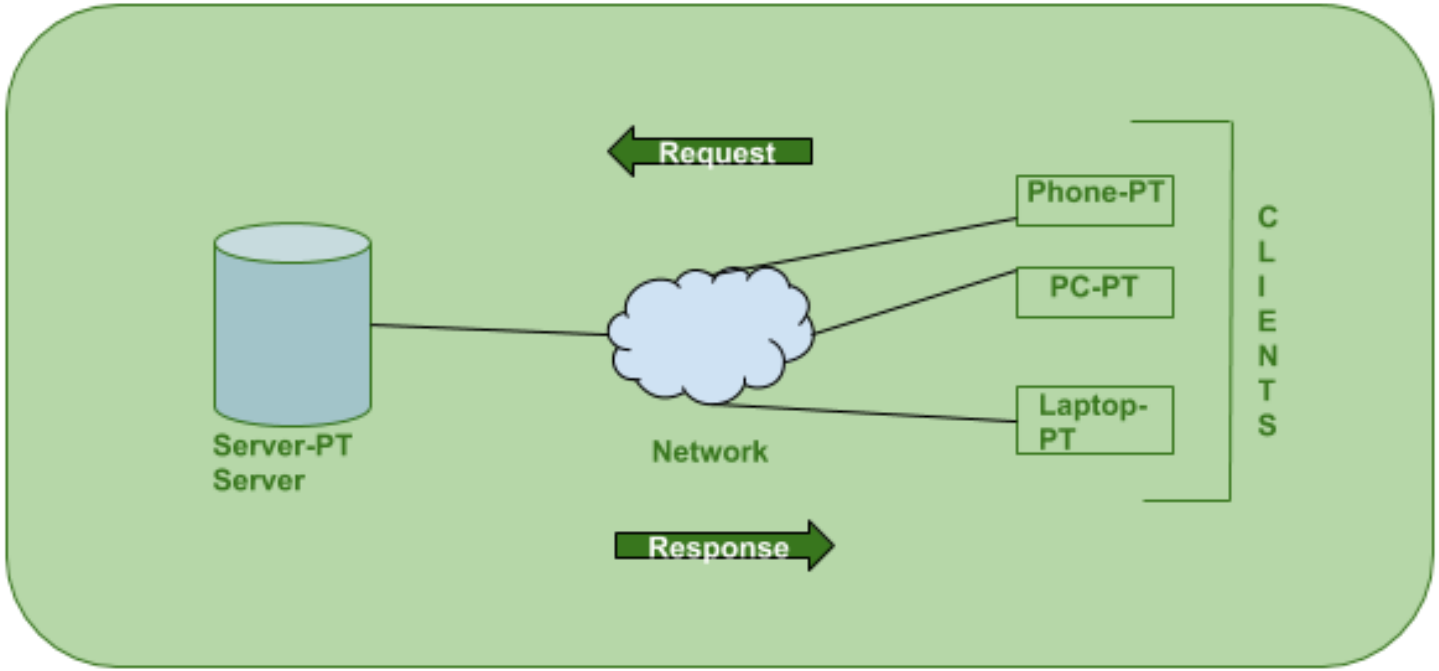
HTML

Module-1

Client-Server Model



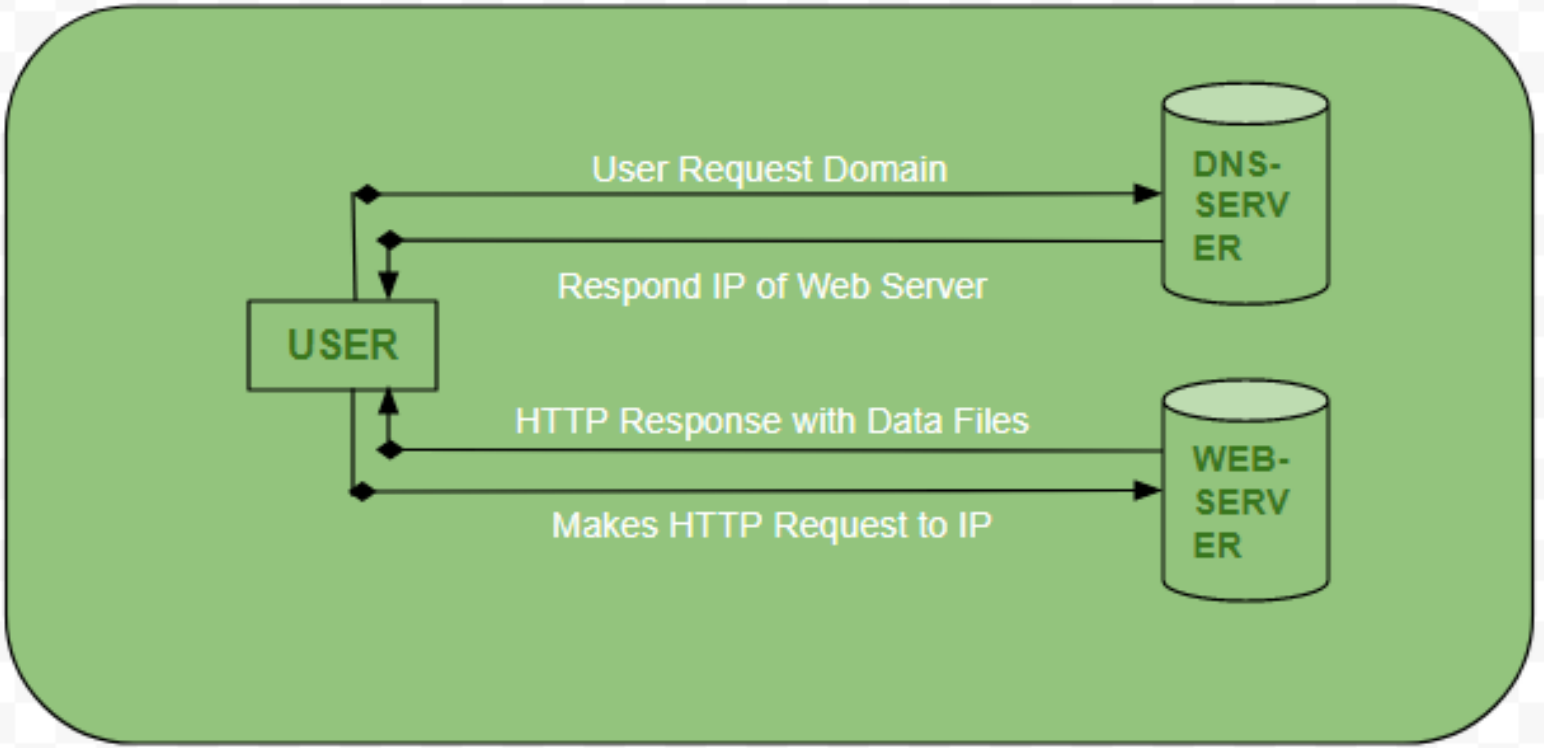
Client-Server Model

- **Client:** When we talk the word Client, it mean to talk of a person or an organization using a particular service. Similarly in the digital world a Client is a computer (Host) i.e. capable of receiving information or using a particular service from the service providers (Servers).
- **Servers:** Similarly, when we talk the word Servers, It mean a person or medium that serves something. Similarly in this digital world a Server is a remote computer which provides information (data) or access to particular services.
- So, it's basically the Client requesting something and the Server serving it as long as its present in the database.

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.

How the browser interacts with the servers ?



Advantages of Client-Server model:

- Centralized system with all data in a single place.
- Cost efficient requires less maintenance cost and Data recovery is possible.
- The capacity of the Client and Servers can be changed separately.

Disadvantages of Client-Server model:

- Clients are prone to viruses, Trojans and worms if present in the Server or uploaded into the Server.
- Server are prone to Denial of Service (DOS) attacks.
- Data packets may be spoofed or modified during transmission.
- Phishing or capturing login credentials or other useful information of the user are common and MITM(Man in the Middle) attacks are common.

What is HTML?

- HTML, otherwise known as HyperText Markup Language, is the language used to create Web pages
- Using HTML, you can create a Web page with text, graphics, sound, and video

Tags

- The essence of HTML programming is tags
- A tag is a keyword enclosed by angle brackets (Example: <I>)
- There are opening and closing tags for many but not all tags; The affected text is between the two tags

Attributes

- All HTML elements can have attributes
- The `href` attribute of `<a>` specifies the URL of the page the link goes to
- The `src` attribute of `<img>` specifies the path to the image to be displayed
- The `width` and `height` attributes of `<img>` provide size information for images
- The `alt` attribute of `<img>` provides an alternate text for an image
- The `style` attribute is used to add styles to an element, such as color, font, size, and more
- The `lang` attribute of the `<html>` tag declares the language of the Web page
- The `title` attribute defines some extra information about an element

More Tags...

- The opening and closing tags use the same command except the closing tag contains and additional forward slash /
- For example, the expression `<B> Warning </B>` would cause the word ‘Warning’ to appear in bold face on a Web page

Nested Tags

- Whenever you have HTML tags within other HTML tags, you must close the nearest tag first
- Example:

    <H1> <I> The Nation </I> </H1>

Structure of a Web Page

- All Web pages share a common structure
- All Web pages should contain a pair of <HTML>, <HEAD>, <TITLE>, and <BODY> tags

```
<HTML>
<HEAD>
<TITLE> Example </TITLE>
</HEAD>
<BODY>
    This is where you would include the text and images on your Web page.
</BODY>
</HTML>
```

The <TITLE> Tag

- Choose the title of your Web page carefully; The title of a Web page determines its ranking in certain search engines
- The title will also appear on Favorite lists, History lists, and Bookmark lists to identify your page

Text Formatting

- Manipulating text in HTML can be tricky; Oftentimes, what you see is NOT what you get
- For instance, special HTML tags are needed to create paragraphs, move to the next line, and create headings

Text Formatting Tags

<B> **Bold Face** </B>

<I> *Italics* </I>

<U> Underline </U>

<P> New Paragraph </P>

 Next Line

Changing the Font

- The expression <FONT FACE = “fontname”> … </FONT> can be used to change the font of the enclosed text
- To change the size of text use the expression <FONT SIZE=n> …. </FONT> where n is a number between 1 and 7

Changing the Font

- To change the color, use <FONT COLOR="red">…. </FONT>; The color can also be defined using hexadecimal representation (Example: #ffffff)
- These attributes can be combined to change the font, size, and color of the text all at once; For example, <FONT SIZE=4 FACE="Courier" COLOR="red"> …. </FONT>

Headings

- Web pages are typically organized into sections with headings; To create a heading use the expression <Hn>….</Hn> where n is a number between 1 and 7
- In this case, the 1 corresponds to the largest size heading while the 7 corresponds to the smallest size

Aligning Text

- The ALIGN attribute can be inserted in the <P> and <Hn> tags to right justify, center, or left justify the text
- For example, <H1 ALIGN=CENTER> The New York Times </H1> would create a centered heading of the largest size

Comment Statements

- Comment statements are notes in the HTML code that explain the important features of the code
- The comments do not appear on the Web page itself but are a useful reference to the author of the page and other programmers
- To create a comment statement use the <!-- …. --> tags

The Infamous Blink Tag

- It is possible to make text blink using the <BLINK> … </BLINK> tag
- However, it is best to use this feature at most sparingly or not at all; What seems like a good idea to a Web designer can become very annoying to a Web user
- The <BLINK> tag is not supported by Internet Explorer

Page Formatting

- To define the background color, use the BGCOLOR attribute in the <BODY> tag
- To define the text color, use the TEXT attribute in the <BODY> tag
- To define the size of the text, type <BASEFONT SIZE=n>

Example

```
<HTML>
<HEAD>
<TITLE> Example </TITLE>
</HEAD>
<BODY BGCOLOR="black"  TEXT="white">
<BASEFONT SIZE=7>
    This is where you would include the text and images on your Web
    page.
</BODY>
</HTML>
```

Inserting Images

- Type <IMG SRC = “image.ext”>, where image.ext indicates the location of the image file
- The WIDTH=n and HEIGHT=n attributes can be used to adjust the size of an image
- The attribute BORDER=n can be used to add a border n pixels thick around the image

Alternate Text

- Some browsers don’t support images. In this case, the ALT attribute can be used to create text that appears instead of the image.
- Example:

  <IMG SRC=“satellite.jpg” ALT = “Picture of satellite”>

Links

- A link lets you move from one page to another, play movies and sound, send email, download files, and more….
- A link has three parts: a **destination**, a **label**, and a **target**
- To create a link type

  <A HREF="page.html"> label </A>

Anatomy of a Link

<A HREF="page.html"> label </A>

- In the above link, "page.html" is the destination. The destination specifies the address of the Web page or file the user will access when he/she clicks on the link.
- The label is the text that will appear underlined or highlighted on the page

Example: Links

- To create a link to CNN, I would type:

  <A HREF="http://www.cnn.com">CNN</A>

- To create a link to MIT, I would type:

  <A HREF="http://www.mit.edu">MIT</A>

Changing the Color of Links

- The LINK, VLINK, and ALINK attributes can be inserted in the <BODY> tag to define the color of a link
  - LINK defines the color of links that have not been visited
  - VLINK defines the color of links that have already been visited
  - ALINK defines the color of a link when a user clicks on it

Using Links to Send Email

- To create a link to an email address, type <A HREF="mailto:email_address"> Label</A>
- For example, to create a link to send email to myself, I would type: <A HREF="mailto: ktdunn@mit.edu">email Katie Dunn</A>

Anchors

- Anchors enable a user to jump to a specific place on a Web site
- Two steps are necessary to create an anchor. First you must create the anchor itself. Then you must create a link to the anchor from another point in the document.

Anchors

- To create the anchor itself, type <A NAME=“anchor name”>label</A> at the point in the Web page where you want the user to jump to
- To create the link, type <A HREF=“#anchor name”>label</A> at the point in the text where you want the link to appear

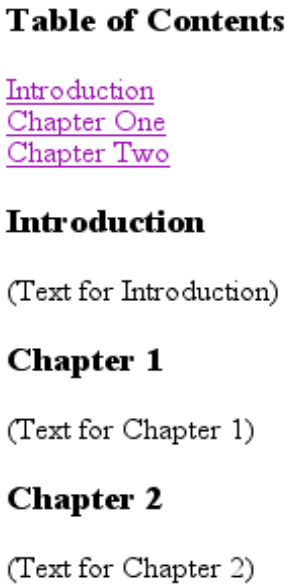
Example: Anchor

<A HREF="#chap2">Chapter Two</A>

Link

<A NAME="chap2">Chapter 2 </A>

Anchor



Ordered Lists

- Ordered lists are a list of numbered items.
- To create an ordered list, type:

```
<OL>
    <LI> This is step one.
    <LI> This is step two.
    <LI> This is step three.
</OL>
```

Here's how it would look on the Web:

1. **This is step one.**
2. **This is step two.**
3. **This is step three.**

Ordered Lists

```
<ol>
  <li>Coffee</li>
  <li>Tea</li>
  <li>Milk</li>
</ol>

<ol start="50">
  <li>Coffee</li>
  <li>Tea</li>
  <li>Milk</li>
</ol>
```

The ol element

1. Coffee
2. Tea
3. Milk

50. Coffee
51. Tea
52. Milk

More Ordered Lists….

- The TYPE=x attribute allows you to change the the kind of symbol that appears in the list.
  - A is for capital letters
  - a is for lowercase letters
  - I is for capital roman numerals
  - i is for lowercase roman numerals

Unordered Lists

- An unordered list is a list of bulleted items
- To create an unordered list, type:

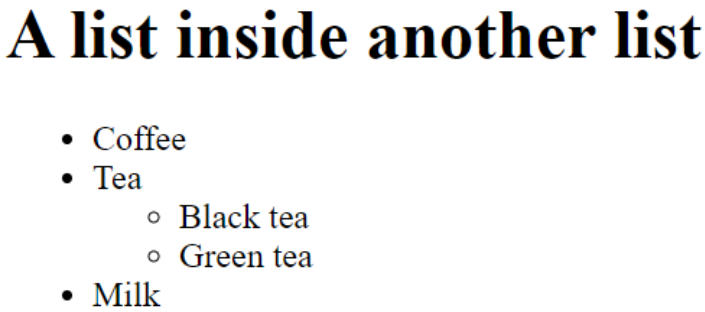
```
<UL>
    <LI> First item in list
    <LI> Second item in list
    <LI> Third item in list
</UL>
```

Here's how it would look on the Web:

- First item in list
- Second item in list
- Third item in list

Unordered Lists

```
<!DOCTYPE html>
<html>
<body>
<h1>A list inside another list</h1>
<ul>
  <li>Coffee</li>
  <li>Tea
    <ul>
      <li>Black tea</li>
      <li>Green tea</li>
    </ul>
  </li>
  <li>Milk</li>
</ul>
</body>
</html>
```



More Unordered Lists...

- The TYPE=shape attribute allows you to change the type of bullet that appears
  - *circle* corresponds to an empty round bullet
  - *square* corresponds to a square bullet
  - *disc* corresponds to a solid round bullet; this is the default value

Nested Unordered List

- Progrmming Languages
  - C
  - C++
  - Java
  - Python
- DSA
  - Array
  - Linked List
  - stack
  - Queue
  - Trees
  - Graphs
- Web Technologies
  - HTML
  - CSS
  - JavaScript
    - React
    - Angular
    - Vue
  - Bootstrap

Preceding Text

I. List Item 1
   a. Nested Item 1.1
   b. Nested Item 1.2
II. List Item 2
   1. Nested Item 2.1
   2. Nested Item 2.2
      - Nested Item 2.2.1
      - Nested Item 2.2.2
        - Nested Item 2.2.2.1
        - Nested Item 2.2.2.2
      - Nested Item 2.2.3
   3. Nested Item 2.3
III. List Item 3
   - Nested Item 3.1
   - Nested Item 3.1
   - Nested Item 3.1

Nested List

I. Background Skills
    A. Unix Commands
    B. Vim Test Editors
II. HTML
    A. Minimal Page
    B. Headings
    C. Elements
    D. Lists
        i. Unordered
        ii. Ordered
        iii. Definition
        iv. Nested
    E. Links
        i. Absolute
        ii. Relative
    F. Images
III. CSS
    A. Anatomy
    B. Basic Selectors
        i. Element
        ii. Class
        iii. ID
        iv. Group
    C. The DOM
    D. Advanced Selectors
    E. Box Model
IV. Programming
    A. Python
    B. JavaScript
V. Database
    A. Flat File
    B. Relational

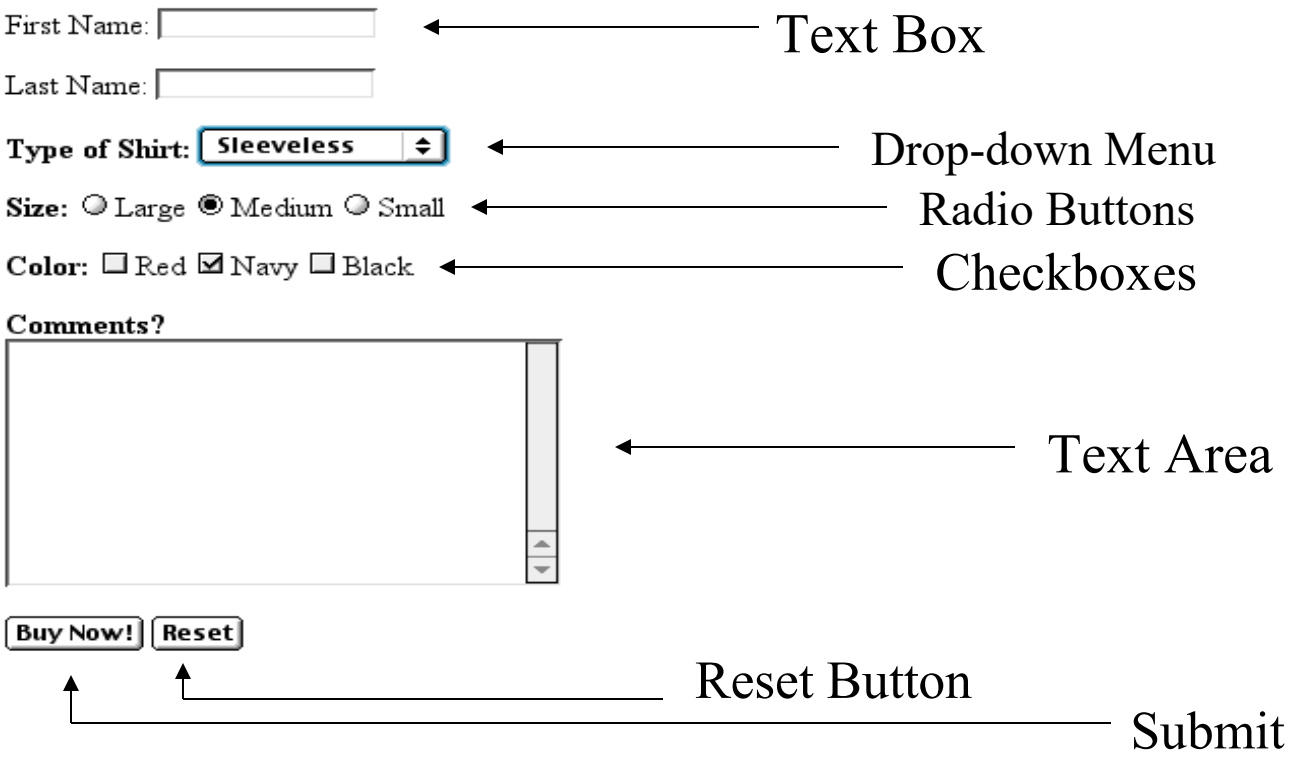
Forms

- What are forms?
  - An HTML form is an area of the document that allows users to enter information into fields.
  - A form may be used to collect personal information, opinions in polls, user preferences and other kinds of information.

Forms

- There are two basic components of a Web form: the shell, the part that the user fills out, and the script which processes the information
- HTML tags are used to create the form shell. Using HTML you can create text boxes, radio buttons, checkboxes, drop-down menus, and more...

Example: Form



The Form Shell

- A form shell has three important parts:
  - the <FORM> tag, which includes the address of the script which will process the form
  - the form elements, like text boxes and radio buttons
  - the submit button which triggers the script to send the entered information to the server

Creating the Shell

- To create a form shell, type <FORM METHOD=POST ACTION="script_url"> where "script_url" is the address of the script
- Create the form elements
- End with a closing </FORM> tag

Creating Text Boxes

- To create a text box, type <INPUT TYPE="text" NAME="name" VALUE="value" SIZE=n MAXLENGTH=n>
- The NAME, VALUE, SIZE, and MAXLENGTH attributes are optional

Text Box Attributes

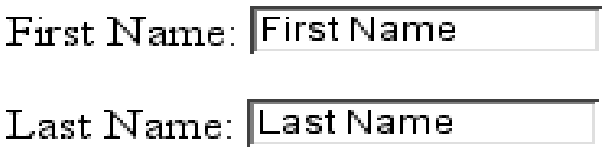
- The NAME attribute is used to identify the text box to the processing script
- The VALUE attribute is used to specify the text that will initially appear in the text box
- The SIZE attribute is used to define the size of the box in characters
- The MAXLENGTH attribute is used to define the maximum number of characters that can be typed in the box

Example: Text Box

First Name: <INPUT
TYPE="text"
NAME="FirstName"
VALUE="First Name"
SIZE=20>

Last Name: <INPUT
TYPE="text"
NAME="LastName"
VALUE="Last Name"
SIZE=20>

- Here's how it would look on the Web:



Creating Larger Text Areas

- To create larger text areas, type <TEXTAREA NAME="name" ROWS=n1 COLS=n2 WRAP> Default Text </TEXTAREA>, where n1 is the height of the text box in rows and n2 is the width of the text box in characters
- The WRAP attribute causes the cursor to move automatically to the next line as the user types

Example: Text Area

```
<B>Comments?</B>
<BR>
<TEXTAREA NAME="Comments" ROWS=10 COLS=50 WRAP>
</TEXTAREA>
```

Creating Radio Buttons

- To create a radio button, type <INPUT TYPE="radio" NAME="name" VALUE="data">Label, where "data" is the text that will be sent to the server if the button is checked and "Label" is the text that identifies the button to the user

Example: Radio Buttons

```
<B> Size: </B>
<INPUT TYPE="radio" NAME="Size"
  VALUE="Large">Large
<INPUT TYPE="radio" NAME="Size"
  VALUE="Medium">Medium
<INPUT TYPE="radio" NAME="Size"
  VALUE="Small">Small
```

Creating Checkboxes

- To create a checkbox, type <INPUT TYPE="checkbox" NAME="name" VALUE="value">Label
- If you give a group of radio buttons or checkboxes the same name, the user will only be able to select one button or box at a time

Example: Checkboxes

```
<B> Color: </B>
<INPUT TYPE="checkbox" NAME="Color"
  VALUE="Red">Red
<INPUT TYPE="checkbox" NAME="Color"
    VALUE="Navy">Navy
  <INPUT TYPE="checkbox" NAME="Color"
    VALUE="Black">Black
```

Creating Drop-down Menus

- To create a drop-down menu, type <SELECT NAME=“name” SIZE=n MULTIPLE>
- Then type <OPTION VALUE= “value”>Label
- In this case the SIZE attribute specifies the height of the menu in lines and MULTIPLE allows users to select more than one menu option

Example: Drop-down Menu

```
<B>WHICH IS FAVOURITE FRUIT:</B>
<SELECT>
<OPTION VALUE="MANGOES">MANGOES
<OPTION VALUE="PAPAYA">PAPAYA
<OPTION VALUE="GUAVA">GUAVA
<OPTION VALUE="BANANA"> BANANA
<OPTION VALUE="PINEAPPLE">PINEAPPLE
</SELECT>
```

Creating a Submit Button

- To create a submit button, type <INPUT TYPE="submit">
- If you would like the button to say something other than submit, use the VALUE attribute
- For example, <INPUT TYPE="submit" VALUE="Buy Now!"> would create a button that says "Buy Now!"

Creating a Reset Button

- To create a reset button, type <INPUT TYPE="reset">
- The VALUE attribute can be used in the same way to change the text that appears on the button

Tables

- Tables can be used to display rows and columns of data, create multi-column text, captions for images, and sidebars
- The <TABLE> tag is used to create a table; the <TR> tag defines the beginning of a row while the <TD> tag defines the beginning of a cell

Adding a Border

- The BORDER=n attribute allows you to add a border n pixels thick around the table
- To make a solid border color, use the BORDERCOLOR="color" attribute
- To make a shaded colored border, use BODERCOLORDARK="color" and BORDERCOLORLIGHT="color"

Creating Simple Table

```
<TABLE BORDER=10>
    <TR>
        <TD>One</TD>
        <TD>Two</TD>
    </TR>
    <TR>
        <TD>Three</TD>
        <TD>Four</TD>
    </TR>
</TABLE>
```

- Here's how it would look on the Web:

Adjusting the Width

- When a Web browser displays a table, it often adds extra space. To eliminate this space use the WIDTH =n attribute in the <TABLE> and <TD> tags
- Keep in mind - a cell cannot be smaller than its contents, and if you make a table wider than the browser window, users will not be able to see parts of it.

Centering a Table

- There are two ways to center a table
  - Type <TABLE ALIGN=CENTER>
  - Enclose the <TABLE> tags in opening and closing <CENTER> tags

Wrapping Text around a Table

- It is possible to wrap text around a table. This technique is often used to keep images and captions together within an article.
- To wrap text around a table, type <TABLE ALIGN = LEFT> to align the table to the left while the text flows to the right.
- Create the table using the <TR>, <TD>, and </TABLE> tags as you normally would

Adding Space around a Table

- To add space around a table, use the HSPACE=n and VSPACE=n attributes in the <TABLE> tag
- Example:

```
<TABLE HSPACE=20 VSPACE=20>
```

Spanning Cells Across Columns

- It is often necessary to span one cell across many columns. For example, you would use this technique to span a headline across the columns of a newspaper article.
- To span a cell across many columns, type <TD COLSPAN=n>, where n is the number of columns to be spanned

Spanning Cells Across Rows

- To span a cell across many rows, type <TD ROWSPAN=n>, where n is the number of rows

Aligning Cell Content

- By default, a cell's content are aligned horizontally to the left and and vertically in the middle.
- Use VALIGN=direction to change the vertical alignment, where "direction" is top, middle, bottom, or baseline
- Use ALIGN=direction to change the horizontal alignment where "direction" is left, center, or right

Controlling Cell Spacing

- Cell spacing is the space *between* cells while cell padding is the space *around* the contents of a cell
- To control both types of spacing, use the CELLSPACING =n and CELLPADDING=n attributes in the <TABLE> tag

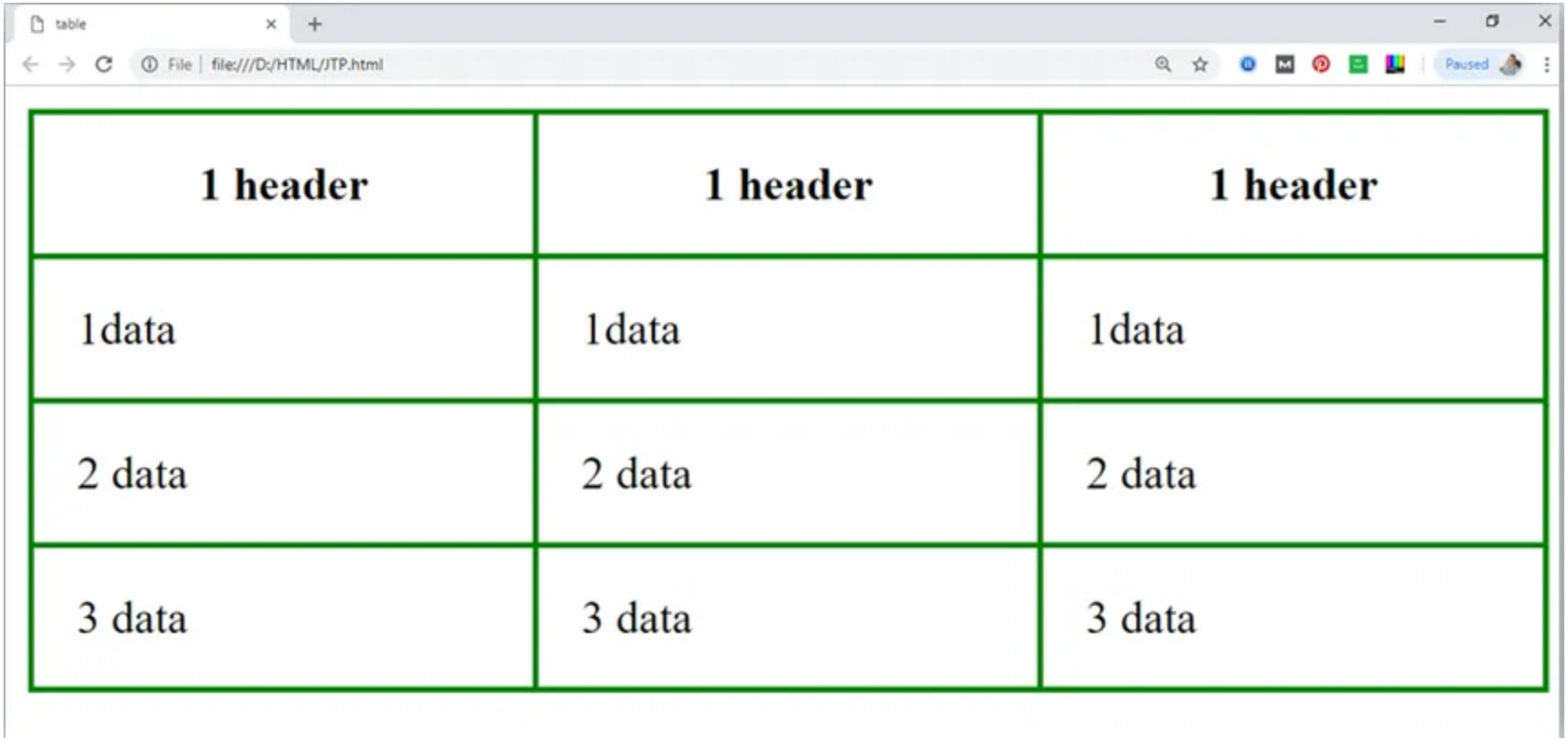


table
File | file:///D:/HTML/JTP.html
Paused
1 header
1 header
1 header
1data
1data
1data
2 data
2 data
2 data
3 data
3 data
3 data

Adding Image in Table Cell in HT

127.0.0.1:5500/image-in-html-table.html

Name	Image	Category
Tiger		Animal
Eagle		Bird
Rabbit		Animal
Parrot		Bird

A test table with merged cells

	Average		Red eyes
	height	**weight**	
Males	1.9	0.003	40%
Females	1.7	0.002	43%

TIME TABLE

Day/Period	I 9:30-10:20	II 10:20-11:10	III 11:10-12:00	12:00-12:40	IV 12:40-1:30	V 1:30-2:20	VI 2:20-3:10	VII 3:10-4:00
Monday	Eng	Mat	Che	**LUNCH**	LAB			Phy
Tuesday	LAB				Eng	Che	Mat	SPORTS
Wednesday	Mat	phy	Eng		Che	LIBRARY		
Thursday	Phy	Eng	Che		LAB			Mat
Friday	LAB				Mat	Che	Eng	Phy
Saturday	Eng	Che	Mat		SEMINAR			SPORTS

Nesting Tables

- Create the inner table
- Create the outer table and determine which cell of the outer table will hold the inner table
- Test both tables separately to make sure they work
- Copy the inner table into the cell of the outer table
- Don’t nest too many tables. If you find yourself doing that, find an easier way to lay out your Web page

Changing a Cell's Color

- To change a cell's color, add the BGCOLOR="color" attribute to the <TD> tag
- Example:

  <TD BGCOLOR="blue">

Dividing Your Table into Column Groups

- You can divide your table into two kinds of column groups: structural and non-structural.
- Structural column groups control where dividing lines are drawn; Non-structural groups do not
- Both let you format an entire column of cells at once

Column Groups

- To create structural column groups, type <COLGROUP SPAN=n> after the <TABLE> tag, where n is the number of columns in the group
- To create non-structural column groups, type <COLSPAN=n>, where n is the number of columns in the group

Dividing Table into Horizontal Sections

- You can also create a horizontal section consisting of one or more rows. This allows you to format the rows all at once
- To create a horizontal section, type <THEAD>, <TBODY>, or <TFOOT> before the first <TR> tag of the section
- Netscape does not support these tags

Controlling Line Breaks

- Unless you specify otherwise a browser will divide the lines in a cell as it sees fit.
- The NOWRAP attribute placed within the <TD> tag forces the browser to keep all the text in a cell on one line
- Example:
  - <TD NOWRAP>Washington, D.C.

Frame tag

<iframe src="https://arxiv.org/pdf/2005.08100v1.pdf" title="Research Paper">

</iframe>

Div tag

The tag is used as a container for HTML elements - which is then styled with CSS or manipulated with JavaScript. The tag is easily styled by using the class or id attribute.

My feedback form

- Name:
- Email:
- Password:

- Please check all the emotions that apply to you:
  - Angry
  - Sad
  - Happy
  - Ambivalent
- How satisfied were you with our service?
  - Very satisfied
  - Satisfied
  - Didn't care
  - Dissatisfied
  - Very dissatisfied
- Further comments:

- Bio photo: Choose...
- Location visited: Select location

- submit

HTML Input Types

- <input type="image" src=" " alt="Submit" width="48" height="48">
- <input type=“button” value=“Click Me” onClick=“alert(‘Button Clicked!’)”>
- <input type=“color” id=“col” name=“favcolor” value=“black”>
- <input type=“date” id=“dob” name=“dob”>
- <input type=“datetime-local” id=“appointment” name=“appointment”>
- <input type=“email” id=“email” name=“email” placeholder=“Enter your email”>
- <input type=“file” id=“resume” name=“resume” accept=“.pdf,.doc,.docx”>
- <input type=“hidden” id=“userid” name=“userid” value=“12345”>
- <input type=“month” id=“billingmonth” name=“billingmonth”>
- <input type=“number” id=“quantity” name=“quantity” min=“1” max=“10” value=“1”>

HTML Input Types

- <input type=“password” id=“pass” name=“pass” minlength=“8” placeholder=“Enter your password”>
- <input type=“range” id=“volume” name=“volume” min=“0” max=“100” step=“10” value=“50”>
- <input type=“search” id="searchBox" name="query" placeholder="Search here">
- <input type=“tel” id="phone" name="phone" placeholder="123-456-7890" pattern="[0-9]{3}-[0-9]{3}-[0-9]{4}" >
- <input type=“time” id="meetingTime" name="meetingTime" >
- <input type=“url” id="website" name="website" placeholder="https://example.com" required >
- <input type=“week” id="week" name="week">

Books.html

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Book Information</title>
</head>
<body>
    <h1>Book Information</h1>

    <ul>
        <li><a href="details.html#Book1">Book 1</a></li>
        <li><a href="details.html#Book2">Book 2</a></li>
        <li><a href="details.html#Book3">Book 3</a></li>
        <!-- Add more books as needed -->
    </ul>
</body>
</html>
```

details.html

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Book Details</title>
</head>
<body>
    <h1>Book Details</h1>

    <h2 id="Book1"></h2>
    <p id="bookDescription">Book description goes here.</p>
    <!-- Add more details as needed -->

    <a href="Books.html">Back to Home</a>
</body>
</html>
```

3. Design a page to display the product information such as name, brand, price and etc with table tag

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport"
content="width=device-width, initial-
scale=1.0">
    <title>Product Information</title>
</head>
<body>

<h2>Product Information</h2>

<table border="1" cellspacing="0"
cellpadding="8">
    <thead>
        <tr>
            <th>Name</th>
            <th>Category</th>
            <th>Brand</th>
            <th>Quantity</th>
            <th>Price (INR)</th>
        </tr>
    </thead>
    <tr>
        <td>T-Shirt</td>
        <td>Apparel</td>
        <td>XYZ Clothing</td>
        <td>25</td>
        <td>799.00</td>
    </tr>
    <tr>
        <td>Cookware Set</td>
        <td>Home & Kitchen</td>
        <td>PQR Homeware</td>
        <td>5</td>
        <td>2,500.00</td>
    </tr>
    <tr>
        <td>Face Cream</td>
        <td>Beauty</td>
        <td>LMN Cosmetics</td>
        <td>50</td>
        <td>299.00</td>
    </tr>
```

```
 <tr>
            <td>Cricket Bat</td>
            <td>Sports & Outdoors</td>
            <td>JKL Sports</td>
            <td>15</td>
            <td>1,999.00</td>
        </tr>
    </tbody>
</table>

</body>
</html>
```