3-Tier Model

| Presentation | **User Interface**
Software: Apache, NGINX, IIS
Language: HTML, JavaScript, AngularJS |

↕ HTTP

| Application | **Business & Data Access Logic**
Software: JBoss, WebLogic, Tomcat
Language: Java, C#, Ruby, Python J2EE, EJB , ASP. Net. JSP, Servlet |

↕ JDBC

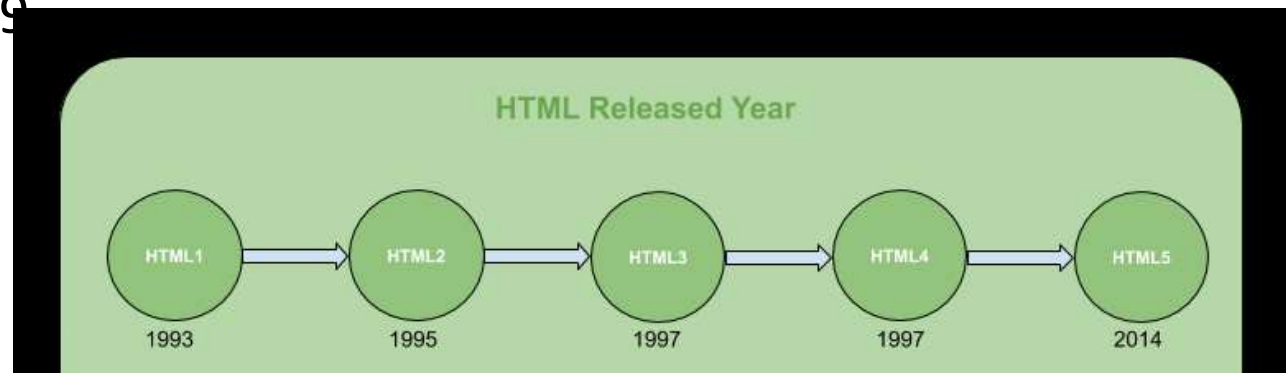| Database | **Data Layer**
Software: DB2, Oracle, MongoDB
Type: RDBMS, NOSQL, In-Memory, Time Series, Graph |

3-Tier Architecture Model

History of HTML

- Hypertext defines the link between the web pages.

- A markup language is used to define the text document within tag which defines the structure of web pages.

- HTML is a markup language used by the browser to manipulate text, images, and other content, in order to display it in the required format.

- HTML was created by Tim Berners-Lee in 1991.

- The first-ever version of HTML was HTML 1.0, but the first standard version was HTML 2.0, published in 1999.

HTML Released Year

HTML1	HTML2	HTML3	HTML4	HTML5
1993	1995	1997	1997	2014

Tags vs. Elements

- HTML specifies a set of *tags* that identify structure and content type
  - tags are enclosed in < >
    - `<img src="image.gif">` specifies an image
  - most tags come in pairs, marking a beginning and ending
    - `<title>` and `</title>` enclose the title of a page
    - HTML Tags not case-sensitive
    - Lower-case tags recommended
    - HTML Tags may contain attributes

- Can have tags within tags

Elements

An HTML *element* is an object enclosed by a pair of tags

<title>My Home Page</title> is a TITLE element

This text appears bold. is a BOLD element

<p>Part of this text is bold.</p>
is a PARAGRAPH element that contains a BOLD element

HTML page structure

- **<DOCTYPE! html>:** This is the document type declaration (not technically a tag).

- **<html>:** This is called the HTML root element. All other elements are contained within it.

- **<head>:** The head tag contains the "behind the scenes" elements for a webpage. Elements within the head aren't visible on the front-end of a webpage.

- HTML elements used inside the <head> element include:
- <style>
- <title>
- <base>
- <noscript>
- <script>
- <meta>
- <link>

- **<body>:** the body tag is used to enclose all the visible content of a webpage.


```
<!DOCTYPE html>          ←————————— Tells version of HTML
<html>            ←————————— HTML Root Element

<head>            ←————————— Used to contain  page HTML metadata
  <title>Page Title</title>    ←—————————Title of HTML page
</head>

<body>            ←————————— Hold content of HTML
  <h2>Heading Content</h2>     ←————————— HTML headling tag
  <p>Paragraph Content</p>     ←————————— HTML paragraph tag
</body>

</html>
```

HTML Page Structure

Example – A simple page to demonstrate the structure of html
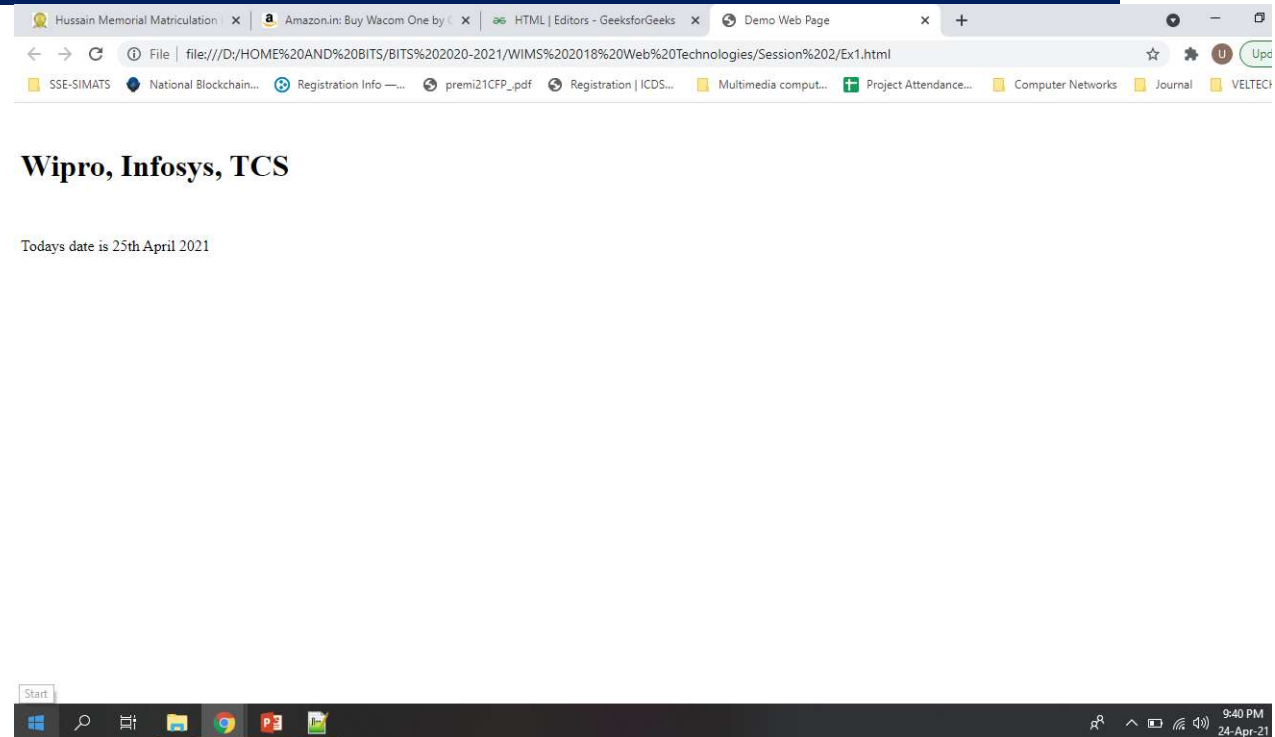
```
<!DOCTYPE html>
<html>

<head>
    <title>Demo Web Page</title>
</head>

<body>
    <h1>Wipro, Infosys, TCS </h1>

<p>Todays date is 25th April 2021 </p>

</body>

</html>
```

Wipro, Infosys, TCS

Todays date is 25th April 2021

HTML Headings

- These tags help us to give headings to the content of a webpage. These tags are mainly written inside the body tag. HTML provides us with six heading tags from **<h1>** to **<h6>**

```
<!DOCTYPE html>
<html>
 <head>
   <title>Demo Web Page</title>
</head>

<body>
   <h1>Wipro, Infosys, TCS </h1>
<p>Todays date is 25th April 2021 </p>

         <h1>Hello Students</h1>
   <h2>Hello India </h2>
   <h3>Hello Tamil nadu</h3>
   <h4>Hello Chennai</h4>
   <h5>Hello Wipro</h5>
   <h6>Hello Web Technology geeks</h6>
</body>
</html>
```

Wipro, Infosys, TCS

Todays date is 25th April 2021

Hello Students

Hello India

Hello Tamil nadu

Hello Chennai

Hello Wipro

Hello Web Technology geeks

<p>
    <hr>

- **HTML Paragraph**

- These tags help us to write paragraph statements in a webpage. They start with the **<p>** tag and ends with **</p>**. Here the **
** tag is used to break line and acts as a carriage return. **
** is an empty tag.

- **HTML Horizontal Lines**

- The **<hr>** tag is used to break the page into various parts, creating horizontal margins with help of a horizontal line running from left to right hand side of the page. This is also an empty tag and doesn't take any additional statements.

Alignment

Align headings and text with the ALIGN command

- left, center, and right justify a heading

  <H1 ALIGN=LEFT>Joe's home page</H1>

  <H1 ALIGN=CENTER>Joe's home page</H1>

  <H1 ALIGN=RIGHT>Joe's home page</H1>

- left, center, and right justify a paragraph

  <P ALIGN=LEFT>imagine a BIG paragraph in here</P>

  <P ALIGN=CENTER> imagine a BIG paragraph in here </P>

  <P ALIGN=RIGHT> imagine a BIG paragraph in here </P>

- note that the </P> is used here to end the paragraph and turn off the alignment

HTML Formatting

- **Text Formatting Tags**
  - <b>
  - <big>
  - <em>
  - <I>
  - <small>
  - <strong>
  - <sub>
  - <ins>
  - <del>

HTML Formatting Tags

Browser dependent

Emphasis Tag

    <EM> … </EM>

    Usually displays italics

Strong emphasis Tag

    <STRONG> … <STRONG>

    Usually displays boldface

- Comment Tag

    <! …>

Italics

    <I> … </I>

Boldface

    <B> … </B>

Underline

    <U>…</U>

Typewriter

    <TT>…</TT>

Strikeout

    <S>…</S>

Center

    <CENTER> … </CENTER>

HTML Link Tag

Link to
- Other sites
- Between your own pages
- To e-mail

<A HREF="name">hypertext</A>

<A HREF="http://www.kodak.com">Kodak</A>

<A HREF="john/johnpage.html">John's Page</A>

<A HREF="mailto:johnsmith@practice.com">John's mail</A>

<A HREF="file:///C:\web\john\johnpage.html">John's Page</A>

Text links

- use <A HREF="…"> to link to another HTML page

- HREF points to new page

- text between <A…> and </A> will be highlighted as a link, e.g., "click here for syllabus" below will be highlighted

  <A HREF="http://cis519dhm.bus.umich.edu">
  click here for syllabus
  </A>

HTML Images

- \<img>   Defines an image
-      Attributes:SRC, ALT, HEIGHT, WIDTH,   ALIGN, HSPACE ,VSPACE

- \<map> Defines an image map
- \<area> Defines an area inside an image map

Image File Formats

- Acceptable image formats vary by browser
- Generally acceptable formats are
  - **GIF**
    - Graphics Interchange Format
    - Use for graphics
  - **JPG**
    - Joint Photographic Experts Group
    - Use for photographs
  - **PNG**
    - Portable Network Graphics
    - Expected to replace GIF

Image File Formats

- **Transparency**
  - All bitmapped graphics are rectangular by nature.
  - Parts of a GIF image can be made transparent.
  - Transparency in layered in flat images.

- **Interlacing**
  - Downloading in a series of passes.
  - With each pass, the image becomes clearer.
  - Useful for slow Internet connections.

- **Animation**
  - A sequence of frames.
  - All frames saved as a single animated GIF file.

HTML Image Tag

- <p> An image:
- <img src="constr4.gif" width="144" height="50">
- </p>

- <p> A moving image:
- <img src="hackanm.gif" width="48" height="48">
- </p>

- An image:

- A moving image:

-

Inserting Image from Other Location

- <p> An image from another folder:

- <img src="/images/netscape.gif" width="33" height="32">

- </p>

- <p> An image from W3Schools:

- <img src="http://www.w3schools.com/images/ie.gif" width="73" height="68">

- </p>

- An image from another folder:

- An image from W3Schools:

-

Background Color / Graphics

Backgrounds can be added to each document, but are not readable on all browsers.

Attributes of <BODY>

BGCOLOR="code" Specify color for background of the screen

BACKGROUND="path/file" Tiles the graphic in the file to fit the screen

<BODY BGCOLOR="green">

<BODY BGCOLOR="#00FF00">

<BODY BACKGROUND=" BrickWall.gif">

- black is "000000" (i.e., no color)
- white is "ffffff"

Creating Tables

<TABLE BORDER> starts table including a border
- <CAPTION ALIGN=top> add title at top
- <TR> starts a new table row
- <TH> adds the headers for a table
- <TD> adds the data for a table
- <table> Defines a table
- <caption>Defines a table caption
- <colgroup>Defines groups of table columns
- <col>Defines the attribute values for one or more columns in a table
- <thead>Defines a table head
- <tbody>Defines a table body
- <tfoot>Defines a table footer
- see next page for example format

Table example

- Tables (continued)

```
<TABLE BORDER>
<CAPTION ALIGN=top>Joe's Resume</CAPTION>
 <TR>
   <TH>Year</TH><TH>Company</TH><TH>Position</TH>
 </TR>
 <TR>
   <TD>1995</TD><TD>Microsoft</TD><TD>Manager</TD>
 </TR>
 <TR>
   <TD>1994</TD><TD>Microsoft</TD><TD>Programmer</TD>
 </TR>
</TABLE>
```

HTML Forms

- HTML Form is a document which stores information of a user on a web server using interactive controls.

- An HTML form contains different kind of information such as username, password, contact number, email id etc.

- The elements used in an HTML form are check box, input box, radio buttons, submit buttons etc.

- Using these elements the information of an user is submitted on a web server.

- The **form** tag is used to create an HTML form.

HTML Forms

- <form>Defines a form for user input
- <input>Defines an input field
- <textarea>Defines a text-area (a multi-line text input control)
- <label>   Defines a label to a control
- <fieldset>Defines a fieldset
- <legend>Defines a caption for a fieldset
- <select>Defines a selectable list (a drop-down box)
- <optgroup>Defines an option group
- <option>Defines an option in the drop-down box
- <button>Defines a push button

Input Element in HTML Forms :

- **Text Field in HTML Forms :**
  The text field is a one line input field allowing the user to **input** text. Text Field input controls are created using the "**input**" element with a type attribute having value as "text".

- **Password Field in HTML Forms :**
  Password fields are a type of text field in which the text entered is masked using asterisk or dots for prevention of user identity from another person who is looking onto the screen. Password Field input controls are created using the "input" element with a type attribute having value as "password".

- **Name Attribute in Html Forms :**
  The name attribute is required for each input field. If the name attribute is not specified in an input field then the data of that field would not be sent at all.
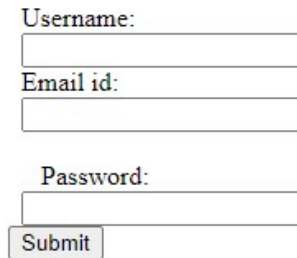
Text Fields

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

<form>
  Username:<br>
  <input type="text" name="username">
  <br>
  Email id:<br>
  <input type="text" name="email_id">
  <br><br>

  <label for="user-password">Password: </label><br>
  <input type="password" name="user-pwd"      id="user-
password">
<br>
  <input type="submit" value="Submit">
</form>

</body>
</html>
```

Username:

Email id:

Password:

Submit

USE of LABEL tag
Screen reader users (will read out loud the label, when the use
is focused on the element)
Users who have difficulty clicking on very small regions (such a
checkboxes) - because when a user clicks the text within the
<label> element, it toggles the input (this increases the hit
area).
Tips and Notes
Tip: 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.

Radio Buttons in HTML Form :

- Radio Buttons are used to let the user select exactly one option from a list of predefined options. Radio Button input controls are created using the "input" element with a type attribute having value as "radio".

```
<!DOCTYPE html>
<html>
<h3>Example of Radio Buttons</h3>
<body>
    <form>
        SELECT GENDER
        <br>
        <input type="radio" name="gender" id="male">
        <label for="male">Male</label><br>

        <input type="radio" name="gender" id="female">
        <label for="female">Female</label>
    </form>
</body>
</html>
```

Checkboxes in HTML Form :

- Checkboxes are used to let the user select one or more options from a pre-defined set of options. Checkbox input controls are created using the "input" element with a type attribute having value as "checkbox".

```html
<!DOCTYPE html>
<html>
<h3>Example of HTML Checkboxes</h3>
<body>
    <form>
        <b>SELECT SUBJECTS</b>
        <br>
        <input type="checkbox" name="subject" id="maths">
        <label for="maths">Maths</label>
        <input type="checkbox" name="subject" id="science">
        <label for="sceince">Science</label>
        <input type="checkbox" name="subject" id="english">
        <label for="english">English</label>
    </form>
</body>
</html
```

File select boxes in HTML Forms :

- File select boxes are used to allow the user to select a local file and send it as an attachment to the web server. It is similar to a text box with a button which allows the user to browse for a file.Instead of browsing for the file, the path and the name of the file can also be written. File select boxes are created using the "input" element with a type attribute having value as "file".

```
<!DOCTYPE html>
<html>
<h3>Example of a File Select Box</3>
    <body>
    <form>
        <label for="fileselect">Upload:</label>
        <input type="file" name="upload" id="fileselect">
    </form>
</body>
</html>
```

Text area in an HTML Form :

- Text Area is a multiple line text input control which allows user to provide a description or text in multiple lines. A Text Area input control is created using the "textarea" element.

```
<!DOCTYPE html>
<html>
<h3>Example of a Text Area Box</h3>
<body>
    <form>
        <label for="Description">Description:</label>
        <textarea rows="5" cols="50" name="Description"
                        id="Description"></textarea>
    </form>
</body>
</html>
```

Select Boxes in HTML Forms :

- Select boxes are used to allow users to select one or more than one option from a pull-down list of options. Select boxes are created using two elements which are "select" and "option".List items are defined within the select element.

```html
<!DOCTYPE html>
<html>
<h3>Example of a Select Box</h3>
<body>
    <form>
        <label for="country">Country:</label>
        <select name="country" id="country">
            <option value="India">India</option>
            <option value="Sri Lanka">Sri Lanka</option>
            <option value="Australia">Australia</option>
        </select>
    </form>
</body>
</html>
```

Reset And Submit Buttons :

- The Submit Button allows the user to send the form data to the web server. The Reset Button is used to reset the form data and use the default values.

```html
<!DOCTYPE html>
<html>
<h3>Example of a Submit And Reset Button</h3>
<body>
    <form action="test.php" method="post" id="users">
        <label for="username">Username:</label>
        <input type="text" name="username" id="Username">
        <input type="submit" value="Submit">
        <input type="reset" value="Reset">
    </form>
</body>
</html>
```