, in Tutorialspoint.com the domain name is tutorialspoint.com.
- Some Domain Extensions are as mentioned below
  - **.com** – Stands for company/commercial, but it can be used for any website.
  - **.net** – Stands for network and is usually used for a network of sites.
  - **.org** – Stands for organization and is supposed to be for non-profit bodies.
  - **.us, .in** – They are based on your country names so that you can go for country specific domain extensions
  - **.biz** – A newer extension on the Internet and can be used to indicate that this site is purely related to business.

Website Designing steps

- Information Gathering
- Planning
- Design
- Development
- Testing and Delivery
- Maintenance

Website Planning

- Define your target audiences.
- Set goals and objectives.
- Create a sitemap.
- Request an estimate.
- Set a budget.
- Define roles and responsibilities.

- https://www.farreachinc.com/blog/far-reach/2014/08/14/6-steps-how-to-plan-a-successful-website-redesign

Website Design Issues

- Simplicity –less animations, texts, visuals
- Identity –web apps through design
- Consistency –e.g. uniform style, color, etc.
- Robustness–required function should not miss
- Navigability –navigation should be simple
- Visual appeal–look & feel of content
- Compatibility –compatible to all browsers, internet connection types, OS, etc.

Outline

Introduction to web technology, internet and www, Web site planning and design issues,

HTML: structure of html document,HTML elements: headings, paragraphs, line break, colors & fonts, links, frames, lists, tables, images and forms,

Difference between HTML and HTML5.

CSS: Introduction to Style Sheet,Inserting CSS in an HTML page, CSS selectors,

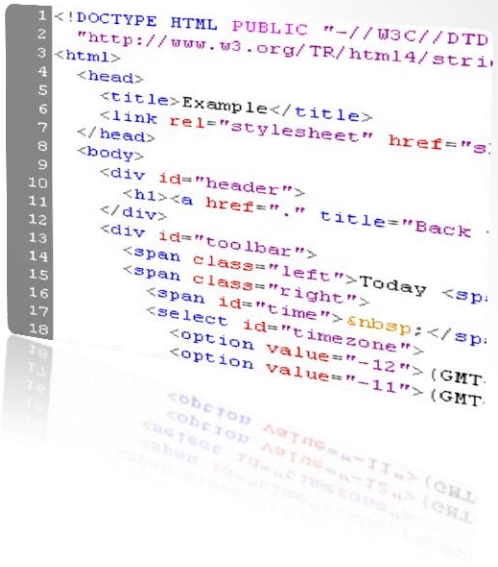
XML: Introduction to XML, XML key component,Transforming XML into XSLT,

DTD: Schema, elements, attributes,

Introduction to JSON.


HTML
HTML
HTML
HTML


HTML


<!DOCTYPE HTML PUBLIC "-//W3C//DTD
"http://www.w3.org/TR/html4/stri
<html>
<head>
<title>Example</title>
<link rel="stylesheet" href="s
</head>
<body>

<h1><a href="." title="Back

Today <sp

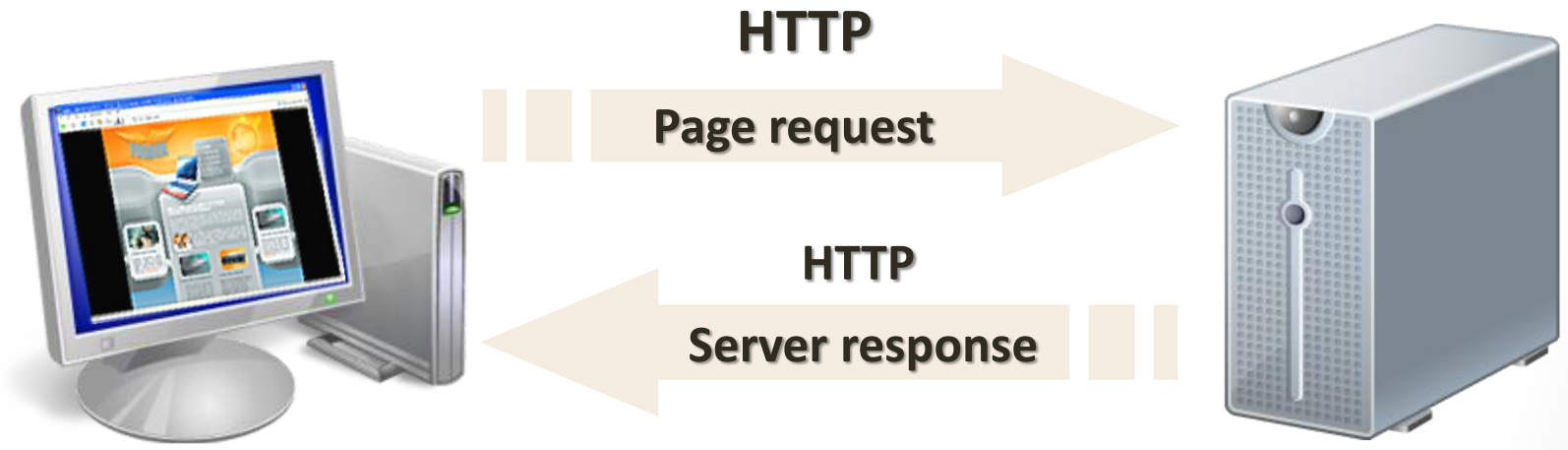
 </sp
<select id="timezone">
<option value="-12">(GMT
<option value="-11">(GMT

HTML Basics


HTML

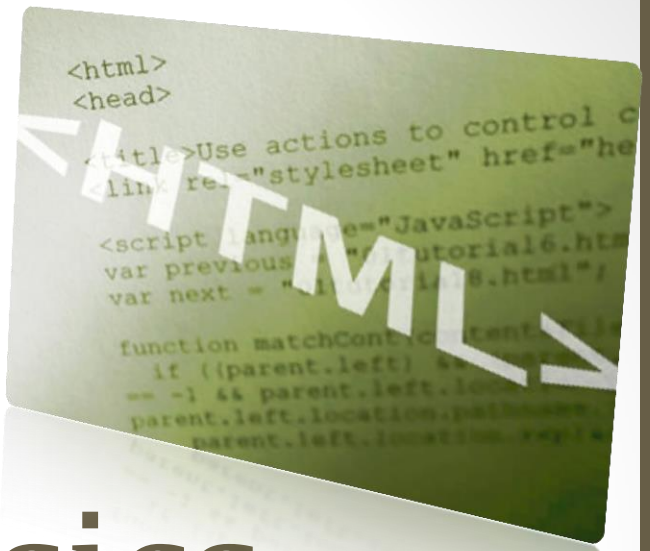
How the Web Works?

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



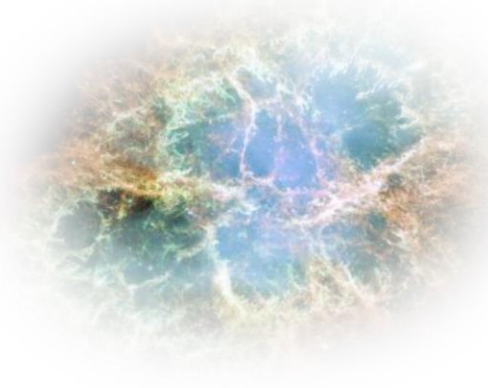
Client running a Web Browser

Server running Web Server Software (IIS, Apache, etc.)



HTML Basics

Text, Images, Tables, Forms



What is HTML?

- HTML is the standard markup language for creating Web pages.
- HTML stands for Hyper Text Markup Language
- HTML describes the structure of Web pages using markup
- HTML elements are the building blocks of HTML pages
- HTML elements are represented by tags
- Browsers do not display the HTML tags, but use them to render the content of the page

A Simple HTML Document

Example

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

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

</body>
</html>
```

Explanation

- The **<html>** element is the root element of an HTML page
- The **<head>** element contains meta information about the document
- The **<title>** element specifies a title for the document
- The **<body>** element contains the visible page content
- The **<h1>** element defines a large heading
- The **<p>** element defines a paragraph

HTML Tags

- HTML tags are element names surrounded by angle brackets:
- <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 Page Structure

```
<html>
  <head>
    <title>Page title</title>
  </head>
  <body>
    <h1>This is a heading</h1>
    <p>This is a paragraph.</p>
    <p>This is another paragraph.</p>
  </body>
</html>
```

HTML Versions

Version	Year
HTML	1991
HTML 2.0	1995
HTML 3.2	1997
HTML 4.01	1999
XHTML	2000
HTML5	2014

Creating HTML Page

Write HTML Using Notepad or TextEdit

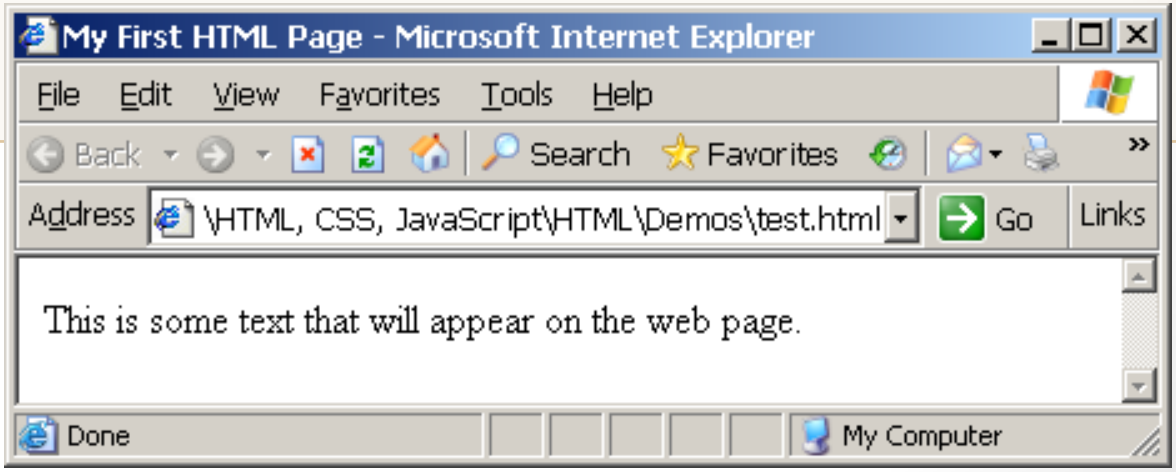
Save the file on your computer using .html or .htm extension and set the encoding to UTF-8

View the HTML Page in Your Browser

First HTML Page

test.html

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



First HTML Page: Tags

```
<!DOCTYPE HTML>
<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.

First HTML Page: Header

HTML header

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

First HTML Page: Body

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

HTML body

HTML Headings-

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

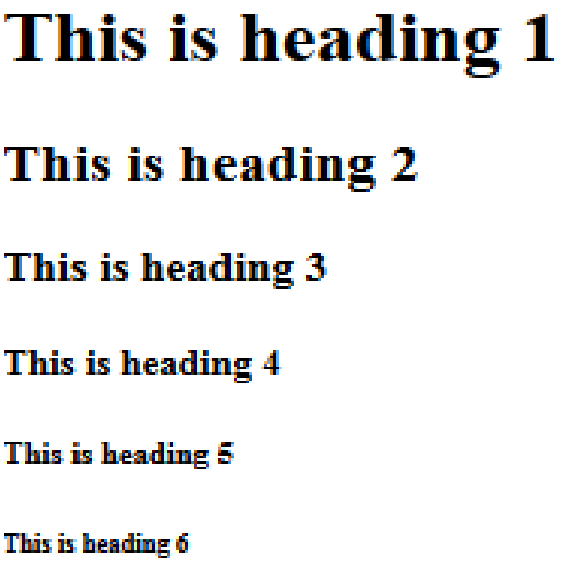
HTML Code

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

<h1>This is heading 1</h1>
<h2>This is heading 2</h2>
<h3>This is heading 3</h3>
<h4>This is heading 4</h4>
<h5>This is heading 5</h5>
<h6>This is heading 6</h6>

</body>
</html>
```

Output



Headings and Paragraphs

- Heading Tags (h1 – h6)

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

- Paragraph Tags

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

- Sections: `div` and `span`

```
<div style="background: skyblue;">
   This is a div</div>
```

Text Formatting

- Text formatting tags modify the text between the opening tag and the closing tag
  - Ex. `<b>Hello</b>` makes “Hello” bold

`<b></b>`	**bold**
`<i></i>`	*italicized*
`<u></u>`	underlined
`<sup></sup>`	Sample^{superscript}
`<sub></sub>`	Sample$_{subscript}$
`<strong></strong>`	**strong**
`<em></em>`	*emphasized*
`<pre></pre>`	`Preformatted text`
`<blockquote></blockquote>`	`Quoted text block`
`<del></del>`	Deleted text – ~~strike through~~

Text Formatting Example

HTML Code

```
<!DOCTYPE html>
<html>
<body>
<b>This text is bold.</b>
<br/>
<i>This text is Italic.</i>
<br/>
<strong>This text is strong</strong>
<br/>
This is <sup>superscripted</sup> text.
</body>
</html>
```

Output

This text is bold.

This text is Italic.

This text is strong

This is superscripted text.

Hyperlinks: <a> Tag

- Link to a document called `form.html` on the same server in the same directory:

```
<a href="form.html">Fill Our Form</a>
```

- Link to a document called `parent.html` on the same server in the parent directory:

```
<a href="../parent.html">Parent</a>
```

- Link to a document called `cat.html` on the same server in the subdirectory `stuff`:

```
<a href="stuff/cat.html">Catalog</a>
```

- Link to an external Web site:

```
<a href="http://www.devbg.org" target="_blank">BASD</a>
```

Links to the Same Document – Example

links-to-same-document.html

```
<h1>Table of Contents</h1>

<p><a href="#section1">Introduction</a><br />
<a href="#section2">Some background</A><br />
<a href="#section2.1">Project History</a><br />
...the rest of the table of contents...

<!-- The document text follows here -->

<h2 id="section1">Introduction</h2>
... Section 1 follows here ...
<h2 id="section2">Some background</h2>
... Section 2 follows here ...
<h3 id="section2.1">Project History</h3>
... Section 2.1 follows here ...
```

Images: <img> tag

- Inserting an image with `<img>` tag:

```
<img src="/img/basd-logo.png">
```

- Image attributes:

src	**Location of image file (relative or absolute)**
alt	**Substitute text for display (e.g. in text mode)**
height	**Number of pixels of the height**
width	**Number of pixels of the width**
border	**Size of border, 0 for no border**

- Example:

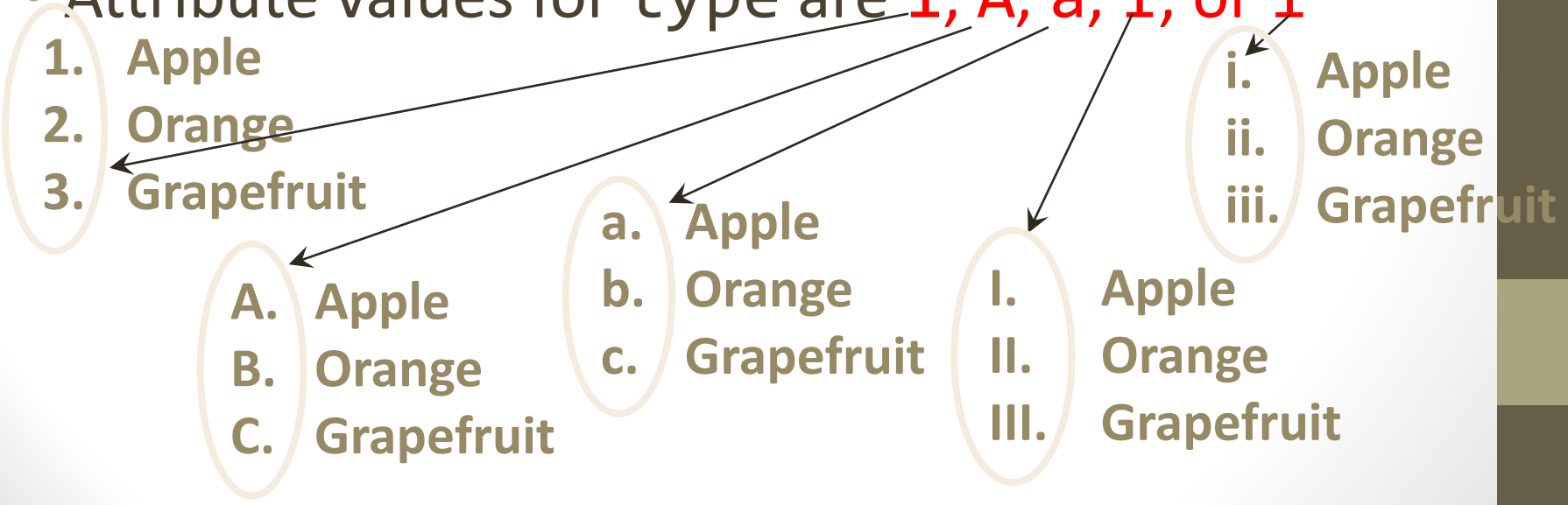
```
<img src="./php.png" alt="PHP Logo" />
```

Ordered Lists: <ol> Tag

- Create an Ordered List using :

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

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

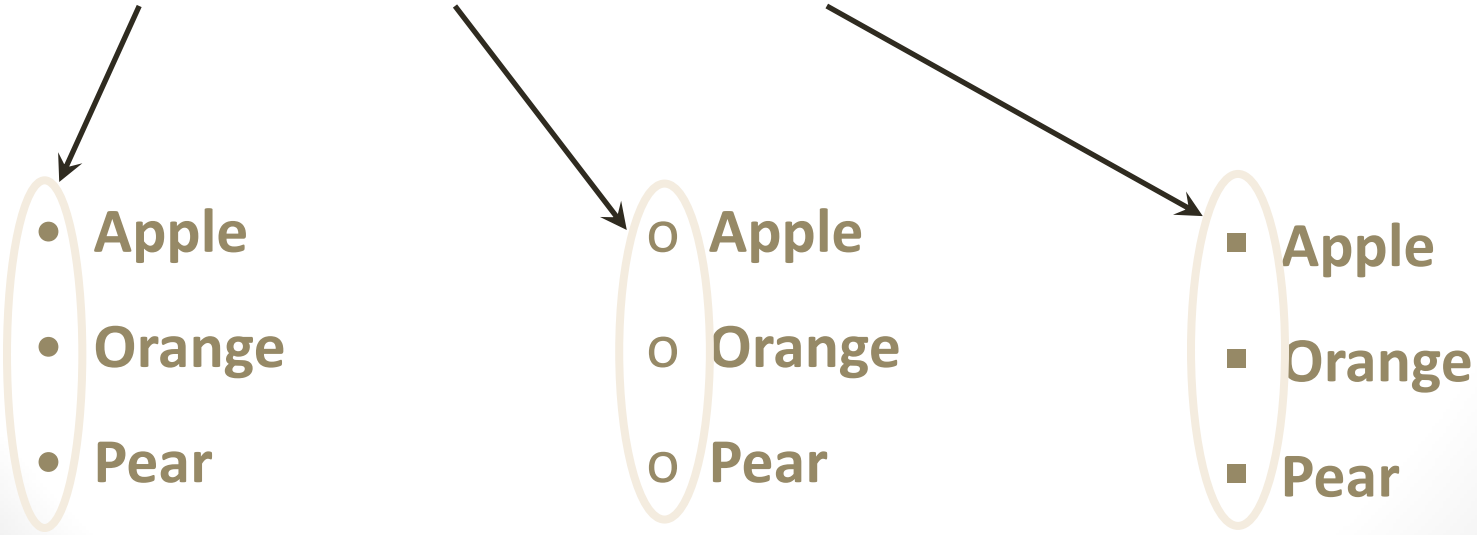


Unordered Lists: <ul> Tag

- Create an **U**nordered **L**ist using `<ul></ul>`:

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

- Attribute values for `type` are:
  - `disc`, `circle` or `square`



Definition lists: <dl> tag

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

```
<dl>
   <dt>HTML</dt>
   <dd>A markup language …</dd>
   <dt>CSS</dt>
   <dd>Language used to …</dd>
</dl>
```

  - Renders without bullets
  - Definition is indented

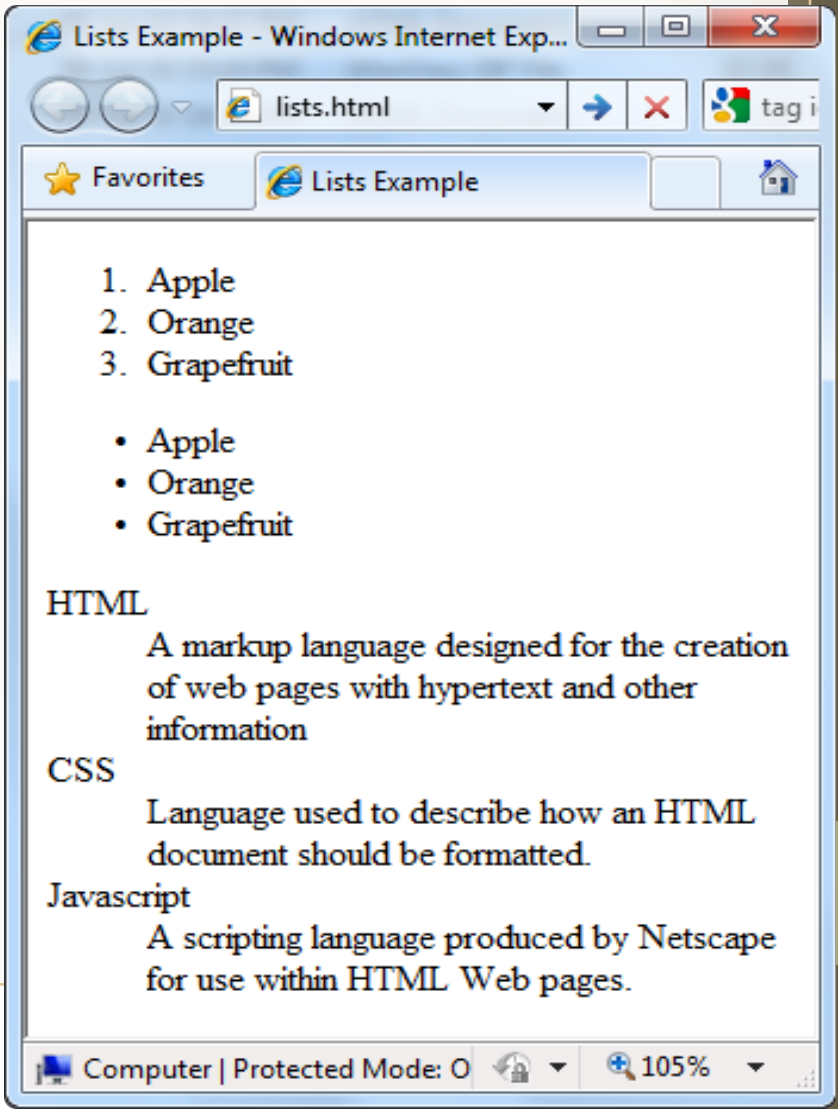
Lists – Example

lists.html

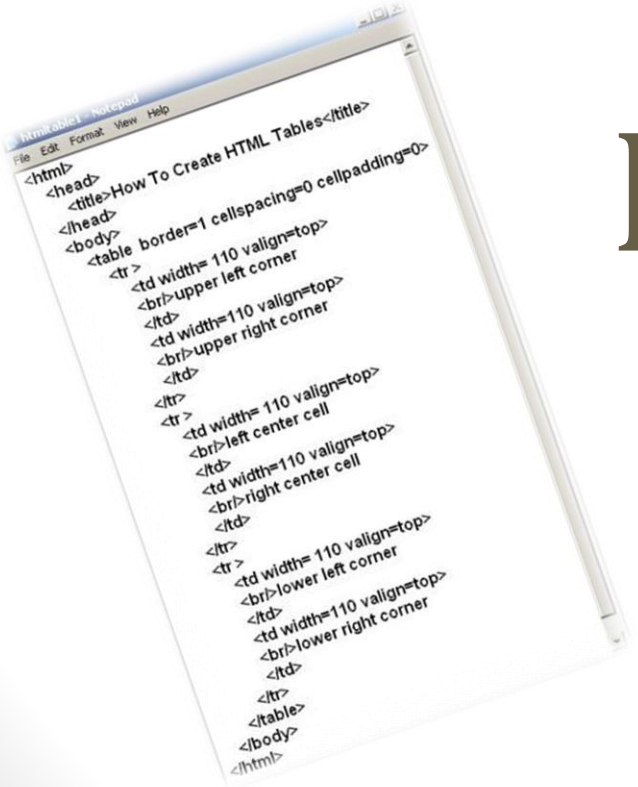
```
<ol type="1">
    <li>Apple</li>
    <li>Orange</li>
    <li>Grapefruit</li>
</ol>

<ul type="disc">
    <li>Apple</li>
    <li>Orange</li>
    <li>Grapefruit</li>
</ul>

<dl>
    <dt>HTML</dt>
    <dd>A markup lang…</dd>
</dl>
```



US time	European date (D/M/Y) & time	Y-M-D date & time	Dollar	Chinese money	IP addresses	Names	Numbers
	29/10/1965	83-03-24		YMB 4	98.176.35.80		26.32 E +03
Fri Mar 22 21:48:49 UTC+0200 1957		1967-08-22 06:07:16 PM		YMB -81.38	162.117.253.34	dyse chidi	
Thu, 14 Feb 2002 04:24:20 UTC	06/07/99 06:46:01 AM	81-02-04 09:09:54 AM		YMB -108.83	122.205.50.6	bochai dychai	-191.45E-05
Monday, May 30, 1994 4:47:31 PM	06/09/05 05:11:16 AM			YMB 33.16		dydy balie	-131.20E+01
09/28/2000	24/11/1957		$-38.77	YMB 112.42	15.192.151.209		
		97-08-13 00:01:33 AM	$14.5	YMB -1.75	99.93.147.150	dychai tonchai	-187.28E-05
Mon, 29 Oct 1979 00:44:03 UTC		87-10-16	$14.66	YMB 61.14		chite malie	- 125.19 E -03
Sat, 9 Jan 1982 05:45:06 UTC	04/06/68	74-10-20	$20.47		121.169.225.22	dyma bama	138.11E+02
04/05/75		2000-03-20	$68.84	YMB 88.19	239.133.227.68	made liete	195.44 E +03
Monday, July 15, 2002 1:05:02 AM	01/02/1961 09:40:16 AM		$97.9	YMB 44.28	223.66.228.116	mava sete	-107
this is footer	row	number	ONE!	adsf	adsf	adsf	adsf



HTML Tables

Title	Title	Title	Title	Title	Title
Data	Data	Data	Data	Data	Data
Data	Data	Data	Data	Data	Data
Data	Data	Data	Data	Data	Data
Data	Data	Data	Data	Data	Data
Data	Data	Data	Data	Data	Data

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 (2)

- Start and end of a table

```
<table> ... </table>
```

- Start and end of a row

```
<tr> ... </tr>
```

- Start and end of a cell in a row

```
<td> ... </td>
```

Simple HTML Tables – Example

```
<html>
<body>

<table width=100% border = "1" bgcolor = "yellow">
 <tr>
   <th>Firstname</th>
    <th>Lastname</th>
    <th>Age</th>
 </tr>
 <tr>
   <td>Jill</td>
   <td>Smith</td>
   <td>50</td>
 </tr>
 </table>

</body>
</html>
```

Firstname	Lastname	Age
Jill	Smith	50

Simple HTML Tables – Example

```
<html>
<body>

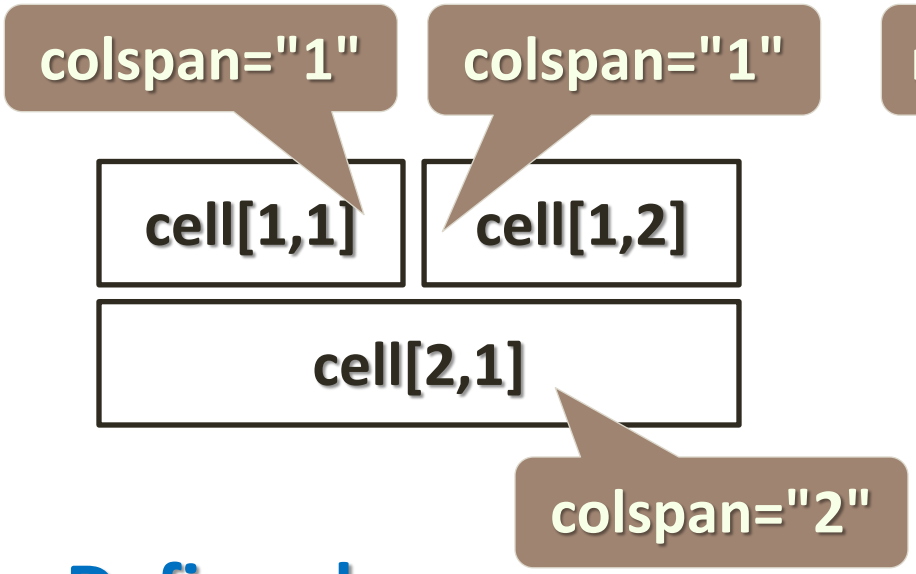
<table width=50% border = "1" >
 <tr>
   <th colspan=2>Firstname</th>
    <th>Age</th>
 </tr>
 <tr>
   <td>Jill</td>
   <td>Smith</td>
   <td>50</td>
 </tr>
 </table>

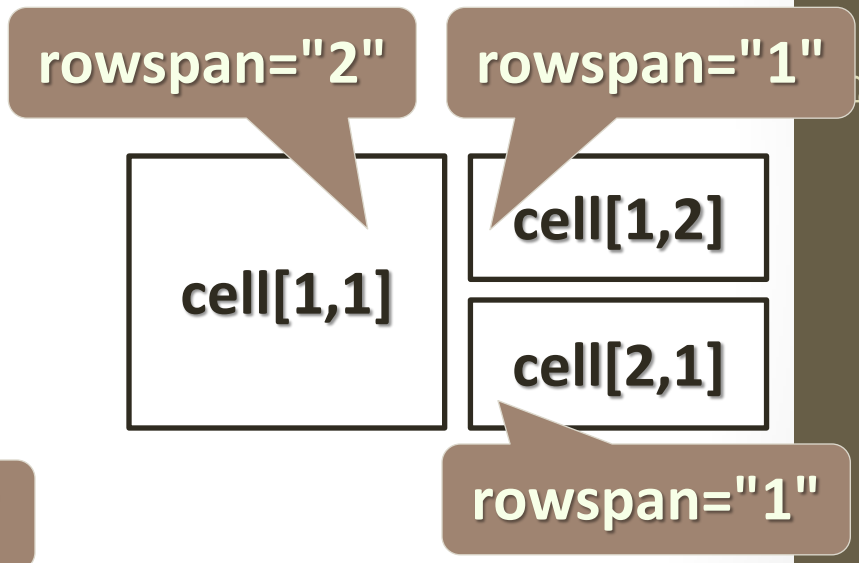
</body>
</html>
```

Firstname		Age
Jill	Smith	50

Column and Row Span

- Table cells have two important attributes:
  - **colspan**
  - **rowspan**





- **Defines how many columns the cell occupies**
- **Defines how many rows the cell occupies**

HTML Tables – colspan Example

```
<html>
<body>

<table width=50% border = "1" >
 <tr>
   <th colspan=2>Firstname</th>
    <th>Age</th>
 </tr>
 <tr>
   <td>Jill</td>
   <td>Smith</td>
   <td>50</td>
 </tr>
 </table>

</body>
</html>
```

Firstname		Age
Jill	Smith	50

HTML Tables – rowspan Example

```
<h2 align=center> Cell that spans two rows: </h2>
<table style="width:50%“ border=“1” align=center>
 <tr>
  <th>Name:</th>
  <td>Bill Gates</td>
 </tr>
 <tr>
  <th rowspan="2">Telephone:</th>
  <td>55577854</td>
 </tr>
 <tr>
  <td>55577855</td>
 </tr>
</table>

</body>
</html>
```

Cell that spans two rows:

Name:	Bill Gates
Telephone:	55577854
	55577855

HTML Tables – rowspan Example with <style>

```
<html>
<head>
<style>
th, td {
    padding: 5px;
    text-align: left;
}
</style>
</head>
<body>

<h2>Cell that spans two rows:</h2>
<table style="width:50%" border=1>
  <tr>
    <th>Name:</th>
    <td>Bill Gates</td>
  </tr>
  <tr>
    <th rowspan="2">Telephone:</th>
    <td>55577854</td>
  </tr>
  <tr>
    <td>55577855</td>
  </tr>
</table>

</body>
</html>
```

Cell that spans two rows:

Name:	Bill Gates
Telephone:	55577854
	55577855

Complete HTML Tables

- Table rows split into three semantic sections: header, body and footer
  - `<thead>` denotes table header and contains `<th>` elements, instead of `<td>` elements
  - `<tbody>` denotes collection of table rows that contain the very data
  - `<tfoot>` denotes table footer but comes BEFORE the `<tbody>` tag
  - `<colgroup>` and `<col>` define columns (most often used to set column widths)

HTML Forms

Entering User Data from a Web Page

HTML Form

- **The <form> Element**
- The HTML **<form>** element defines a form that is used to collect user input:
- **Syntax**

```
<form>
form elements
</form>
```

- Form elements are different types of input elements, like
  - text fields,
  - checkboxes,
  - radio buttons,
  - submit buttons, and more.

The <input> Element

- The **<input>** element is the most important form element.
- Here are some examples:
  - **Input Type Text**
  - **Input Type Password**
  - **Input Type Submit**
  - **Input Type Radio**
  - **Input Type Reset**
  - **Input Type Checkbox**
  - **Input Type Button …etc**

- **HTML5 Input Types**
- HTML5 added several new input types
  - color
  - date
  - datetime-local
  - email
  - month
  - number
  - range
  - search
  - tel
  - time
  - url
  - week

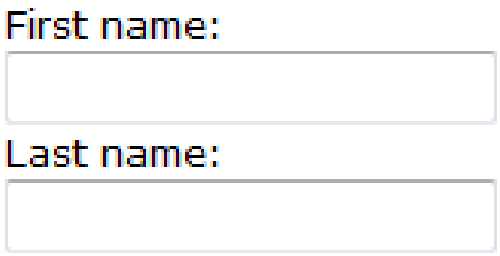
Input Type Text

- **<input type="text">** defines a **one-line text input field**:

- Example

```
<form>
  First name:<br>
  <input type="text" name="firstname"><br>
  Last name:<br>
  <input type="text" name="lastname">
</form>
```

- This is how the HTML code above will be displayed in a browser:



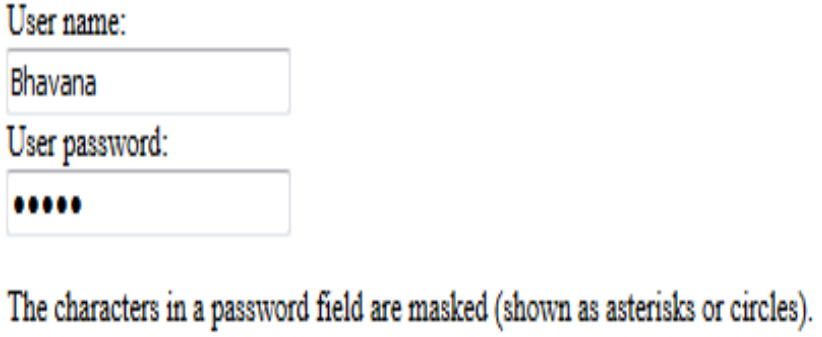
Input Type Password

- **<input type="password">**
- defines a **password field**:

- This is how the HTML code above will be displayed in a browser:

- Example

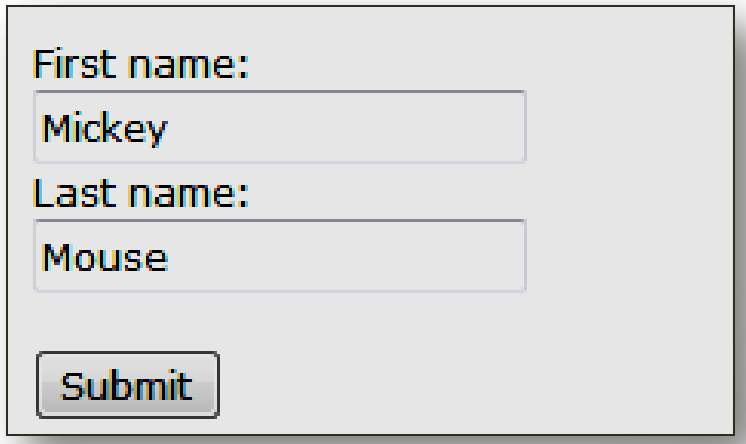
```
<form>
  User name:<br>
  <input type="text" name="username"><br>
  User password:<br>
  <input type="password" name="psw">
</form>
```



Input Type Submit

- defines a button for **submitting** form data to a **form-handler**.
- The form-handler is specified in the form's **action** attribute:
- **Example**

```
<form action="/action_page.php">
  First name:<br>
  <input type="text" name="firstname" value="Mickey"> <br>
  Last name:<br>
  <input type="text" name="lastname" value="Mouse"><br><br>
  <input type="submit" value="Submit">
</form>
```

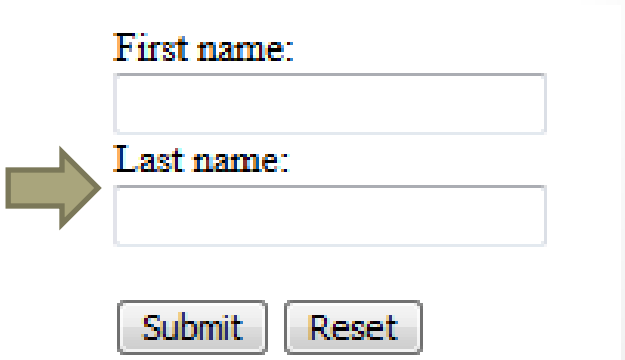


Input Type Reset

- **<input type="reset">** defines a **reset button** that will reset all form values to their default values:
- **click the "Reset" button, the form-data will be reset.**

- **Example**

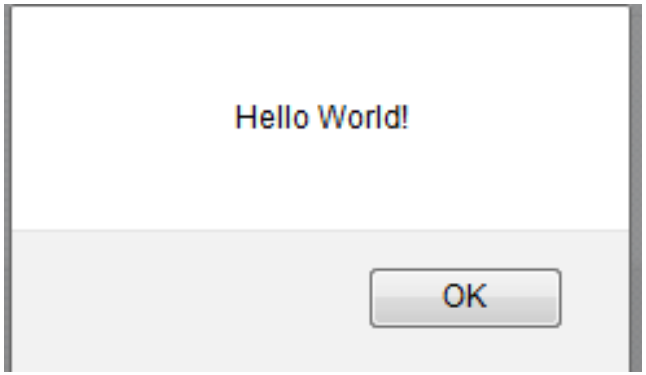
```
<form action="/action_page.php">
First name:<br>
<input type="text" name="firstname" >
<br>
Last name:<br>
<input type="text" name="lastname" >
<br><br>
<input type="submit" value="Submit">
<input type="reset">
</form>
```



Input Type Button

- **<input type="button">** defines a **button**:
- **Example**
- <input type="button" onclick="alert('Hello World!')" value="Click Me!">

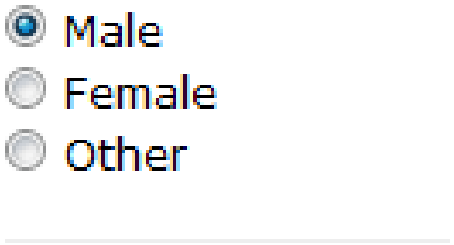
- After clicking above button it shows output as below:



Input Type Radio

- **<input type="radio">** defines a **radio button**.
- Radio buttons let a user select ONLY ONE of a limited number of choices:
- ```
  <form>
  <input type="radio" name="gender" value="male" checked> Male<br>
  <input type="radio" name="gender" value="female"> Female<br>
  <input type="radio" name="gender" value="other"> Other
  </form>
  ```

- This is how the HTML code above will be displayed in a browser:

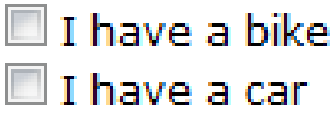

  ```

Input Type Checkbox

- **<input type="checkbox">** defines a **checkbox**.
- Checkboxes let a user select ZERO or MORE options of a limited number of choices.
- **Example**

```
<form>
 <input type="checkbox" name="vehicle1" value="Bike"> I have a bike
  <br>
 <input type="checkbox" name="vehicle2" value="Car"> I have a car
</form>
```

- This is how the HTML code above will be displayed in a browser:

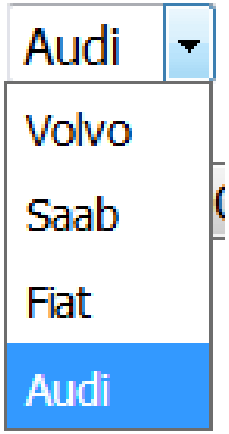


HTML Input Attributes

- The value Attribute
- The readonly Attribute
- The disabled Attribute
- The size Attribute
- The maxlength Attribute

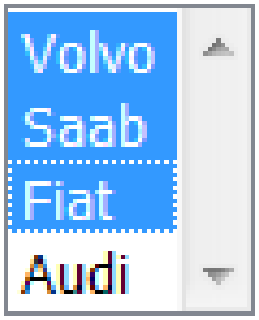
The <select> Element (Dropdown menus)

- The **<select>** element defines a **drop-down list**:
-
```
<select name="cars">
  <option value="volvo">Volvo</option>
  <option value="saab">Saab</option>
  <option value="fiat">Fiat</option>
  <option value="audi">Audi</option>
</select>
```



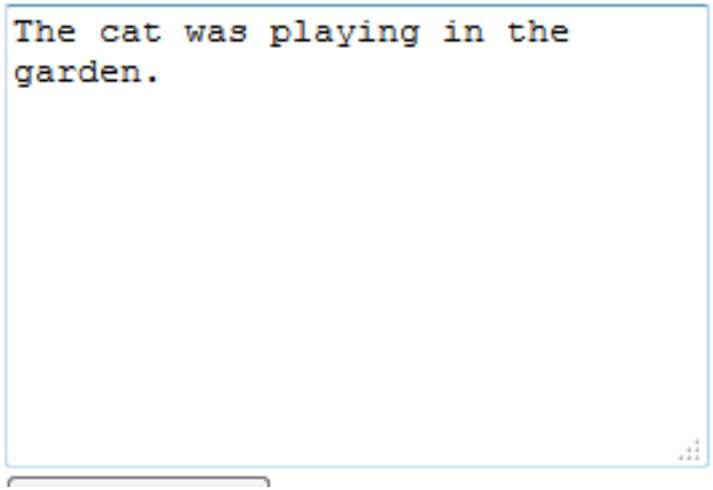
The <select> Element with multiple selection

- <select name="cars" size="4" **multiple**>
  <option value="volvo">Volvo</option>
  <option value="saab">Saab</option>
  <option value="fiat">Fiat</option>
  <option value="audi">Audi</option>
  </select>



The <textarea> Element

- <textarea name="message" rows="10" cols="30">
  The cat was playing in the garden.
  </textarea>



- The **rows** attribute specifies the visible number of lines in a text area.
- The **cols** attribute specifies the visible width of a text area.

HTML Forms – Example

form.html

```
<form method="post" action="apply-now.php">
  <input name="subject" type="hidden" value="Class" />
  <fieldset><legend>Academic information</legend>
    <label for="degree">Degree</label>
    <select name="degree" id="degree">
      <option value="BA">Bachelor of Art</option>
      <option value="BS">Bachelor of Science</option>
      <option value="MBA" selected="selected">Master of
        Business Administration</option>
    </select>
    <br />
    <label for="studentid">Student ID</label>
    <input type="password" name="studentid" />
  </fieldset>
  <fieldset><legend>Personal Details</legend>
    <label for="fname">First Name</label>
    <input type="text" name="fname" id="fname" />
    <br />
    <label for="lname">Last Name</label>
    <input type="text" name="lname" id="lname" />
```

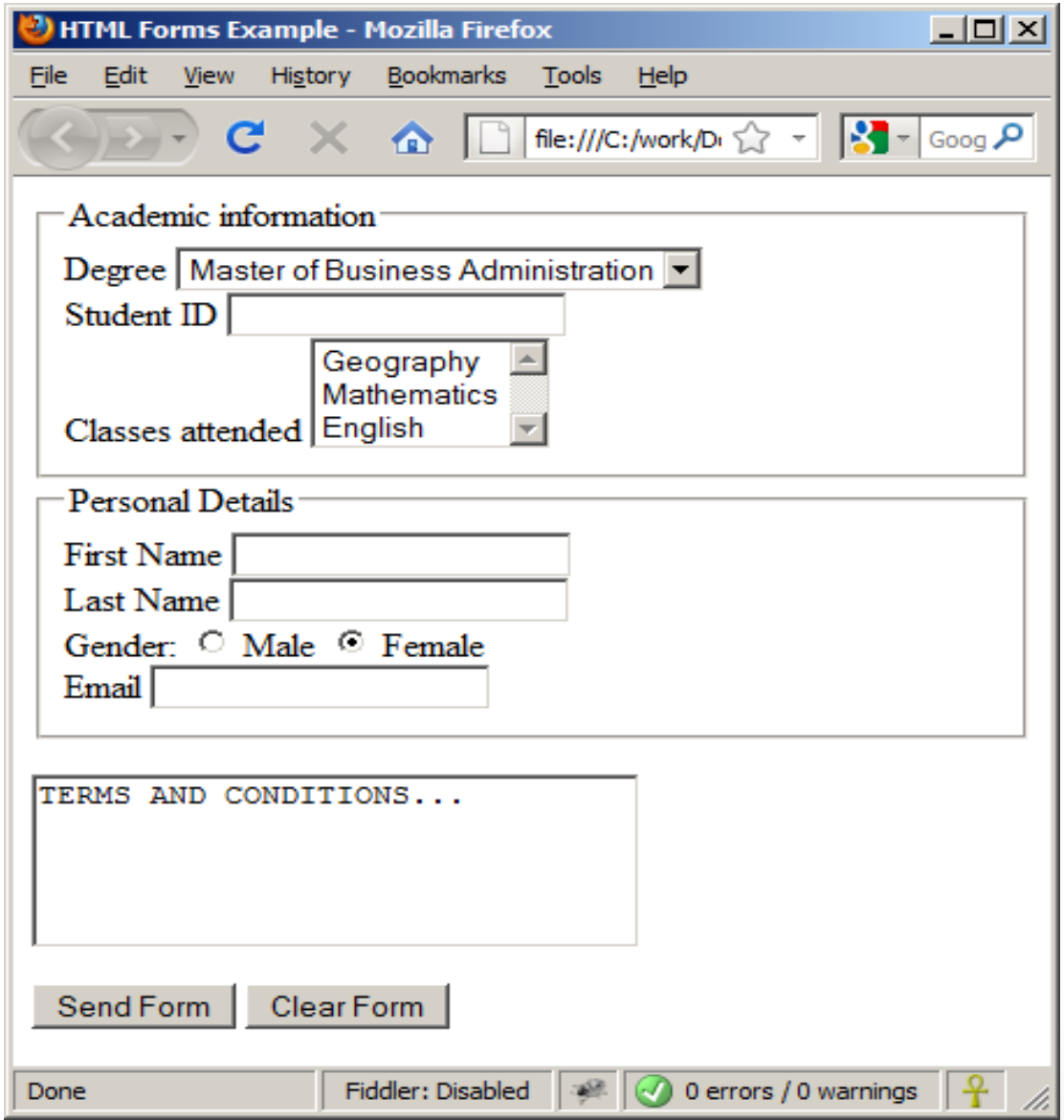
HTML Forms – Example (2)

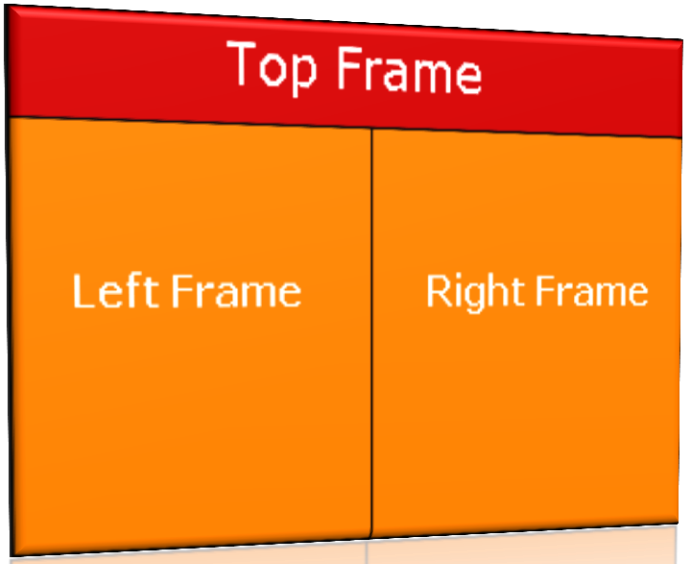
form.html (continued)

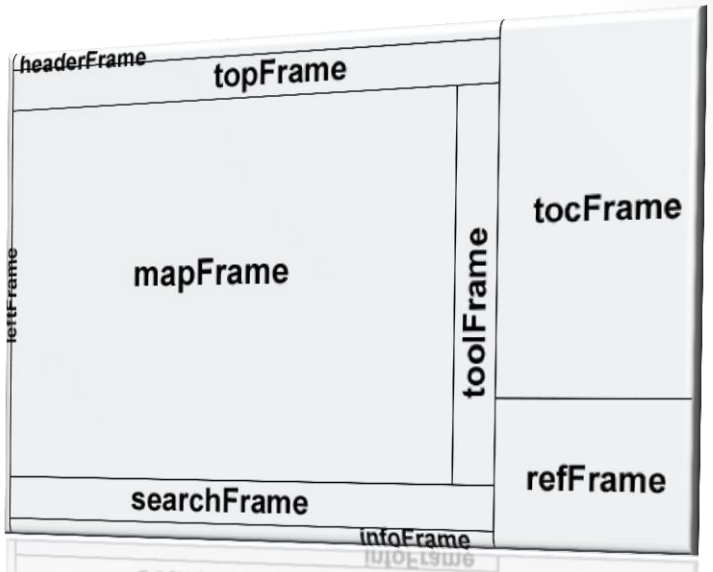
```
    <br />
      Gender:
      <input name="gender" type="radio" id="gm" value="m" />
      <label for="gm">Male</label>
      <input name="gender" type="radio" id="gf" value="f" />
      <label for="gf">Female</label>
    <br />
     <label for="email">Email</label>
     <input type="text" name="email" id="email" />
 </fieldset>
    <p>
     <textarea name="terms" cols="30" rows="4"
       readonly="readonly">TERMS AND CONDITIONS...</textarea>
  </p>
  <p>
     <input type="submit" name="submit" value="Send Form" />
     <input type="reset" value="Clear Form" />
  </p>
</form>
```

HTML Forms – Example (3)

form.html (continued)







HTML Frames

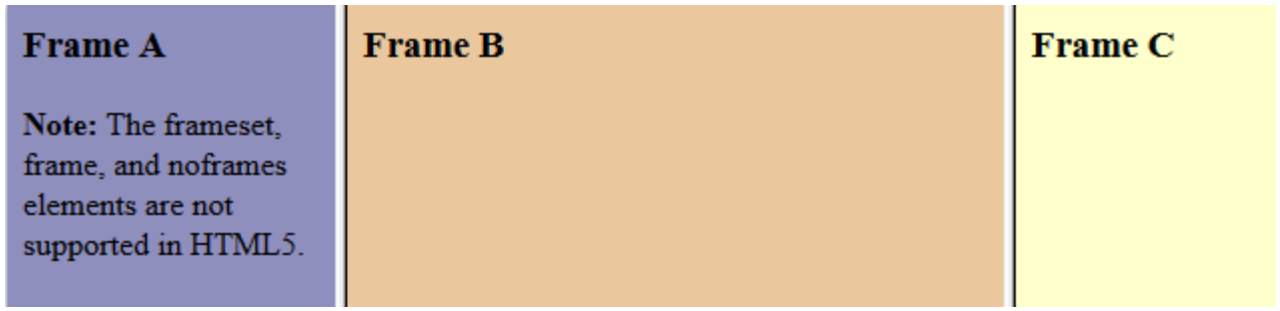
<frameset>, <frame> and <iframe>

HTML Frames

- Frames provide a way to show multiple HTML documents in a single Web page
- The page can be split into separate views (frames) horizontally and vertically
- Frames were popular in the early ages of HTML development, but now their usage is rejected
- Frames are not supported by all user agents (browsers, search engines, etc.)
  - A <noframes> element is used to provide content for non-compatible agents.

HTML <frame> Tag.

- **Example**
- A simple three-framed page:
- <frameset cols="25%,50%,25%">
  <frame src="frame_a.htm">
  <frame src="frame_b.htm">
  <frame src="frame_c.htm">
  </frameset>



- Each <frame> in a <frameset> can have different attributes, such as border, scrolling, the ability to resize, etc.

Outline

Introduction to web technology, internet and www, Web site planning and design issues,

HTML: structure of html document,HTML elements: headings, paragraphs, line break, colors & fonts, links, frames, lists, tables, images and forms,

Difference between HTML and HTML5.

CSS: Introduction to Style Sheet,Inserting CSS in an HTML page, CSS selectors,

XML: Introduction to XML, XML key component,Transforming XML into XSLT,

DTD: Schema, elements, attributes,

Introduction to JSON.

Html	Html5
Doctype declaration in Html is too longer <!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01//EN" "http://www.w3.org /TR /html4 /strict.dtd">	**DOCTYPE declaration in Html5 is very simple** "<!DOCTYPE html>
character encoding in Html is also longer <!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">	character encoding (charset) declaration is also very **simple** <meta charset="UTF-8">
Audio and Video are not part of HTML4	Audio and Videos are **integral part of HTML5** e.g. <audio> and <video> tags.
Vector Graphics is possible with the help of technologies such as VML, Silverlight, Flash etc	Vector graphics is integral part of HTML5 e.g. SVG and canvas
It is almost impossible to get true GeoLocation of user browsing any website especially if it comes to mobile devices.	JS GeoLocation API in HTML5 helps identify location of user browsing any website (provided user allows it)
Html5 use cookies.	It provides local storage in place of cookies.
Not possible to draw shapes like circle, rectangle, triangle.	Using Html5 you can draw shapes like circle, rectangle, triangle.
Does not allow JavaScript to run in browser. JS runs in same thread as browser interface.	Allows JavaScript to run in background. This is possible due to JS Web worker API in HTML5
Works with all old browsers	Supported by all new browser

Outline

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Introduction to JSON.

Cascading Style Sheets (CSS)

```
171 #content .article img.left.border {
172     padding: 0 9px 9px 0;
173     border-right: 1px dotted #999;
174     border-bottom: 1px dotted #999; }
175 #content .article blockquote {
176     margin-left: 10px;
177     padding-left: 10px;
178     border-left: 3px solid #252525; }
179 #content .article ul {
180     padding-left: 1em;
181     list-style-type: circle; }
```

Introduction of CSS

- **C**ascading **S**tyle **S**heets, fondly referred to as CSS, is a simple design language intended to simplify the process of making web pages presentable.
- CSS handles the look and feel part of a web page.
- Using CSS, you can control the color of the text, the style of fonts, the spacing between paragraphs, how columns are sized and laid out, what background images or colors are used, layout designs,variations in display for different devices and screen sizes as well as a variety of other effects.

Advantages of CSS

- CSS saves time
- Pages load faster
- Easy maintenance
- Superior styles to HTML
- Multiple Device Compatibility
- Global web standards
- Offline Browsing
- Platform Independence

CSS3 Modules

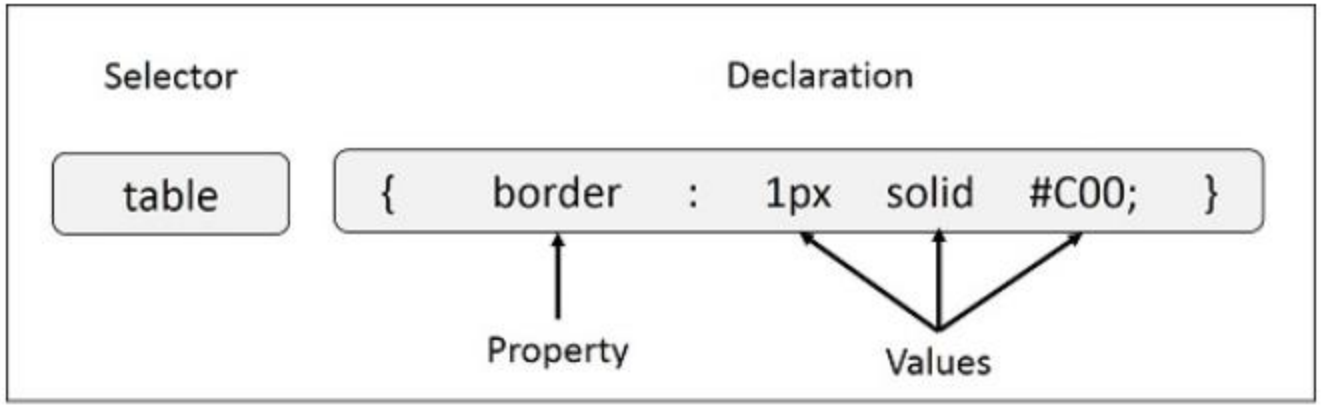
- Selectors
- Box Model
- Backgrounds and Borders
- Image Values and Replaced Content
- Text Effects
- 2D/3D Transformations
- Animations
- Multiple Column Layout
- User Interface

CSS - Syntax

- A CSS comprises of style rules that are interpreted by the browser and then applied to the corresponding elements in your document.
- Style rule is made of three parts −
- **Selector** − A selector is an HTML tag at which a style will be applied. This could be any tag like <h1> or <table> etc.
- **Property** - A property is a type of attribute of HTML tag. Put simply, all the HTML attributes are converted into CSS properties. They could be *color*, *border* etc.
- **Value** - Values are assigned to properties. For example, *color* property can have value either *red* or *#F1F1F1* etc.

CSS - Syntax

- Syntax:
- selector { property: value }
- Example:
- table{ border :1px solid #C00; }



CSS selectors (1)

- CSS selectors are used to "find" (or select) HTML elements based on their element name, id, class, attribute, and more.
- **The element Selector**
  - The element selector selects elements based on the element name.
  - You can select all <p> elements on a page like this (in this case, all <p> elements will be center-aligned, with a red text color):
  - **Example**
    - ```
      p {
          text-align: center;
          color: red;
      }
      ```
      ```

Example with output

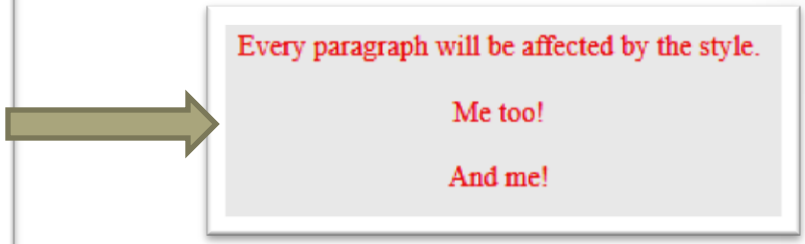
HTML Code with CSS

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

<p>Every paragraph will be affected by the style.</p>
<p id="para1">Me too!</p>
<p>And me!</p>

</body>
</html>
```

Output



CSS selectors (2)

- **The id Selector**
- The id selector uses the id attribute of an HTML element to select a specific element.
- The id of an element should be unique within a page, so the id selector is used to select one unique element!
- To select an element with a specific id, write a hash (#) character, followed by the id of the element.
- The style rule below will be applied to the HTML element with id="para1":
- **Example**
- ```
  #para1 {
      text-align: center;
      color: red;
  }
  ```
  ```

Example with output

```html
<!DOCTYPE html>
<html>
<head>
<style>
#para1 {
    text-align: center;
    color: red;
}
</style>
</head>
<body>

<p id="para1">Hello World!</p>
<p>This paragraph is not affected by the style.</p>

</body>
</html>
```

HTML Code with CSS

Hello World!

This paragraph is not affected by the style.

Output

CSS selectors (3)

- **The class Selector**
- The class selector selects elements with a specific class attribute.
- To select elements with a specific class, write a period (.) character, followed by the name of the class.
- In the example below, all HTML elements with class="center" will be red and center-aligned:
- **Example**
- .center {
  text-align: center;
  color: red;
  }

Example with output

HTML Code with CSS

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

<h1 class="center">Red and center-aligned heading</h1>
<p class="center">Red and center-aligned paragraph.</p>

</body>
</html>
```

Output

CSS selectors (4)

- **The class Selector continued….**
- You can also specify that only specific HTML elements should be affected by a class.
- In the example below, only <p> elements with class="center" will be center-aligned:
- **Example**
- p.center {
  text-align: center;
  color: red;
  }

CSS selectors (5)

- **Grouping Selectors**
- If you have elements with the same style definitions, like this:
  - h1 {
    text-align: center;
    color: red;}
    h2 {
    text-align: center;
    color: red; }
    p {
    text-align: center;
    color: red;}
- It will be better to group the selectors, to minimize the code.
  - h1, h2, p {
    text-align: center;
    color: red;
    }

Example with output

HTML Code with CSS

```
<!DOCTYPE html>
<html>
<head>
<style>
h1, h2, p {
    text-align: center;
    color: red;
}
</style>
</head>
<body>

<h1>Hello World!</h1>
<h2>Smaller heading!</h2>
<p>This is a paragraph.</p>

</body>
</html>
```

Output

Insert CSS in HTML

- **Three Ways to Insert CSS**
  1. External style sheet
  2. Internal style sheet
  3. Inline style

External Style Sheet

- With an external style sheet, you can change the look of an entire website by changing just one file!
- Each page must include a reference to the external style sheet file inside the <link> element. The <link> element goes inside the <head> section:
- **Example**
- <head>
  <link rel="stylesheet" type="text/css" href="mystyle.css">
  </head>

External Style Sheet - Example

HTML Code

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

<h1>This is a heading</h1>
<p>This is a paragraph.</p>

</body>
</html>
```

CSS File named- mystyle.css

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

h1 {
    color: navy;
    margin-left: 20px;
}
```

Internal Style Sheet

- An internal style sheet may be used if one single page has a unique style.
- Internal styles are defined within the <style> element, inside the <head> section of an HTML page:
- **Example**

```
<head>
<style>
body {
    background-color: linen;
}

h1 {
    color: maroon;
    margin-left: 40px;
}
</style>
</head>
```

Inline Styles

- An inline style may be used to apply a unique style for a single element.
- To use inline styles, add the style attribute to the relevant element. The style attribute can contain any CSS property.
- The example below shows how to change the color and the left margin of a <h1> element:
- **Example**

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

<h1 style="color:blue;margin-left:30px;">This is a heading</h1>
<p>This is a paragraph.</p>

</body>
</html>
```

Text-related CSS Properties

- `color` – specifies the color of the text
- `font-size` – size of font: `xx-small`, `x-small`, `small`, `medium`, `large`, `x-large`, `xx-large`, `smaller`, `larger` or numeric value
- `font-family` – comma separated font names
  - Example: `verdana`, `sans-serif`, etc.
  - The browser loads the first one that is available
  - There should always be at least one generic font
- `font-weight` can be `normal`, `bold`, `bolder`, `lighter` or a number in range [`100` … `900`]

CSS Rules for Fonts (2)

- `font-style` – styles the font
  - Values: `normal`, `italic`, `oblique`
- `text-decoration` – decorates the text
  - Values: `none`, `underline`, `line-trough`, `overline`, `blink`
- `text-align` – defines the alignment of text or other content
  - Values: `left`, `right`, `center`, `justify`

Shorthand Font Property

- `font`
  - Shorthand rule for setting multiple font properties at the same time

```
font:italic normal bold 12px/16px verdana
```

is equal to writing this:

```
font-style: italic;
font-variant: normal;
font-weight: bold;
font-size: 12px;
line-height: 16px;
font-family: verdana;
```

Backgrounds

- `background-image`
  - URL of image to be used as background, e.g.:

```
background-image:url("back.gif");
```

- `background-color`
  - Using color and image and the same time
- `background-repeat`
  - `repeat-x`, `repeat-y`, `repeat`, `no-repeat`
- `background-attachment`
  - `fixed` / `scroll`

Backgrounds (2)

- `background-position`: specifies vertical and horizontal position of the background image
  - Vertical position: `top`, `center`, `bottom`
  - Horizontal position: `left`, `center`, `right`
  - Both can be specified in percentage or other numerical values
  - Examples:

```
background-position: top left;
```

```
background-position: -5px 50%;
```

Borders

- `border-width`: `thin`, `medium`, `thick` or numerical value (e.g. `10px`)
- `border-color`: color alias or RGB value
- `border-style`: `none`, `hidden`, `dotted`, `dashed`, `solid`, `double`, `groove`, `ridge`, `inset`, `outset`
- Each property can be defined separately for left, top, bottom and right
  - `border-top-style`, `border-left-color`, …

Border Shorthand Property

- `border`: shorthand rule for setting border properties at once:

```
border: 1px solid red
```

is equal to writing:

```
border-width:1px;
border-color:red;
border-style:solid;
```

- Specify different borders for the sides via shorthand rules: `border-top`, `border-left`, `border-right`, `border-bottom`
- When to avoid `border:0`

Width and Height

- `width` – defines numerical value for the width of element, e.g. `200px`
- `height` – defines numerical value for the height of element, e.g. `100px`
  - By default the height of an element is defined by its content
  - Inline elements do not apply height, unless you change their `display` style.

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XML

- **Introduction to XML**
  - XML is a software- and hardware-independent tool for storing and transporting data.
- **What is XML?**
  - XML stands for eXtensible Markup Language
  - XML is a markup language much like HTML
  - XML was designed to store and transport data
  - XML was designed to be self-descriptive
  - XML is a W3C Recommendation

XML Does Not DO Anything

- This note is a note to Tove from Jani, stored as XML::
- <note>
  <to>Tove</to>
  <from>Jani</from>
  <heading>Reminder</heading>
  <body>Don't forget me this weekend!</body>
  </note>
- The XML above is quite self-descriptive:
  - It has sender information.
  - It has receiver information
  - It has a heading
  - It has a message body.
- But still, the XML above does not DO anything. XML is just information wrapped in tags.

The Difference Between XML and HTML

- XML and HTML were designed with different goals:
- XML was designed to carry data - with focus on what data is
- HTML was designed to display data - with focus on how data looks
- XML Does Not Use Predefined Tags like HTML tags

XML Used For (1)

- It simplifies data sharing
- It simplifies data transport
- It simplifies platform changes
- It simplifies data availability

XML Used For (2)

- Many computer systems contain data in incompatible formats. Exchanging data between incompatible systems (or upgraded systems) is a time-consuming task for web developers. Large amounts of data must be converted, and incompatible data is often lost.
- XML stores data in plain text format. This provides a software- and hardware-independent way of storing, transporting, and sharing data.
- XML also makes it easier to expand or upgrade to new operating systems, new applications, or new browsers, without losing data.

XML Example 1

- <?xml version="1.0" encoding="UTF-8"?>
  <note>
  <to>Amit</to>
  <from>Neha</from>
  <heading>Reminder</heading>
  <body>Don't forget me this weekend!</body>
  </note>

- Save the file with .xml extension and when run o/p is like below

```
<note>
  <to>Tove</to>
  <from>Jani</from>
  <heading>Reminder</heading>
  <body>Don't forget me this weekend!</body>
</note>
```

XML Example 2- Books.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<bookstore>

 <book category="children">
  <title lang="en">Harry Potter</title>
  <author>J K. Rowling</author>
  <year>2005</year>
  <price>29.99</price>
 </book>

 <book category="web" cover="paperback">
  <title lang="en">Learning XML</title>
  <author>Erik T. Ray</author>
  <year>2003</year>
  <price>39.95</price>
 </book>

</bookstore>
```

XML Example 2- Books.xml explanation

- XML uses a much self-describing syntax.
- A prolog defines the XML version and the character encoding:
- <?xml version="1.0" encoding="UTF-8"?>
- The next line is the **root element** of the document:
- <bookstore>
- The next line starts a <book> element:
- <book category="cooking">
- The <book> elements have **4 child elements**: <title>, <author>, <year>, <price>.
- The next line ends the book element:
- </book>

XSLT

- XSLT (eXtensible Stylesheet Language Transformations) is the recommended style sheet language for XML.
- XSLT is far more sophisticated than CSS.
- With XSLT you can add/remove elements and attributes to or from the output file.
- You can also rearrange and sort elements, perform tests and make decisions about which elements to hide and display, and a lot more.
- XSLT uses XPath to find information in an XML document.

Displaying XML with XSLT

- Create XML Page
- Create XSLT Page according to your design criteria
- Link XML page with XSLT Page
- Get output on browser

Step 1 : Create XML Document: students.xml

```
<?xml version = "1.0"?>
<class>
  <student rollno = "393">
    <firstname>Dinkar</firstname>
    <lastname>Kad</lastname>
</student>
  <student rollno = "493">
    <firstname>Vaneet</firstname>
    <lastname>Gupta</lastname>
</student>
</class>
```

Step 2: XSLT Conversion criteria

- We need to define an XSLT style sheet document for the above XML document to meet the following criteria −
- Page should have a title **Students**.
- Page should have a table of student details.
- Columns should have following headers:
  - Roll No, First Name, Last Name
- Table must contain details of the students accordingly.

Step 2: Create XSLT document according to design criteria: **students.xsl**

```
<?xml version = "1.0" encoding = "UTF-8"?>
<xsl:stylesheet version = "1.0" xmlns:xsl = "http://www.w3.org/1999/XSL/Transform">
  <xsl:template match = "/">
    <html>  <body>
        <h2>Students</h2>

        <table border = "1">
          <tr bgcolor = "#9acd32">
            <th>Roll No</th>
            <th>First Name</th>
            <th>Last Name</th>
          </tr>

          <xsl:for-each select="class/student">
            <tr>
             <td><xsl:value-of select = "@rollno"/></td>
            <td><xsl:value-of select = "firstname"/></td>
              <td><xsl:value-of select = "lastname"/></td>
             </tr>
          </xsl:for-each> </table>
      </body>  </html>
  </xsl:template>
</xsl:stylesheet>
```

Step 3: Link the XSLT Document to the XML Document

- <?xml version = "1.0"?>
- **<?xml-stylesheet type = "text/xsl" href = "students.xsl"?>**
- <class>
- ...
- </class>

Step 4: View the XML Document in Internet Explorer

```
<?xml version = "1.0"?>
<?xml-stylesheet type = "text/xsl" href = "students.xsl"?>
<class>
  <student rollno = "393">
    <firstname>Dinkar</firstname>
    <lastname>Kad</lastname>
</student>
  <student rollno = "493">
    <firstname>Vaneet</firstname>
    <lastname>Gupta</lastname>
   </student>
</class>
```

Output

Students

Roll No	First Name	Last Name
393	Dinkar	Kad
493	Vaneet	Gupta

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Introduction to DTD

- A DTD is a Document Type Definition.
- A DTD defines the structure and the legal elements and attributes of an XML document.
- With a DTD, independent groups of people can agree on a standard DTD for interchanging data.
- An application can use a DTD to verify that XML data is valid.

An Internal DTD Example

- <?xml version="1.0"?>
  <!DOCTYPE note [
  <!ELEMENT note (to,from,heading,body)>
  <!ELEMENT to (#PCDATA)>
  <!ELEMENT from (#PCDATA)>
  <!ELEMENT heading (#PCDATA)>
  <!ELEMENT body (#PCDATA)>
  ]>
  <note>
  <to>Tove</to>
  <from>Jani</from>
  <heading>Reminder</heading>
  <body>Don't forget me this weekend</body>
  </note>

An Internal DTD Expalnation

- The DTD in previous slide is interpreted like this:
- **!DOCTYPE note** defines that the root element of this document is note
- **!ELEMENT note** defines that the note element must contain four elements: "to,from,heading,body"
- **!ELEMENT to** defines the to element to be of type "#PCDATA"
- **!ELEMENT from** defines the from element to be of type "#PCDATA"
- **!ELEMENT heading** defines the heading element to be of type "#PCDATA"
- **!ELEMENT body** defines the body element to be of type "#PCDATA"

An External DTD Example

- XML File

- <?xml version="1.0"?>
  <!DOCTYPE note SYSTEM "note.dtd">
  <note>
  <to>Tove</to>
  <from>Jani</from>
  <heading>Reminder</heading>
  <body>Don't forget me this weekend!</body>
  </note>

- note.dtd

- <!ELEMENT note (to,from,heading,body)>
  <!ELEMENT to (#PCDATA)>
  <!ELEMENT from (#PCDATA)>
  <!ELEMENT heading (#PCDATA)>
  <!ELEMENT body (#PCDATA)>

Building Blocks of XML Documents as per DTD

- **Elements :** <body>some text</body>
- **Attributes :**
- **Entities :** < &
- **PCDATA :** PCDATA means parsed character data.
  - **PCDATA is text that WILL be parsed by a parser**. Character data is the text found between the start tag and the end tag of an XML element.
- **CDATA:** CDATA means character data.
  - **CDATA is text that will NOT be parsed by a parser**.

Elements

- XML elements can be defined as building blocks of an XML document.
- Elements can behave as a container to hold text, elements, attributes, media objects or mix of all.
- Each XML document contains one or more elements, the boundaries of which are either delimited by start-tags and end-tags, or empty elements.

- **Example**
- **<name>Tutorials Point</name>**

Attributes

- Attributes are part of the XML elements.
- An element can have any number of unique attributes.
- Attributes give more information about the XML element or more precisely it defines a property of the element.
- An XML attribute is always a *name-value* pair.

- **Example**
- ****
- Here *img* is the element name whereas *src* is an attribute name and *flower.jpg* is a value given for the attribute *src*.

Entities

- Entities are placeholders in XML. These can be declared in the document prolog or in a DTD. Entities can be primarily categorized as:
  - Built-in entities
  - Character entities
  - General entities
  - Parameter entities
- There are five built-in entities that play in well-formed XML, they are:
  - ampersand: &
  - Single quote: '
  - Greater than: >
  - Less than: <
  - Double quote: "

Advantages & Disadvantages

- **Advantages of using DTD**
  - **Documentation -** You can define your own format for the XML files.
  - **Validation -** It gives a way to check the validity of XML files by checking whether the elements appear in the right order, mandatory elements and attributes are in place

- **Disadvantages of using DTD**
- It does not support the namespaces.
- It supports only the *text string data type.*
- It is not object oriented.

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JSON-Introduction

- JSON: **J**ava**S**cript **O**bject **N**otation.
- JSON is a syntax for storing and exchanging data.
- JSON is text, written with JavaScript object notation.
- JSON is language independent *
- **Why use JSON?**
- Since the JSON format is text only, it can easily be sent to and from a server, and used as a data format by any programming language.
- JavaScript has a built in function to convert a string, written in JSON format, into native JavaScript objects:
- JSON.parse()
- So, if you receive data from a server, in JSON format, you can use it like any other JavaScript object.

JSON Syntax Rules

- JSON syntax is derived from JavaScript object notation syntax:
- Data is in name/value pairs
- Data is separated by commas
- Curly braces hold objects
- Square brackets hold arrays
- **JSON Data - A Name and a Value**
  - JSON data is written as name/value pairs.
  - A name/value pair consists of a field name (in double quotes), followed by a colon, followed by a value:
- **Example**
  - "name":"John"

JSON Values

- In JSON, *values* must be one of the following data types:
  - a string
  - a number
  - an object (JSON object)
  - an array
  - a boolean
  - null
- In JSON, *string values* must be written with double quotes:
  - { "name":"John" }

Object Syntax

- **Example**
- { "name":"John", "age":30, "car":null }
- JSON objects are surrounded by curly braces {}.
- JSON objects are written in key/value pairs.
- Keys must be strings, and values must be a valid JSON data type (string, number, object, array, boolean or null).
- Keys and values are separated by a colon.
- Each key/value pair is separated by a comma.

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