CE542 WEB TECHNOLOGIES

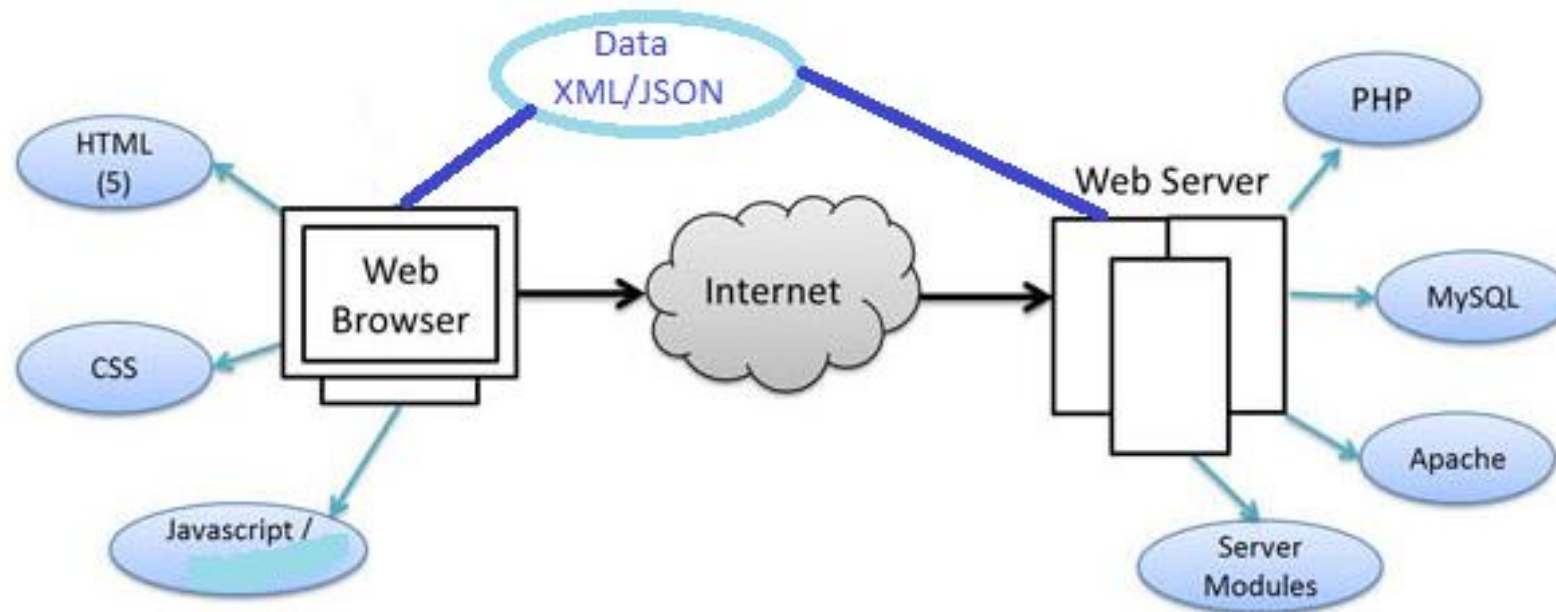| WEB-TECHNOLOGIES					
Course Code	CE542		Credits	3	
Scheme of Instruction	L	T	P	TOTAL	
Hours/ Week	3	0	0	40 hrs/sem	
Scheme of Examination	IA	TW	TM	P	O
TOTAL = 125 marks	25	0	100	0	0

CE542 WEB TECHNOLOGIES

Course Outcomes:

At the end of the course the student will be able to:

CE542.1	Discuss the basics of the internet and the related underlying protocols involved in web development.
CE542.2	Explain, design and transform data using XML and JSON.
CE542.3	Design static web pages using HTML and Cascading Style Sheet
CE542.4	Test dynamic websites using JavaScript, PHP and MySQL.

Web Overview
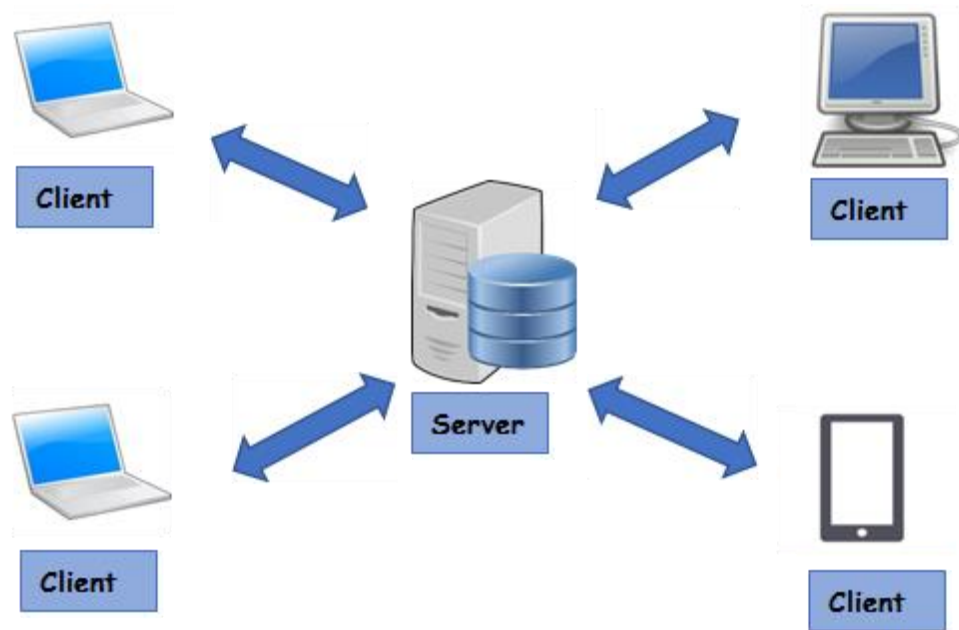
Web Technologies in a Nutshell

CE542 WEB TECHNOLOGIES

UNIT -1

Introduction to Web Technologies: History of the Web, Understanding Web System Architecture, understanding 3-Tier Web Architecture, Web browsers, Overview of HTTP, Using Cookies to Remember User Information, Exploring Web Technologies.

HTML: HTML, Introducing HTML Document structure, Creating Headings on a web page, Working with Links, creating a paragraph, working with images, working with tables, Introduction to Forms and HTML Controls.

Overview of HTML5: Exploring new features of HTML5: new elements, attributes, support, CSS enhancements

Cascading Style Sheets: Coding CSS, Properties of Tags, Property Values, InLine Style Properties, Embedded Style Sheets, External Style Sheets,Grouping, Class as Selector, ID as Selector, Contextual Selectors, Positioning, Backgrounds, Element Dimensions.

CE542 WEB TECHNOLOGIES

UNIT -2

Extensible Mark-Up Language (XML): Introduction, HTML vs XML, Syntax of XML Document, XML Attributes

JSON: Basics of JSON, JSON syntax, JSON data types,JSON schemas,The JavaScript XmlHttpRequest and Web APIs: Web APIs,The JavaScript XMLHttpRequest.

JSON, Client-side frameworks, JSON on the server side: Serializing, Deserializing and Requesting JSON:PHP.

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UNIT -3

Overview of JavaScript: Exploring features of Javascript, Using Javascript in HTML document, exploring programming fundamentals of JavaScript, using: an external javascript file, variables, operators, if statement, if...else statement, switch statement, while loop, do while loop, for loop, break statement, continue statement, alert box, confirm box, prompt box.

Javascript Functions,events: Working with functions, working with events: onclick, onload, mouse,onreset, onsubmit.

Javascript objects: Working with the String object, working with the Number object, working with the Array object, Working with the Math object.

Validation &Errors: Introducing Form validation,Exploring errors in javascript,Validating forms.

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UNIT -4

Introducing PHP: Versions of PHP, Features of PHP, Advantages of PHP over other scripting languages, creating a PHP Script, running a PHP Script, Handling Errors in a PHP Script.

Working with variables and constants: Using variables, using constants, exploring data types in PHP, Exploring operators in PHP.

Controlling Program Flow: Conditional Statements, Looping Statement, Break, Continue and Exit Statements.

Working with Functions,Arrays,Files : User-Defined Functions in PHP, Built-in functions in PHP, Recursive, Variable and call-back Functions, Introducing Arrays, Types of Arrays, Traversing Arrays using Loops and Array Iterators, Built-in Array Functions, Working with Files.

Working with Forms and databases: working with the Form Tag and Form Elements, processing a Web Form, validating a Form, Using Php and Mysql. Exploring sessions in PHP: Working with Sessions.

Reference Material

TEXTBOOKS	
1	N. P. Gopalan and J. Akhilandeswari; Web Technology: A Developer's Perspective; PHI; ISBN: 978-81-203-5006-9
2	DT Editorial Services; Web Technologies Black Book;dreamtechpress; ISBN: 9788177229974
3	Kogent Learning Solutions; HTML5 Black Book; dreamtechpress; ISBN: 978-93-5004-095-9
4	Lindsay Bassett; Introduction to JavaScript Object Notation;O'Reilly Media; ISBN: 978-1-491-92948-3

REFERENCES	
1	Smith, Ben;Beginning JSON;Apress; ISBN 978-1-4842-0202-9

Online Editors

https://www.w3schools.com/php/phptryit.asp?filename=tryphp_intro

https://www.w3schools.com/js/tryit.asp?filename=tryjs_validation_js

HTML - OneCompiler - Write, run and share HTML code online

Interactive Session

-Team HTML/CSS

-Team Data(XML/JSON)

-Team JS(Scripting)

-Team Server(php/mysql)

Lecture#2: 8th September 2021

Introduction to Web Technologies:

- History of the Web

- Understanding Web System Architecture-3-Tier Web Architecture

- Web browsers

- Overview of HTTP

- Using Cookies to Remember User Information

- Exploring Web Technologies

HTML
(Hyper Text Markup Language)

Module1

HTML:What?

- **language understood by web browser to display web pages**

Example:

```
<!DOCTYPE html>
<html>
  <head>
    <title>This is document title</title>
  </head>
  <body>
    <h1>This is a heading</h1>
    <p>Document content goes here.....</p>
  </body>

</html>
```

HTML Tags

- Tags are enclosed within angle braces **<Tag Name>**

1 <!DOCTYPE...>: declaration tag is used by the web browser to understand the version of the HTML used in the document.

2 <html>: This tag encloses the complete HTML document

3 <head> :This tag represents the document's header which can keep other HTML tags like <title>, <link> etc.

4 <title>:The <title> tag is used inside the <head> tag to mention the document title.

5 <body>:This tag represents the document's body which keeps other HTML tags like <h1>, <div>, <p> etc.

6 <h1>:This tag represents the heading.

7 <p>:This tag represents a paragraph.

Html Structuring Tags

- Heading Tags :**<h1>(biggest), <h2>, <h3>, <h4>, <h5>,** and **<h6>(smallest)**

- Paragraph Tag**: <p>**para**</p>** …structure your text into different paragraphs

- Line Break Tag:**
** element, anything following it starts from the next line

- **<center>** tag to put any content in the center of the page or any table cell.

- Horizontal Lines: **<hr>** tag creates a line from the current position in the document to the right margin and breaks the line accordingly

- Nonbreaking Spaces:where you do not want the client browser to break text, you should use a nonbreaking space entity ** **
Eg. "12 Angry Men."

HTML Elements

1. An **HTML element** is defined by a starting tag. If the element contains other content, it ends with a closing tag.For eg. <p>....</p> , <h1>...</h1>

2. HTML – Attributes(name/value pair) which are extra bits of information .Eg. <p align = "left">This is left aligned</p>

- Id,Class and Style are the most important attributes

a.The id attribute of an HTML tag can be used to uniquely identify any element within an HTML page

b.The class attribute associates an element with a style sheet(CSS), and specifies the class of element

c.The style attribute allows you to specify Cascading Style Sheet (CSS) rules within the element. Eg. <p style = "font-family:arial; color:#FF0000;">Some text...</p>

HTML – Formatting: **how text appears**

1.Bold Text:Anything that appears within ... element, is displayed in bold

2.Italic Text:Anything that appears within <i>...</i> element is displayed in italicized

3.Underlined Text: Anything that appears within <u>...</u> element, is displayed with underline

4.Strike Text: Anything that appears within <strike>...</strike> element is displayed with strikethrough

5.Superscript Text :The content of a ^{...} element is written in superscript

6.Subscript Text:The content of a _{...} element is written in subscript

HTML - Formatting

7.Grouping Content: The <div> element allow you to group together several elements to create sections or subsections of a page.

```
<body>
    <div id = "menu" align = "middle" >
      <a href = "/index.htm">HOME</a> |
      <a href = "/about/contact_us.htm">CONTACT</a> |
      <a href = "/about/index.htm">ABOUT</a>
    </div>

    <div id = "content" align = "left" bgcolor = "white">
      <h5>Content Articles</h5>
      <p>Actual content goes here.....</p>
    </div>
  </body>
```

HTML - Formatting

8.Emphasized Text: Anything that appears within ... element is displayed as emphasized text.

The Input Tag

Attributes are:

1. Alt: used with image type
2. Checked
3. Disabled
4. Readonly
5. Maxlength: number
6. Type:button or submit ,checkbox,radio,hidden,file,image,password,reset,text
7. Src has URL of image when type is image
8. Name

The Form Tag

<body>

<form action="example1.html" method="post" or get>

First name:<input type="text" name="email">

<input type="submit" value="submit">

</form>

Post: form data is within message body

Get: form data needs to be encoded by browser into URL

Html controls

1. `<label for="email">email: </LABEL>`
2. `<input type="text or password" id="email" disabled maxlength or size>`
3. `<input type="radio" name="gender" value="Male"> Male`
   `<input type="radio" name="gender" value="Female"> Female`
4. `<input type="submit" value="Send">  or <input type="reset">`
5. `<input type="checkbox" name="newsletter" checked="checked">Apple`
   `<input type="checkbox" name="newsletter" checked="checked">Mango`
6. `<textarea cols="50" rows="4" name="comment"></textarea>`
7. Selection control: `<select name="continent" size="1">`
   `<option value="europe">europe</option>`
   `<option value="Asia">Asia</option></select>`

Html controls

Selection control:

```html
<select>  <optgroup label="western countries">
     <option value="UK">UK</option>
     <option value="Germany"> Germany </option>
</optgroup>
<optgroup label="Asian countries">
     <option value="india"> india </option>
     <option value="pakistan">pakistan </option>
</optgroup>
</select>
```

Html table

- Arrange data into rows and columns. The <table> ,<tr>, <td> tag is used to create table , rows and data cells.

<html>

<head>

    <title>HTML Tables</title>

</head>

<body>

    <table border = "1">

      <tr>

        <td>Row 1, Column 1**</td>**

        <td>Row 1, Column 2</td>

      </tr>

      <tr>

        <td>Row 2, Column 1</td>

        <td>Row 2, Column 2</td>

      </tr>

    </table>

  </body>

</html>

Html table

Table heading can be defined using <th> tag.

```
<html>
 <head>    <title>HTML Table Header</title>
 </head>
<body>
    <table border = "1">
      <tr> <th>Name</th>
           <th>Salary</th>
      </tr>
      <tr>
        <td>Ramesh Raman</td>
        <td>5000</td>
      </tr>
      <tr>
        <td>Shabbir Hussein</td>
        <td>7000</td>
      </tr>
    </table>
  </body>
 </html>
```

Html table :Cellpadding and Cellspacing Attributes

The cellspacing attribute defines space between table cells and cellpadding represents the distance between cell borders and the content within a cell.

```
<html>
 <head>     <title>HTML Table Cellpadding</title>  </head>
<body>
 <table border = "1" cellpadding = "5" cellspacing = "5">
<caption> Employee details</caption>
 <tr>  <th>Name</th>  <th>Salary</th> </tr>
 <tr>
      <td>Ramesh Raman</td>
      <td>5000</td>
 </tr>
 <tr>
      <td>Shabbir Hussein</td>
      <td>7000</td>
 </tr>
   </table>
  </body>
</html>
```

Colspan and Rowspan Attributes

- colspan attribute if you want to merge two or more columns into a single column and Similar way you will use rowspan if you want to merge two or more rows.

```
<html>
 <head>    <title>HTML Table Colspan/Rowspan</title>  </head>
 <body>
    <table border = "1">
      <tr> <th>Column 1</th><th>Column 2</th> <th>Column 3</th></tr>
      <tr> <td rowspan = "2">Row 1 Cell 1</td>
           <td>Row 1 Cell 2</td>
           <td>Row 1 Cell 3</td>
      </tr>
      <tr><td>Row 2 Cell 2</td><td>Row 2 Cell 3</td>
      </tr>
      <tr><td colspan = "3">Row 3 Cell 1</td>
      </tr>
    </table>
<input type="submit" value="submit">
  </body>
</html>
```

Colspan and Rowspan Attributes

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

Tables Backgrounds

bgcolor attribute - You can set background color for whole table or just for one cell.

<table border = "1" bordercolor = "green" bgcolor = "yellow or #000000">

Table Height and Width

- You can set a table width and height using width and height attributes(pixels or in terms of percentage of available screen area)

```
<table border = "1" width = "400 or 40%" height = "150">
    <tr>
        <td>Row 1, Column 1</td>
        <td>Row 1, Column 2</td>
    </tr>
    <tr>
        <td>Row 2, Column 1</td>
        <td>Row 2, Column 2</td>
    </tr>
</table>
```

Other Html elements

1.Metatdata: HTML lets you specify metadata - additional important information about a document such as author, expiry date, a list of keyword,etc

```
<head>
    <title>Meta Tags Example</title>
    <meta name = "keywords" content = "HTML, Meta Tags, Metadata" />
  </head>
```

2. comments:<!-- Document Header Starts -->

3.Image tag:

Frames:divides page into sections

Vertical frames:

<frameset cols="50%,50%">

<frame src="frame1.html">

<frame src="frame1.html">

</frameset>

Frames:divides page into sections

Horizontal frames:

<frameset rows="50%,50%" frameborder="1" framespacing="10">

<frame src="frame1.html">

<frame src="frame1.html">

</frameset>

Html List

- HTML offers web authors the following ways for specifying lists of information. All lists must contain one or more list elements.

1. - An unordered list. This will list items using plain bullets.

2. - An ordered list. This will use different schemes of numbers to list your items.

- <ul type = "square"> or <ul type = "disc"> or <ul type = "circle">
- You can use type attribute for <ol> tag to specify the type of numbering you like. By default, it is a number. Following are the possible options -
- <ol type = "1"> - Default-Case Numerals.
- <ol type = "I"> - Upper-Case Numerals.
- <ol type = "i"> - Lower-Case Numerals.
- <ol type = "A"> - Upper-Case Letters.
- <ol type = "a"> - Lower-Case Letters.

linking docs

Tutorials Point

1.   _blank Opens the linked document in a new window or tab.
2.   _self Opens the linked document in the same frame
3.   _parent Opens the linked document in the parent frame.
4.   _top Opens the linked document in the full body of the window
5.   **Targetframe Opens the linked document in a named targetframe**.

linking docs

Alink:color of currently active hyperlink

Vlink:color of visited pages

Link: color of unvisited pages

<body vlink="yellow" link="green" alink="blue">

Linking to a Page Section

- You can create a link to a particular section of a given webpage by using name attribute. This is a two-step process.
- First create a link to the place where you want to reach with-in a webpage and name it using <a...> tag as follows -
- <h1>HTML Text Links This is the top of the page</h1>
- Second step is to create a hyperlink to link the document and place where you want to reach -
- Go to the Top

Applying hyperlink targets to a frame

```
<html>
<head>
</head>
 <frameset cols="25%,75%">
<frame src="main1.html">
<frame src="default1.html" name="display">
</frameset>
<noframes></noframes></html>
```

Applying hyperlink targets to a frame

main1.html:

<html>

<head>

</head>

<body>

Area1 |

Area2

Area3

</body></html>

Applying hyperlink targets to a frame

default1.html

<html>

<head>

</head>

<body>

<h1 align="center" > click a link</h1>

</body></html>

Other Html elements

Image maps: link multiple web pages to single image

Research during: tutorial

HTML5:features

1.The DOCTYPE declaration for HTML5 is very simple:

<!DOCTYPE html>

2. The character encoding (charset) declaration is also very simple:

<meta charset="UTF-8">

3.HTML5 is supported in all modern browsers.

4. Add new elements to an HTML page with a browser trick.

```
<!DOCTYPE html>
<html>
<head>
<script>document.createElement("myHero")</script>
<style>
myHero {
  display: block;
  background-color: #dddddd;
  padding: 50px;
  font-size: 30px;
}
</style>
</head>
<body>
<h1>A Heading</h1>
<myHero>My Hero Element</myHero>
</body>
</html>
```

HTML5:features

New HTML5 Elements are

1. New semantic elements like <header>, <footer>, <article>, and <section>.

2. New attributes of form elements like number, date, time, calendar, and range.

3. New graphic elements: <svg> and <canvas>.

4. New multimedia elements: <audio> and <video>.

article

<body>

<article>

  <h1>Google Chrome</h1>

  <p>Google Chrome is a free, open-source web browser developed by Google, released in 2008.</p>

</article>

</body>

svg

- SVG stands for Scalable Vector Graphics
- SVG is used to define graphics for the Web
- SVG is a language for describing 2D graphics in XML.
- <!DOCTYPE html>
  <html>
  <body>
  <svg width="100" height="100">
    <circle cx="50" cy="50" r="40" stroke="green" stroke-width="4" fill="yellow" />
  </svg>
  </body>
  </html>

canvas

```
<body>
<canvas id="myCanvas">Your browser does not support the HTML5 canvas tag.</canvas>
<script>
var c = document.getElementById("myCanvas");
var ctx = c.getContext("2d");//2d object
ctx.fillStyle = "#FF0000";//red color rectangle or canvas is displayed
ctx.fillRect(0, 0, 80, 100);//dimensions of rectangle
</script>
</body>
</html>
```

audio

```
<audio controls>
  <source src="horse.ogg"  type="audio/ogg">
  <source src="horse.mp3"  type="audio/mpeg">
  Your browser does not support the audio tag.
</audio>
```

Currently, there are 3 supported file formats for the <audio> element: MP3, WAV, and OGG:

video

```
<video width="320" height="240" controls>
  <source src="movie.mp4" type="video/mp4">
  <source src="movie.ogg" type="video/ogg">
Your browser does not support the video tag.
</video>
```

Before HTML5, a video could only be played in a browser with a plug-in (like flash).

HTML5:features

New HTML5 API's (Application Programming Interfaces)

1. HTML Geolocation

2. HTML Drag and Drop

3. HTML Local Storage(replacement for cookies)

4. HTML Application Cache

5. HTML Web Workers(When executing scripts in an HTML page, the page becomes unresponsive until the script is finished.A web worker is a JavaScript that runs in the background, independently of other scripts, without affecting the performance of the page. You can continue to do whatever you want: clicking, selecting things, etc., while the web worker runs in the background.)

6. HTML SSE: Server-Sent Events - One Way Messaging .A server-sent event is when a web page automatically gets updates from a server. Examples: Facebook/Twitter updates, stock price updates, news feeds, sport results, etc.