WEB TECHNOLOGY

Dr.L.RAMESH
Assistant Professor,
Department of Information Technology,
Vels Institute of Science, Technology & Advanced Studies (VISTAS),
Pallavaram, Chennai, Tamil Nadu, India.

Dr.S.GOPINATHAN
Professor & Head,
Department of Computer Science,
Guindy Campus, University of Madras,
Chennai, Tamil Nadu, India.

Dr.T.KAMALAKANNAN
Professor,
Department of Information Technology,
Vels Institute of Science, Technology & Advanced Studies (VISTAS),
Pallavaram, Chennai, Tamil Nadu, India.

Dr.K.BALAJI
Assistant Professor,
Department of Information Technology,
Vels Institute of Science, Technology & Advanced Studies (VISTAS),
Pallavaram, Chennai, Tamil Nadu, India.

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Author's Name:	Dr.L.RAMESH Dr.S.GOPINATHAN Dr.T.KAMALAKANNAN Dr.K.BALAJI
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CONTENT

CHAPTER I

HTML

1. Define Internet

The Internet is a global collection of computer networks that are linked together by devices called routers and use a common set of protocols for data transmission known as TCP/IP (transmission control protocol / Internet protocol). The primary purpose of the Internet is to facilitate the sharing of information.

2. Define ARPANET

The Advanced Research Projects Agency Network (ARPANET) was an early packet switching network and the first network to implement the protocol suite TCP/IP.... ARPANET was initially funded by the Advanced Research Projects Agency (ARPA) of the United States Department of Defense.

3. Define IP Address

IP address is short for Internet Protocol (IP) address. An IP address is an identifier for a computer or device on a TCP/IP network. Networks using the TCP/IP protocol route messages based on the IP address of the destination. The format of an IP address is a 32-bit numeric address written as four numbers separated by periods. Each number can be zero to 255. For example, 1.160.10.240 could be an IP address.

Define HTML

HTML (Hypertext Markup Language) is the set of markup symbols or codes inserted in a file to display on a World Wide Web browser page. The markup tells the Web browser how to display a Web page's words and images for the user. Each individual markup code is referred to as a tag.

4. Mention any two basic Rules for HTML.

- Tags are always surrounded by angle brackets (less-than/greater-than characters), as in.
- Most tags come in pairs. There are some exceptions.
- For instance, the tag creates a blank line and doesn't have an end tag
- The end tag always starts with a forward slash. For example for bold tag, the end tag should be </b>.

5. State any two attributes of <BODY> Tag.

- Background attribute: This attribute allow us to include a background image.
- Background color, Text Color, Link Color By default browsers display text in black. If we want to change the color or text (by TEXT attribute), color of links (by LINK attribute), color of active links (by ALINK attribute) and background color (by BGCOLOR attribute).

6. What are Cellspacing and Cellpadding?

Cellpadding:

Cellpadding is the amount of space between the outer edges of the table cell and the content of the cell. The default is 1.

Cellspacing:

Cellspacing is the amount of space in between the individual table cells.

7. What is an Anchor Tag?

The tag defines a hyperlink, which is used to link from one page to another. The most important attribute of the element is the href attribute, which indicates the link's destination.

Example: Visit W3Schools.com!

8. Mention any two attributes of <TABLE> tag

- The HTML tag supports the following attributes: Bgcolor- Specifies the background color of the table.
- Border- Specifies the border width. A value of "0" means no border.
- Cell-padding- Specifies the space between the cell borders and their contents.
- Cell-spacing- Specifies the space between cells.
- Align- Visual alignment either right, left, center, justify.

9. Define <MARQUEE> tag

The HTML tag is used for scrolling piece of text or image displayed either horizontally across or vertically down your web site page depending on the settings.

Attributes:

- **Behavior -** Defines the type of scrolling. It value are scroll, slide, alternate.
- **Bgcolor -** Defines the direction of scrolling the content.

- **Width -** Defines the width of marquee.
- **Scroll Delay -** Defines how long to delay between each jump.

10. What is an Ordered List?

An ordered list typically is a numbered list of items. Ordered lists are appropriate where the exact ordering of items are critically important to the meaning of the content .An ordered list starts with the tag. Each list item starts with the <li> tag.

The type attribute of the <ol> tag, defines the type of the list item marker.

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

Example:

1. Coffee
2. Tea
3. Milk

11. What is an Unordered List?

An unordered list typically is a bulleted list of items. The opening list tag must be <ul>. This type of list is used for lists that don't have a required order. Each list item starts with the <li> tag.

Value	Description
disc	Sets the list item marker to a bullet (default)
circle	Sets the list item marker to a circle
square	Sets the list item marker to a square none

The list items will not be marked

Example:

- ✓ Coffee
- ✓ Tea
- ✓ Milk

12. What do you mean by Frames?

HTML frames are used to divide your browser window into multiple sections where each section can load a separate HTML document. A collection of frames in the browser window is known as a frameset.

The <frame> tag defines one particular window (frame) within a <frameset>. Each <frame> in a <frameset> can have different attributes, such as border, scrolling, the ability to resize, etc.

Attribute:

- ➢ **Cols:** Specifies the number and size of columns in a frameset.
- ➢ **Rows:** Specifies the number and size of rows in a frameset.

13. Define <HEADER> Tags

Headings are defined with the< h1> to <h6> tags. <h1> defines the most important heading. <h6> defines the least important heading.<h1> headings should be used for main headings, followed by <h2> headings, then the less important <h3>, and so on.

Example:

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

14. Define Rowspan and Colspan

A table is divided into rows and each row is divided into cells.

Colspan

The Colspan attribute defines the number of columns a cell should span (or merge) horizontally. If we want to merge two or more Cells in a row into a single Cell.

<td colspan=2 >

Rowspan

The Rowspan attribute specifies the number of rows a cell should span vertically. If we want to merge two or more Cells in the same column as a single Cell vertically.

<td rowspan=2 >

SECTION – B (8 MARKS)

1.1 Internet Basics

- The Internet is a global collection of computer networks that are linked together by devices called routers and use a common set of protocols for data transmission known as TCP/IP (transmission control protocol / Internet protocol).
- The primary purpose of the Internet is to facilitate the sharing of information.
- In this network each computer is recognized by a globally unique address known as IP address. A special computer DNS (Domain Name Server) is used to give name to the IP Address so that user can locate a computer by a name.
- There are many different tools used on the Internet to make this possible. Some of the more common tools include email, listservs, newsgroups, telnet, gopher, FTP, and the World Wide Web. Probably the most popular of all Internet tools is the World Wide Web.
- Internet refers to network of networks.

World Wide Web (WWW):

The WWW is a collection of Internet sites that can be accessed by using a hypertext interface. Hypertext documents on the web contain links to other documents located anywhere on the web. By clicking on a link, you are immediately taken to another file or site to access relevant materials anywhere in the world.

Browser:

Browser is a piece of software such as Mozilla Firefox and Internet Explorer that allows a computer to access and display documents, view pictures, hear sound, and view video clips from the World Wide Web.

Examples: Netscape Navigator and Microsoft Internet Explorer.

E-mail :

E-mail is mail that's electronically transmitted by your computer. As opposed to snail mail, e-mail sends your messages instantaneously, anywhere in the world. It has the capability to send messages at any time and to anyone.

File Transfer Protocol:

File Transfer Protocol is the standard method for downloading and uploading files over the Internet. With FTP, you can login to a server and transfer files (meaning you can "send" or "receive" files).

HTML (Hypertext Markup Language):

HTML is a set of commands used to create World Wide Web documents.

URL (Uniform Resource Locator):

The Uniform Resource Locator (URL) is an addressing scheme that is used on the Internet to locate resources and/or services on the World Wide Web. Basically the URL is the address of a computer file that has been put on a computer server to access the Internet.

Internet Protocol (IP) Address:

The Internet is composed of local, regional, national, and worldwide computer networks. Each computer on the Internet can be identified by a set of unique numbers that is called an Internet Protocol (IP) address. The IP address is composed of four different numbers separated by periods such as 205.134.120.60.

Link or Hypertext Link:

Link or Hypertext Link is an underlined word(s), phrase(s), or graphics on a Web page that transports the reader to additional or related information on the Internet.

HTTP (Hypertext Transfer Protocol):

HTTP is the abbreviation for Hypertext Transfer Protocol. It is the set of rules by which Web pages are transferred across the Internet.

Home Page:

Homepage or Home page is the first page that is viewed when the browser starts. It is also the page of a Web site that provides the introduction or content with links.

Web Page:

A Web page is a single hypertext file or a page that is part of a Web site.

Website:

A **Website** is a collection of World Wide Web pages or files. Explain the following tags with examples <p> <sub> <sup> Header tag.

Paragraph Tag:

The **<p>** tag offers a way to structure your text into different paragraphs. Each paragraph of text should go in between an opening <p> and a closing </p> tag.

Attributes: HTML Paragraph Attributes

1.2 HTML Paragraph Element & Attributes:

- **Align -** The align attribute is used to set the alignment of the paragraph with respect to the page size.
- **Values -** LEFT, RIGHT, and CENTER.

Example: <p align="center">

The <p> tag also supports the Global Attributes in HTML

Example:

```
<html>
<body>
<p>This is a paragraph.</p>
<p>This is a paragraph.</p>
<p>This is a paragraph.</p>
</body>
```

Output:

```
This is a paragraph.
This is a paragraph.
This is a paragraph.
```

Superscript Text:

The content of a **<sup>...</sup>** element is written in superscript; the font size used is the same size as the characters surrounding it but is displayed half a character's height above the other characters.

Subscript Text:

The content of a **<sub>...</sub>** element is written in subscript; the font size used is the same as the characters surrounding it, but is displayed half a character's height beneath the other characters.

Example:

```
<html>
<body>
<p> This text contains <sub>subscript</sub> text. </p>
<p> This text contains <sup> superscript </sup> text.
</p>
</body>
</html>
```

Output:

```
This text contains subscript text.
This text contains superscript text
```

Header Tag:

The <h1> to <h6> tags are used to define HTML headings. <h1> defines the most important heading. <h6> defines the least important heading.

Attribute:

Value	Description
Align left, center, right, justify	Specifies the alignment of a heading.

Example:

```
<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>
```

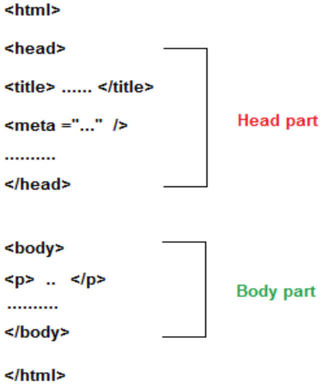
Output:

```
This is heading 1
This is heading 2
This is heading 3
This is heading 4
This is heading 5
This is heading 6
```

Explain the structure of an HTML program with an example.

Every Html Program contain two parts they are

- Head Part
- Body Part



```
<html>
<head>
<title> ...... </title>
<meta ="..."  />
..........
</head>

<body>
<p>  ..   </p>
..........
</body>

</html>
```

Figure 1.1: Contain Two Parts

Example:

```
<html>
<head>
<title>Rupert's Fabulous T-shirt Company </title>
</head>
<body>
<h1>Welcome to Rupert's fabulous T-Shirts!</h1>
<img src="http://www.emf.netl~estephen/images/turl
shirts.jpg"><hr>
<center> Why not visit
<a href="http://www.yahoo.com/">Yahoo </a></center>
</body>
</html>
```

1.3 Html Formatting Tags:

- HTML also defines special elements for defining text with a special meaning.
- HTML uses elements like <b> and <i> for formatting output, like bold or italic text.
- Formatting elements were designed to display special types of text:

Text Formatting Tags

Tag	Description
<b>	Defines Bold Text
<big>	Defines Big Text
<em>	Defines Emphasized Text
<i>	Defines Italic Text
<small>	Defines Small Text
<sub>	Defines Subscripted Text
<sup>	Defines Superscripted Text
<u>	For Underlining Text
<strike>	For Striking a Text

Example Program:

```
<html>
<head>
<title>Underlined Text Example</title>
</head>
<body>
<p>The following word uses an <u>underlined</u>
typeface.</p>
</body>
</html>
```

This will produce the following result −

The following word uses an underlined typeface

1.4 Explain Font Tag with its Attributes:

- Fonts play a very important role in making a website more user friendly and increasing content readability.
- HTML <font> tag can be used to add style, size, and color to the text to our website.
- The font tag is having three attributes called size, color, and face to customize our fonts.
- To change any of the font attributes at any time within our webpage, simply use the <font> tag. The text that follows will remain changed until you close with the </font> tag.
- We can change one or all of the font attributes within one <font> tag.

The syntax for the **<font> tag** is:

```
    <body>
    <p> <font> short quotation goes here </font> </p>
    </body>
```

Attributes:

- We can set content font size using **size** attribute. The range of accepted values is from 1(smallest) to 7(largest). The default size of a font is 3.
- We can set font face using face attribute.
- We can set any font color we like using color attribute. We can specify the color that we want by either the color name or hexadecimal code for that color.

Example:

```
<html>
<body>
<h1>Heading 1</h1>
<p>Example1<font color="red" size=4 face="Verdana">
font color to red using a named color</font></p>
</body>
</html>
```

1.5 Ordered and Unordered List with example:

♣ **Ordered (Numbered) List:**

The other popular kind of list is the ordered list. This type of list can be used when the order of items to list is important. An ordered list can be created with different styles: Arabic numbers, lowercase or uppercase letters, or lowercase or uppercase Roman numerals.

Elements

<ol> … </ol>

Ordered list; paired tag.

<li> … </li>

List item; paired tag.

Attribute

Type:

```
<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.
```

Example

```
<html>
<head><title>HTML Ordered List</title>
</head>
<body>
<ol>
<li>Beetroot</li>
<li>Ginger</li>
<li>Potato</li>
<li>Radish</li>
</ol>
</body>
</html>
```

Output:

```
        1. Beetroot
        2. Ginger
        3. Potato
        4. Radish
```

♣ **Unordered (bulleted) list:**

The most commonly used list is the unordered list. An unordered list can be used whenever the order of items you want to list is unimportant. HTML offers three different default characters to use with an unordered list: disc a circle and a square.

Elements:
<ul> … </ul>
Unordered list; paired tag.
<li> … </li>
List item; paired tag.

Attribute:
TYPE- disc, circle, square
<ul type = "square">
<ul type = "disc">
<ul type = "circle">

Example:

```
<html><head>
<title>HTML Unordered List</title>
</head>
<body>
<ul>
<li>Beetroot</li>
<li>Ginger</li>
<li>Potato</li>
<li>Radish</li>
</ul>
</body>
</html>
```

Output:

✓ Beetroot
✓ Ginger
✓ Potato
✓ Radish

Definition List <pre> and <hr>

Definition Lists:

Definition lists create a list with two parts to each entry: the name or term to be defined and the definition. This creates lists similar to a dictionary or glossary.

- <dl> – Defines the start of the list
- <dt> – A term
- <dd> – Term definition
- </dl> – Defines the end of the list

Example

```
<html>
<head>
<title>HTML Definition List</title>
</head>
<body>
<dl>
<dt><b>HTML</b></dt>
<dd>This stands for Hyper Text Markup Language
</dd>
<dt><b>HTTP</b></dt>
<dd>This stands for Hyper Text Transfer Protocol</dd>
</dl>
</body>
</html>
```

Output:

HTML

This stands for Hyper Text Markup Language

HTTP

This stands for Hyper Text Transfer Protocol**II.**

<Pre> tag

- ✓ The <pre> tag defines preformatted text.
- ✓ Text in a <pre> element is displayed in a fixed-width font (usually Courier), and it preserves both spaces and line breaks.

Attributes

- ✓ Width- Specifies the maximum number of characters per line

<hr> tag

- ♣ The HTML <hr> tag is used for creating a horizontal line. This is also called Horizontal
- ♣ Rule in HTML.

Attribute:

- align - left, center, right(Specifies the alignment of a <hr> element)
- Noshade - noshade(Specifies that a <hr> element should render in one solid color (noshaded), instead of a shaded color).
- size - Specifies the height of a <hr> element
- width - Specifies the width of a <hr> element

Example the <img> tag, <pre> and <br> with attributes and example

<img> tag

The HTML <img> tag is used to put an image in an HTML document.

Attributes

The HTML <img> tag also supports the following additional attributes −

- ✓ Align - Specifies the alignment for the image.
- ✓ Alt- Specifies alternate text
- ✓ Border- Specifies the width of the image border.
- ✓ Height- Specifies the height of the image
- ✓ Src- the Url of an image

Example:

```
<html>
<body>
<img src="smiley.gif" alt="Smiley face" width="42"
height="42">
</body>
</html>
```

Output:

II.

<pre> tag

- Refer previous question

III.

<br> tag

- The <br> tag inserts a single line break.
- The <br> tag is an empty tag which means that it has no end tag.

Example:

```
<html>
<body>
<p>To break lines<br>in a text,<br>use the br element.</p>
</body>
</html>
```

Output:

To break lines in a text use be element

Explain Marquee tag with its attributes

The HTML <marquee> tag is used for scrolling piece of text or image displayed either horizontally across or vertically down on web site page depending on the settings.

Attributes:

Behavior

Sets how the text is scrolled within the marquee. Possible values are scroll, slide and alternate. If no value is specified, the default value is scroll.

Bgcolor

Sets the background color through color name or hexadecimal value.

Direction

Sets the direction of the scrolling within the marquee. Possible values are left, right, up and down. If no value is specified, the default value is left.

Height

Sets the height in pixels or percentage value.

Hspace

Sets the horizontal margin

Loop

Sets the number of times the marquee will scroll. If no value is specified, the default value is −1, which means the marquee will scroll continuously.

Scrollamount

Sets the amount of scrolling at each interval in pixels. The default value is 6.

Zscrolldelay

Sets the interval between each scroll movement in milliseconds. The default value is 85.

Vspace

Sets the vertical margin in pixels or percentage value.

Width

Sets the width in pixels or percentage value.

Example:

```
<html>
<head>
<title>HTML marquee Tag</title>
</head>
<body>
<marquee> This is basic example of marquee</marquee>
<marquee direction = "up"> The direction of text will be from bottom to top. </marquee>
</body>
</html>
```

SECTION – C (15 MARKS)

1.6 Class Time Table using <table> tag with all its attributes.

Example:

```
<html>
<th>Tuesday</th>
<head>
<title>Table</title></head>
<body bgcolor=White>
<caption>TimeTable BCA-"B" 1st year</caption>
<table border=5 bordercolor=red cellspacing=10
cellpadding=10>
<tr bgcolor=blue>
<th>Day</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th rowspan=6>Lunch</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
<tr bgcolor=dodgerblue>
<th>Monday</th>
<td>WT</td>
<td>TAM</td>
<td>ENG</td>
<td>C</td>
<td>MAT</td>
<td>WT</td>
</tr>
```

```
<tr bgcolor=slateblue>
<td>MAT</td>
<td>WT</td>
<td>CS</td>
<td>C</td>
<td>TAM</td>
<td>WT</td>
</tr>
<tr bgcolor=tomato>
<th>Wednesday</th>
<td>WT</td>
<td>C</td>
<td>MAT</td>
<td colspan=3>ST LAB</td>
</tr>
<tr bgcolor=lightgrey>
<th>Thursday</th>
<td>WT</td>
<td>C</td>
<td>WT</td>
<td>MAT</td>
<td>ENG</td>
<td>C</td>
</tr>
<tr bgcolor=pink>
<th>Friday</th>
<td colspan=3>WT LAB</td>
<td>ST</td>
<td>OR</td>
<td>DCN</td>
</tr>
</table>
</body></html>
```

1.7 Form Tag:

```
<html>
<head></head>
<body bgcolor=green text=white><center>
<form>
Name<input type=textbox name=text1>
<br> Age
<input type=textbox name=text2><br> DOB
<select>
<option>1</option>
<option>2</option>
<option>3</option>
<option>4</option>
<option>5</option>
<option>6</option>
<option>7</option>
<option>8</option>
<option>9</option>
<option>10</option>
<option>11</option>
<option>12</option>

<option>13</option>
<option>14</option>
<option>15</option>
<option>16</option>
<option>17</option>
<option>18</option>
<option>19</option>
<option>20</option>
<option>21</option>
<option>22</option>
<option>23</option>
```

```
<option>24</option>
<option>25</option>
<option>26</option>
<option>27</option>
<option>28</option>
<option>29</option>
<option>30</option>
<option>31</option>&nbsp
</select>
<select>
<option>JAN</option>
<option>FEB</option>
<option>MAR</option>
<option>APR</option>
<option>MAY</option>
<option>JUN</option>
<option>JUL</option>
<option>AUG</option>
<option>SEP</option>
<option>OCT</option>
<option>NOV</option>
<option>DEC</option>&nbsp
</select>
<select><option>1998</option>
<option>1999</option>
<option>2000</option>
<option>2001</option>
<option>2002</option>
<option>2003</option>
<option>2004</option>
<option>2005</option>
<option>2006</option>
</select><br>
```

```
Gender<input type=radio name=r1>Male
<input type=radio name=r2>Female<br>
<input type=button name=b1 value=submit>
</form>
</body>
</html>
```

Write a program using frames that gives your likes, dislikes, Personal details, Educational details, Memorable Moments and embarrassing moments. Use List, Hyperlink, Marquee & Table

1.8 What is a Frame? <frame>&<frameset> with an Example

HTML frames are used to divide the browser window into multiple sections where each section can load a separate HTML document. A collection of frames in the browser window is known as a frameset. The window is divided into frames in a similar way the tables are organized: into rows and columns.

Creating Frames

To use frames on a page we use <frameset> tag instead of <body> tag. The <frameset> tag defines, how to divide the window into frames. The rows attribute of <frameset> tag defines horizontal frames and cols attribute defines vertical frames.

Example:

```
<html>
<head>
<title>Frame tag</title>
</head>
```

```
<frameset cols="50%,50%">
<frame src="likes.html">
<frame src="dislikes.html">
</frameset>
</html>
```

likes.html:

```
<h1><center>LIKES</center></h1>
<ul type=fillround>
<li>FLOWERS
<li>COOKING
<li>DRAWING
<li>GARDENING
</ul>
</body></html>
```

dislikes.html:

```
<html>
<body bgcolor=orange text= black size =15>
<h1><center><u>DISLIKES</u></center></h1>
<br><br>
<ol type=1><br></u>
<li>TELLING LIES
<li>CHEATING OTHERS
<li>FIGHTING
</ol>.
</body></html>
```

Explain detail about List and its attributes with example.

A list is a record of short pieces of related information or used to display the data or any information on web pages in the ordered or unordered form.

Ordered (numbered) List:

The other popular kind of list is the ordered list. This type of list can be used when the order of items to list is important. An ordered list can be created with different styles: Arabic numbers, lowercase or uppercase letters, or lowercase or uppercase Roman numerals.

Elements

<ol> … </ol>

Ordered list; paired tag.

<li> … </li>

List item; paired tag.

Attribute

Type-

<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.

Example

```
<html>
<head><title>HTML Ordered List</title>
</head>
<body>
<ol>
<li>Beetroot</li>
<li>Ginger</li>
<li>Potato</li>
<li>Radish</li>
</ol>
</body>
</html>
```

Output:

```
1. Beetroot
2. Ginger
3. Potato
4. Radish
```

Unordered (bulleted) List

The most commonly used list is the unordered list. An unordered list can be used whenever the order of items you want to list is unimportant. HTML offers three different default characters to use with an unordered list: disc a circle and a square.

Elements

<ul> … </ul>

Unordered list; paired tag.

<li> … </li>

List item; paired tag.

ATTRIBUTE: TYPE- disc, circle, square

```
<ul type = "square">
<ul type = "disc">
<ul type = "circle">
```

Example

```
<html>
<head>
<title>HTML Unordered List</title>
</head>
<body>
<ul>
<li>Beetroot</li>
<li>Ginger</li>
<li>Potato</li>
```

```
<li>Radish</li>
</ul>
</body>
</html>
```

Output:

- Beetroot
- Ginger
- Potato
- Radish

Definition Lists

Definition lists create a list with two parts to each entry: the name or term to be defined and the definition.

This Creates lists similar to a Dictionary or Glossary.

- ✓ <dl> – Defines the start of the list
- ✓ <dt> – A term
- ✓ <dd> – Term definition
- ✓ </dl> – Defines the end of the list

Example

```
<html>
<head> <title>HTML Definition List</title> </head>
<body>
<dl>
<dt><b>HTML</b></dt>
<dd> This stands for Hyper Text Markup Language</dd>
<dt><b>HTTP</b></dt>
<dd>This stands for Hyper Text Transfer Protocol</dd>
</dl>
</body>
</html>
```

Output:

HTML

This stands for Hyper Text Markup Language

HTTP

This stands for Hyper Text Transfer Protocol

Define Internet

The Internet is a global collection of computer networks that are linked together by devices called routers and use a common set of protocols for data transmission known as TCP/IP (transmission control protocol / Internet protocol). The primary purpose of the Internet is to facilitate the sharing of information.

Define ARPANET.

The Advanced Research Projects Agency Network (ARPANET) was an early packet switching network and the first network to implement the protocol suite TCP/IP. ... ARPANET was initially funded by the Advanced Research Projects Agency (ARPA) of the United States Department of Defense.

Define IP Address

IP address is short for Internet Protocol (IP) address. An IP address is an identifier for a computer or device on a TCP/IP network. Networks using the TCP/IP protocol route messages based on the IP address of the destination.he format of an IP address is a 32-bit numeric address written as four numbers separated by periods. Each number can be zero to 255. For example, 1.160.10.240 could be an IP address

Define HTML

HTML (Hypertext Markup Language) is the set of markup symbols or codes inserted in a file to display on a World Wide Web browser page. The markup tells the Web browser how to display a Web page's words and images for the user. Each individual markup code is referred to as a tag.

Mention any two basic Rules for HTML.

1. Tags are always surrounded by angle brackets (less-than/greater-than characters), as in.
2. Most tags come in pairs. There are some exceptions. For instance, the tag creates a blank line and doesn't have an end tag
3. The end tag always starts with a forward slash. For example for bold tag, the end tag should be </b>.

State any two attributes of <BODY> tag.

1. Background attribute this attribute allow us to include a background image.
2. Background color, Text Color, Link Color By default browsers display text in black. If we want to change the color or text (by TEXT attribute), color of links (by LINK attribute), color of active links (by ALINK attribute) and background color (by BGCOLOR attribute).

What are Cellspacing and Cellpadding?

Cellpadding:

Cellpadding is the amount of space between the outer edges of the table cell and the content of the cell. The default is 1.

Cellspacing:

Cellspacing is the amount of space in between the individual table cells.

What is an Anchor Tag?

The tag defines a hyperlink, which is used to link from one page to another.The most important attribute of the element is the href attribute, which indicates the link's destination.

Example: Visit W3Schools.com!

Mention any two attributes of <TABLE> tag.

The HTML tag supports the following attributes:

- ✓ Bgcolor- Specifies the background color of the table.
- ✓ Border- Specifies the border width. A value of "0" means no border.
- ✓ Cell-padding- Specifies the space between the cell borders and their contents.
- ✓ Cell-spacing- Specifies the space between cells.
- ✓ Align- Visual alignment either right, left, center, justify.

Define <MARQUEE> Tag.

The HTML tag is used for scrolling piece of text or image displayed either horizontally across or vertically down your web site page depending on the settings.

Attributes:

- ✓ **Behavior -** Defines the type of scrolling. It value are scroll, slide, alternate.

- ✓ **Bgcolor -** Defines the direction of scrolling the content.
- ✓ **Width -** Defines the width of marquee.
- ✓ **Scroll delay -** Defines how long to delay between each jump.

15. What is an Ordered List?

An ordered list typically is a numbered list of items. Ordered lists are appropriate where the exact ordering of items are critically important to the meaning of the content.An ordered list starts with the tag. Each list item starts with the <li> tag.

The type attribute of the <ol> tag, defines the type of the list item marker

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

Example:

1. Coffee
2. Tea
3. Milk

What is an Unordered List?

An unordered list typically is a bulleted list of items. The opening list tag must be <ul>. This type of list is used for lists that don't have a required order.Each list item starts with the <li> tag.

Value	Description
disc	Sets the list item marker to a bullet (default)
circle	Sets the list item marker to a circle
square	Sets the list item marker to a square none

The list items will not be marked

Example:

- Coffee
- Tea
- Milk

What do you mean by Frames?

HTML frames are used to divide your browser window into multiple sections where each section can load a separate HTML document. A collection of frames in the browser window is known as a frameset.

The <frame> tag defines one particular window (frame) within a <frameset>. Each <frame> in a <frameset> can have different attributes, such as border, scrolling, the ability to resize, etc.

Attribute:

- ♣ **Cols:** Specifies the number and size of columns in a frameset.
- ♣ **Rows:** Specifies the number and size of rows in a frameset.

Define <HEADER> tags.

Headings are defined with the< h1> to <h6> tags. <h1> defines the most important heading. <h6> defines the least important heading. <h1> headings should be used for main headings, followed by <h2> headings, then the less important <h3>, and so on.

Example:

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

Define Rowspan and Colspan.

A table is divided into rows and each row is divided into cells.

Colspan

The colspan attribute defines the number of columns a cell should span (or merge) horizontally. If we want to merge two or more Cells in a row into a single Cell.

<td colspan=2 >

Rowspan

The rowspan attribute specifies the number of rows a cell should span vertically. If we want to merge two or more Cells in the same column as a single Cell vertically.

<td rowspan=2 >

CHAPTER II

CSS

SECTION – A (3 MARKS)

2.1 Basics of CSS (Cascading Style Sheets):

1. What do you mean by Style Sheet?

A web style sheet is a form of separation of presentation and content for web design in which the markup (i.e., HTML or XHTML)

- Style Sheets - describe how documents are presented on screens.

Defines the Layout of a Document

- Each property has a name and a value, separated by a colon (:). Each property Declaration is separated by a semi-colon (;)

List the different types of Style Sheets.

Cascading Style Sheets (CSS) provide easy and effective alternatives to specify various attributes for the HTML tags.

There are three different types of Style Sheets:

1. Inline Style Sheet
2. Embedded or Internal Style Sheet
3. External Style Sheet

Mention the three ways of adding a Stylesheet to a Document.

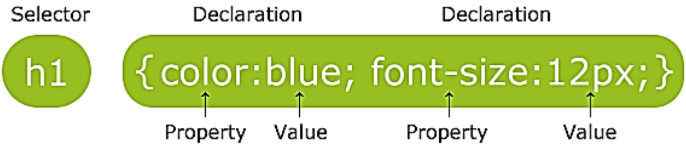
CSS can be added to HTML elements in 3 ways:

- ✓ Inline - by using the style attribute in HTML elements
- ✓ Internal - by using a <style> element in the <head> section
- ✓ External - by using an external CSS file

What is CSS?

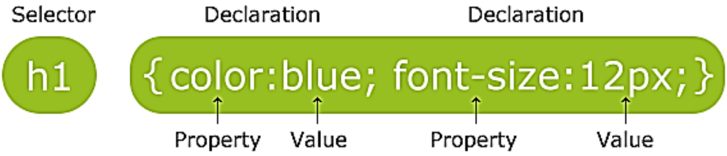
The style sheet with the highest priority controls the content display. Declarations not set in the highest priority source are passed on to a source of lower priority, such as the user agent style. This process is called cascading. One of the goals of CSS is to allow users greater control over presentation.

1. Cascading Style Sheets (CSS) describe how documents are presented on screens, in print, or perhaps how they are pronounced.
2. A CSS rule-set consists of a selector and a declaration block:



Define Style Sheet rules.

A **CSS rule**-set consists of a selector and a declaration block.



The selector points to the HTML element we want to style.

- The declaration block contains one or more declarations separated by semicolons.
- Each declaration includes a CSS property name and a value, separated by a colon.
- A CSS declaration always ends with a semicolon, and declaration blocks are surrounded by curly braces.

Example:

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

What is an External Style Sheet?

Define style sheet rules in a separate .CSS file and then include that file in your

HTML document using HTML <link> tag.

- ✓ An external style sheet is used to define the style for many HTML pages.
- ✓ With an external style sheet, we can change the look of an entire web site, by changing one file!
- ✓ To use an external style sheet, add a link to it in the <head> section of the HTML page.

- ✓ An external style sheet can be written in any text editor. The file must not contain any HTML code, and must be saved with a .css extension.

What is an Internal Style Sheet?

An internal CSS is used to define a style for a single HTML page.

- ✓ An internal CSS is defined in the <head> section of an HTML page, within a <style> element
- ✓ While using <STYLE> tag it must include TYPE attribute.
- ✓ TYPE attribute specifies what type of style is included in the document.

Define Inline Style Sheet.

- An inline CSS is used to apply a unique style to a single HTML element.
- Each property: value pair is separated by a semicolon (;), But it needs to be all in one line i.e. no line break after the semicolon.
- To use inline styles, add the style attribute to the relevant element.

Example

```
<h1 style="color:blue;">This is a Blue Heading</h1>
```

Name any three Background Properties

The @import CSS at-rule is used to import style rules from other style sheets.

Syntax:

```
<style>
@import url('filename.css');
</style>
```

Example:

```
<style type="text/css">
@import url("css/style.css");
p {
color: blue;
font-size: 16px;
}
</style>
```

This code would now import this style sheet for use on the HTML page and we can manage all of our styles in that one file.

What are the three values in Font-Style Property?

Value	Description
normal	The browser displays a normal font style. This is default
italic	The browser displays an italic font style
oblique	The browser displays an oblique font style
initial	Sets this property to its default value. Read about initial

Name any Three Text Propertiess

Property	Description	Values
color	Sets the color of a text	RGB, hex, keyword
line-height	Sets the distance between lines	normal, number, length, %
letter-spacing	Increase or decrease the space between characters	normal, length

text-align	Aligns the text in an element	left, right, center, justify

What is the use of Text-Decoration Property?

The text-decoration property is used to "decorate" the content of the text. It is essentially decorating the text with different kinds of lines. It is a shorthand property for text-decoration-line (required), text-decoration-color, and text-decoration-style.

Syntax:

text-decoration: text-decoration-line text-decoration-style text-decoration-color|initial|inherit;

Write down the syntax for Text-Align Property.

The text-align property specifies the horizontal alignment of text in an element.

CSS Syntax:

text-align: left|right|center|justify|initial|inherit;

Property Values

Value	**Description**
left	Aligns the text to the left
right	Aligns the text to the right
center	Centers the text
justify	Stretches the lines so that each line has equal width (like in newspapers and magazines)
initial	Sets this property to its default value.
inherit	Inherits this property from its parent element.

Name any three Font Properties.

The Font Property is a Shorthand Property for:

- Font-style.
- Font-variant.
- Font-weight.
- Font-size/line-height.
- Font-family.

Mention some Padding and Margin Properties.

Padding Properties:

Property	Description
padding	A shorthand property for setting all the padding properties in one declaration
padding-bottom	Sets the bottom padding of an element
padding-left	Sets the left padding of an element
padding-right	Sets the right padding of an element

Margin Properties:

Property	Description
margin	This property is used to set all the properties in one declaration.
margin-left	It is used to set left margin of an element.
margin-right	It is used to set right margin of an element.
margin-top	It is used to set top margin of an element.
margin-bottom	It is used to set bottom margin of an element.

SECTION – B (8 MARKS)

2.2 Style Sheet Rules with an example:

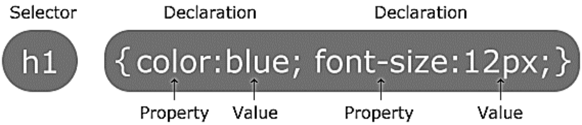
- A web style sheet is a form of separation of presentation and content for web design in which the markup (i.e., HTML or XHTML)
- Style Sheets - describe how documents are presented on screens defines the layout of a document
- Each property has a name and a value, separated by a colon (:). Each property declaration is separated by a semi-colon (;).
- Cascading Style Sheets (CSS) provide easy and effective alternatives to specify various attributes for the HTML tags

There are three different types of Style Sheets:

1. Inline style sheet
2. Embedded or internal style sheet
3. External style sheet.

CSS can be added to HTML elements in 3 ways:

- Inline - by using the style attribute in HTML elements
- Internal - by using a <style> element in the <head> section
- External - by using an external CSS file.
- A **CSS rule**-set consists of a selector and a declaration block



- The selector points to the HTML element we want to style.
- The declaration block contains one or more declarations separated by semicolons.
- Each declaration includes a CSS property name and a value, separated by a colon.
- A CSS declaration always ends with a semicolon, and declaration blocks are surrounded by curly braces.

Example:

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

Advantages of CSS

- **Reusability**: It means CSS file once created can be reused.
- **Easy Maintenance**: If any changes are required for any web page or document then changes can be simply made in a CSS file where all elements in the web pages or document will be updated automatically.
- **Download Content Faster**: CSS requires less code and controls the order of element so that content can be downloaded before images.
- **Platform Independent**: The scripts are platform independent and support all the latest browsers.
- **Data Integrity**: CSS allows to maintain the integrity of data

2. Explain External Style Sheet with an example?

- ✓ In external style sheets, the CSS files are kept separately from an HTML document.
- ✓ External CSS file contains only CSS code and it is saved with a ".css" extension.
- ✓ The CSS file is used as an external style sheet file in HTML document by using a <LINK> tag instead of <STYLE> tag.
- ✓ The <LINK> tag is placed in the <HEAD> section of the HTML document.
- ✓ The main advantage of External style sheet is that external CSS is a "true separation" of style and content.
- ✓ It is easier to reuse CSS code in any separate file.

Syntax:

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

2.3 Attributes of <LINK> Tag

1. rel

- It is used to specify a relationship of CSS with HTML document.
- Its default relationship value is "style sheet".
- Possible relationship values are stylesheet / alternate stylesheet.

2. type

- Type attribute is not used in META tag.
- It specifies which type of style language is used.
- The value of the type attribute is "text/CSS".

3. href

- It points to the external style sheet file's URL.
- It specifies the path of the style sheet file which is linked with the HTML document.

Example: Html File

```
<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>
```

mystyle.css

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

3. Explain Inline Style Sheets with an example?

- Inline styles are used to apply the unique style rules to an element by putting the CSS rules directly into the start tag. It can be attached to an element using the style attribute.

- Each property: value pair is separated by a semicolon (;), But it needs to be all in one line i.e. no line break after the semicolon.
- To use inline styles, add the style attribute to the relevant element.

Example:

```
<html>
<head>
<title>HTML Inline CSS></title>
<body>
<p style=”color:red;”>This is red</p>
<p style=’font-size:20px”>This is thick</p>
<p style=”color:green;”>This is green</p>
<p style=”color:green;font-size:20px;”>This is thick and green</p>
</body>
</html>
```

Output:

```
This is red
This is thick
This is green
This is thick and green
```

4. Explain Internal Style Sheets with an example?

Internal Style Sheet:

- An internal CSS is used to define a style for a single HTML page.
- An internal CSS is defined in the <head> section of an HTML page, within a <style> element

- While using <STYLE> tag it must include TYPE attribute.
- TYPE attribute specifies what type of style is included in the document.

2.4 Attributes of <STYLE> Element Tag:

1. Type

- It specifies the internal type of the style language.
- In CSS, the value of type is "text/CSS".

2. Media

- Media specifies the medium on which style sheet is applied.
- Its default value is screen.

Example:

```
<html>
<head><title>HTML Internal CSS</title>
<style type="text/css">
Red{
Color:red;
}
Thick{
Font-size:20px;
}
Green{
Color:green;
}
</style>
</head>
```

```
<body>
<p class=”red>This is red</p>< p class=”thick”>This is
thick</p>
<p class=”green”>Thiss is green</p>
<p class=”thickgreen”>This is thick and green</p>
</body>
</html>
```

State how to import a Style Sheet with an example?

- The @import CSS at-rule is used to import style rules from other style sheets**.**
- To import a new CSS file from within CSS simply use the following rule:

Syntax:

```
<style>
@import url('filename.css');
</style>
```

This code would now import this style sheet for use on HTML page and we can manage all of our styles in that one file.

Example: HTML File

```
<html>
<head>
<style type="text/css">
@import url("imp.css");
</style>
</head>
```

```
<body>
<h1>Hai</h1>
<p>Welcome to all. </p>
</body>
</html>
```

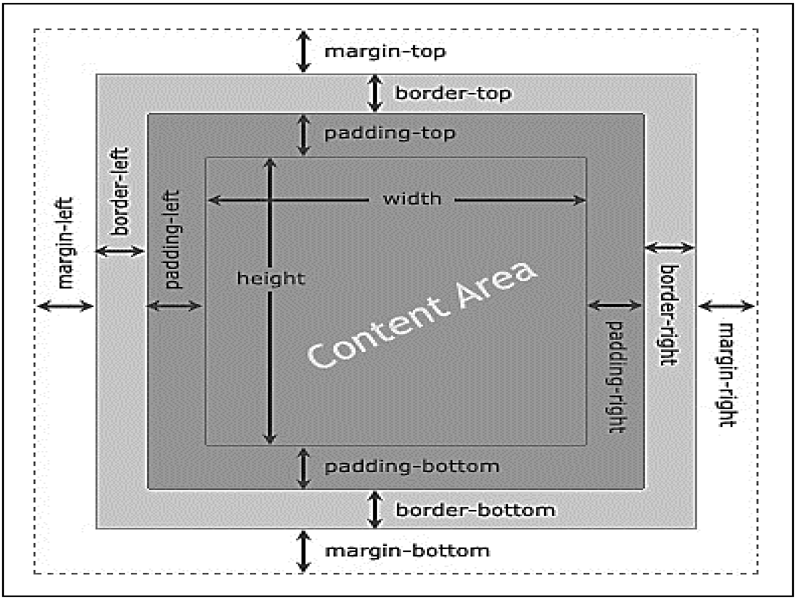
CSS File

```
body {
background-color: lightblue;
}h1 {
color: white;
text-align: center;
}
p {
font-family: verdana;
font-size: 20px;
}
```

2.5 Box Properties:

CSS Box Model

A CSS box model is a compartment that includes numerous assets, such as edge, border, padding and material. It is used to develop the design and structure of a web page. It can be used as a set of tools to personalize the layout of different components. According to the CSS box model, the web browser supplies each element as a square prism.



The CSS box model contains the different properties in CSS. These are listed below.

- Border
- Margin
- Padding
- Content

Now, we are going to determine the properties one by one in detail.

Border Field

It is a region between the padding-box and the margin. Its proportions are determined by the width and height of the boundary.

Margin Field

This segment consists of the area between the boundary and the edge of the border.

The proportion of the margin region is equal to the margin-box width and height. It is better to separate the product from its neighbour nodes.

Padding Field

This field requires the padding of the component. In essence, this area is the space around the subject area and inside the border-box. The height and the width of the padding box decide its proportions.

Content Field

Material such as text, photographs, or other digital media is included in this area.

It is constrained by the information edge, and its proportions are dictated by the width and height of the content enclosure.

```
<!DOCTYPE html>
<head>
<title>CSS Box Model</title>
<style>
.main
{
            font-size:30px;
            font-weight:bold;
            Text-align:center;
        }
.gfg
{
            margin-left:50px;
            border:50px solid Purple;
            width:300px;
            height:200px;
            text-align:center;
            padding:50px;
        }
.gfg1
{
            font-size:40px;
            font-weight:bold;
            color:black;
            margin-top:60px;
            background-color:purple;
        }
.gfg2
{
            font-size:20px;
            font-weight:bold;
            background-color:white;
        }
</style>
</head>

<body>
<div class = "main">CSS Box-Model Property</div>
<div class = "gfg">
<div class = "gfg1">JavaTpoint</div>
<div class = "gfg2">A best portal for learn Technologies
</div>
</div>
</body>
</html>
```

2.6 Text Properties:

It is possible to assign various CSS text properties in your HTML element using the CSS text properties listed below:

CSS Text Property	Description
color	The color property can be applied to set the color in your text.
direction	The direction property can be applied to set the direction of your text.
letter-spacing	The letter-spacing property can be applied to add or subtract space between letters, which will form a word.
text-decoration	The text-decoration property can be applied for underlining, overlining, and strikethrough text.
text-shadow	The text-shadow property can be applied for setting the text-shadow on your text.
text-transform	The text-transform property can be applied to capitalize text or convert text to uppercase or lowercase letters.
word-spacing	The word-spacing property can be applied to add or subtract space between different words in your sentence.
text-indent	The text-indent property can be applied to indent the text of your paragraph.

text-align	The text-align property can be applied to align text in your document.
white-space	The white-space property can be applied to control flow, as well as to the formatting of your text.

Let us discuss these in detail and see how to implement them and how it looks in the browser.

CSS Text Color

The color property of CSS is implemented for assigning colors to your texts.

Three different approaches can specify these colors:

- By using the **color name**, such as red, aqua, blue
- By using the **HEX value**, such as #ff0000, #ffff00
- By using the **RGB value**, such as rgb(255,0,0), rgb(255,255,0)

Here is a code snippet of how to implement:

Example:

```
P
{
color: red;
}
Body
 {
color: aqua;
}
```

Css Text Alignment:

This property is implemented to specify a horizontal alignment in your text. Text alignment can be of these four values.

1. left
2. right
3. center or
4. justify

Example:

```
p {
  text-align:left;}
body {
  text-align: center;}
h2 {
  text-align: right;}
```

Css text Decoration:

This property of CSS is implemented to add or remove decorations from your text.

When the text-decoration value is set to none, it is often employed for removing underlines from links, which looks something like this:

Example:

```
a {
text-decoration: none;}
```

Css Letter and Word Spacing

The letter-spacing property is implemented for specifying the space involving the characters within your HTML text. And the word-spacing property is implemented for specifying the space involving the words between your texts.

Example:

```
h2 {
   letter-spacing: 2px;}
h3 {
   letter-spacing:3px;}
h1 {
   word-spacing: 10px;}
```

8. Explain Font Properties with an example.

CSS Font Property:

Example

```
p.a {
  font: 15px Arial, sans-serif;
}
p.b {
  font: italic small-caps bold 12px/30px Georgia, serif;
}
```

The Font Property is a shorthand property for:

- Font-style
- Font-Variant
- Font-Weight
- Font-Size/line-height
- Font-Family

The font-size and font-family values are required. If one of the other values is missing, their default value are used.

Property / Value	Description
font-style	Specifies the font style. Default value is "normal"
font-variant	Specifies the font variant. Default value is "normal"
font-weight	Specifies the font weight. Default value is "normal"
font-size/line-height	Specifies the font size and the line-height. Default value is "normal"
font-family	Specifies the font family. Default value depends on the browser
caption	Uses the font that are used by captioned controls (like buttons, drop-downs, etc.)
icon	Uses the font that are used by icon labels
menu	Uses the fonts that are used by dropdown menus
message-box	Uses the fonts that are used by dialog boxes
small-caption	A smaller version of the caption font
status-bar	Uses the fonts that are used by the status bar
initial	Sets this property to its default value.
inherit	Inherits this property from its parent element.

Note: The line-height property sets the space between lines.

2.7 Margin and Padding Properties:

Margin Properties:

CSS margin attributes are used to generate space around items that are not bound by any defined borders. You have absolute control over the margins using CSS. Some characteristics allow you to specify the margin for each side of an element (top, right, bottom as well as left). It has no background color and is fully translucent.

Property of CSS Margin	Function
margin	This property is used to configure all of the properties in a single declaration.
margin-left	It is used to specify the left margin of an element.
margin-right	It is used to specify the right margin of an element.
margin-top	It is used to specify the top margin of an element.
margin-bottom	It is used to specify the bottom margin of an element.

Padding Properties:

CSS **padding values** are used to provide space around an element's content while staying within any established bounds.

Programmers can have complete control over the padding with CSS. Padding can be set for every side of an element using attributes (top, right, bottom, as well as left). The values for padding in CSS are provided as lengths or percentages and cannot be negative. For all padding properties, the initial, or default, value is 0.

The following values can be assigned to all Padding Properties:

- **Length:** defines padding in px, pt, cm, and so on.
- **Percent:** defines padding as a percentage of the contained elements.
- **Inherit:** defines that the padding must be inherited from the parent element.

Syntax:

Margin and **Padding** in CSS can be specified with one, two, three, or four values. Every value can also be stated as a fixed amount or as a percentage.

Syntax for Margin Property in CSS:

One Value:

margin: all;

Two Values:

margin: top_bottom left_right;

Three Values:

margin: top right_left bottom;

Four Values:

margin: top right bottom left;

Syntax for Padding Property in CSS :

padding-top: <length> | <percentage>
padding-right: <length> | <percentage>
padding-bottom: <length> | <percentage>
padding-left: <length> | <percentage>

Examples of Padding:

```
<style>h1
{
padding-top: 50px;
}
</style>
<body>  <h1>This is a new heading</h1>
 <p>This is the first paragraph</p>
 <p>This is the second paragraph</p>
</body>
```

Examples of Margin:

```
.box
 {
margin-top: 30px;
  margin-right: 20px;
 margin-bottom: 10px;
  margin-left: 30px;
}
```

Explain Color and Background Properties in detail with an example.

The background property is a shorthand property for:

- background-color
- background-image
- background-position
- background-size
- background-repeat
- background-origin
- background-clip
- background-attachment

Value	Description
background-color	Specifies the background color to be used
background-image	Specifies ONE or MORE background images to be used
background-position	Specifies the position of the background images
background-size	Specifies the size of the background images
background-repeat	Specifies how to repeat the background images
background-origin	Specifies the positioning area of the background images
background-clip	Specifies the painting area of the background images
background-attachment	Specifies whether the background images are fixed or scrolls with the rest of the page

Color Property:

The color property in CSS is used to set the color of HTML elements. Typically, this property is used to set the background color or the font color of an element.

In CSS, we use color values for specifying the color. We can also use this property for the border-color and other decorative effects.

We can define the color of an element by using the following ways:

- RGB format.
- RGBA format.
- Hexadecimal notation.
- HSL.

- HSLA.
- Built-in color.

RGB Format

RGB format is the short form of 'RED GREEN and BLUE' that is used for defining the color of an HTML element simply by specifying the values of R, G, B that are in the range of 0 to 255. The color values in this format are specified by using the rgb() property.

Syntax

```
color: rgb(R, G, B);
```

RGBA Format

It is almost similar to RGB format except that RGBA contains A (Alpha) that specifies the element's transparency. The value of alpha is in the range 0.0 to 1.0, in which 0.0 is for fully transparent, and 1.0 is for not transparent.

Syntax

```
color:rgba(R, G, B, A);
```

Hexadecimal Notation

Hexadecimal can be defined as a six-digit color representation. This notation starts with the # symbol followed by six characters ranges from 0 to F. In hexadecimal notation, the first two digits represent the red (RR) color value, the next two digits represent the green (GG) color value, and the last two digits represent the blue (BB) color value.

Syntax

```
color:#(0-F)(0-F)(0-F)(0-F)(0-F)(0-F);
```

HSL

It is a short form of Hue, Saturation, and Lightness. Let's understand them individually.

Syntax

```
color:hsl(H, S, L);
```

HSLA

It is entirely similar to HSL property, except that it contains A(alpha) that specifies the element's transparency. The value of alpha is in the range 0.0 to 1.0, in which 0.0 indicates fully transparent, and 1.0 indicates not transparent.

Syntax

```
color:hsla(H, S, L, A);
```

Built-in Color

As its name implies, built-in color means the collection of previously defined colors that are used by using a name such as red, blue, green, etc.

Syntax

```
color: color-name;
```

SECTION – C (15 MARKS)

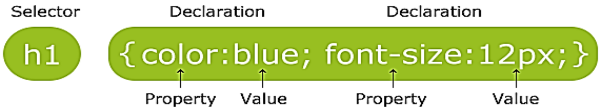
Explain CSS and its types in detail.

- A web style sheet is a form of separation of presentation and
- content for web design in which the markup (i.e., HTML or XHTML)
- Style Sheets - describe how documents are presented on screens.
- defines the layout of a document
- Each property has a name and a value, separated by a colon (:). Each
- Property declaration is separated by a semi-colon (;).
- Cascading Style Sheets (CSS) provide easy and effective alternatives
- to specify various attributes for the HTML tags
- There are three different types of style sheets:

1. Inline style sheet
2. Embedded or internal style sheet
3. External style sheet.

CSS can be added to HTML elements in 3 ways:

- Inline - by using the style attribute in HTML elements
- Internal - by using a <style> element in the <head> section
- External - by using an external CSS file.
- A **CSS rule**-set consists of a selector and a declaration block



- The selector points to the HTML element we want to style.
- The declaration block contains one or more declarations separated by semicolons.
- Each declaration includes a CSS property name and a value, separated by a colon.
- A CSS declaration always ends with a semicolon, and declaration blocks are surrounded by curly braces.

Example:

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

Advantages of CSS

- **Reusability:** It means CSS file once created can be reused.
- **Easy Maintenance:** If any changes are required for any web page or document then changes can be simply made in a CSS file where all elements in the web pages or document will be updated automatically.

Internal Style Sheet

An internal CSS is used to define a style for a single HTML page.

- An internal CSS is defined in the <head> section of an HTML page, within a <style> element
- While using <STYLE> tag it must include TYPE attribute.

- TYPE attribute specifies what type of style is included in the document.

Inline Style Sheet.

- An inline CSS is used to apply a unique style to a single HTML element.
- Each property: value pair is separated by a semicolon (;), But it needs to be all in one line i.e. no line break after the semicolon.
- To use inline styles, add the style attribute to the relevant element.

Example

```
<h1 style="color:blue;">This is a Blue Heading</h1>
```

External Style Sheet

- Define style sheet rules in a separate .css file and then include that file in your HTML document using HTML <link> tag.
- An external style sheet is used to define the style for many HTML pages.
- With an external style sheet, we can change the look of an entire web site, by changing one file!
- To use an external style sheet, add a link to it in the <head> section of the HTML page.
- An external style sheet can be written in any text editor. The file must not contain any HTML code, and must be saved with a .css extension

Explain in detail about External and Internal Style Sheets with an example.

- In external style sheets, the CSS files are kept separately from an HTML document.
- External CSS file contains only CSS code and it is saved with a ".css" extension.
- The CSS file is used as an external style sheet file in HTML document by using a <LINK> tag instead of <STYLE> tag.
- The <LINK> tag is placed in the <HEAD> section of the HTML document.
- The main advantage of External style sheet is that external CSS is a "true separation" of style and content.

It is easier to reuse CSS code in any separate file.o **Syntax:**

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

Attributes of <LINK> tag

1. rel

- It is used to specify a relationship of CSS with HTML document.
- Its default relationship value is "style sheet".
- Possible relationship values are stylesheet/alternate stylesheet.

2. type

- Type attribute is not used in META tag.
- It specifies which type of style language is used.
- The value of the type attribute is "text/CSS".

3. href

- It points to the external style sheet file's URL.
- It specifies the path of the style sheet file which is linked with the HTML document.

Example: Html File

```
<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>
```

mystyle.css

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

Internal Style Sheet

- An internal CSS is used to define a style for a single HTML page.
- An internal CSS is defined in the <head> section of an HTML page, within a
- <style> element
- While using <STYLE> tag it must include TYPE attribute.

- TYPE attribute specifies what type of style is included in the document.
- The attributes of <STYLE> element tag are:

1. type

It specifies the internal type of the style language. In CSS, the value of type is “text/CSS”.

2. media

Media specifies the medium on which style sheet is applied. Its default value is screen.

Example:

```
<html>
<head>
<title>HTML Internal CSS</title>
<style type=”text/css”>
Red{
Color:red;
}
Thick{
Font-size:20px;
}
Green{
Color:green;
}
</style>
</head>

<body>
<p class=”red>This is red</p>
< p class=”thick”>This is thick </p>
<p class=”green”>Thiss is green</p>
```

```
<p class=”thickgreen”> This is thick and green </p>
</body>
</html>
```

Explain Font, Box and Text Properties in detail with an example.

Box Properties:

The CSS box model contains the different properties in CSS. These are listed below.

- Border
- Margin
- Padding
- Content

Now, we are going to determine the properties one by one in detail.

Border Field

It is a region between the padding-box and the margin. Its proportions are determined by the width and height of the boundary.

Margin Field

This segment consists of the area between the boundary and the edge of the border.

The proportion of the margin region is equal to the margin-box width and height. It is better to separate the product from its neighbor nodes.

Padding Field

This field requires the padding of the component. In essence, this area is the space around the subject area and inside the border-box. The height and the width of the padding box decide its proportions.

Content Field

Material such as text, photographs, or other digital media is included in this area.

It is constrained by the information edge, and its proportions are dictated by the width and height of the content enclosure.

Text Properties:

CSS Text Property	Description
color	The color property can be applied to set the color in your text.
direction	The direction property can be applied to set the direction of your text.
letter-spacing	The letter-spacing property can be applied to add or subtract space between letters, which will form a word.
text-decoration	The text-decoration property can be applied for underlining, overlining, and strikethrough text.
text-shadow	The text-shadow property can be applied for setting the text-shadow on your text.
text-transform	The text-transform property can be applied to capitalize text or convert text to uppercase or lowercase letters.
word-spacing	The word-spacing property can be applied to add or subtract space between different words in your sentence.

text-indent	The text-indent property can be applied to indent the text of your paragraph.
text-align	The text-align property can be applied to align text in your document.
white-space	The white-space property can be applied to control flow, as well as to the formatting of your text.

Font Properties:

The font property is a shorthand property for:

- font-style
- font-variant
- font-weight
- font-size/line-height
- font-family

Property / Value	Description
font-style	Specifies the font style. Default value is "normal"
font-variant	Specifies the font variant. Default value is "normal"
font-weight	Specifies the font weight. Default value is "normal"
font-size/line-height	Specifies the font size and the line-height. Default value is "normal"
font-family	Specifies the font family. Default value depends on the browser
caption	Uses the font that are used by captioned controls (like buttons, drop-downs, etc.)
icon	Uses the font that are used by icon labels

menu	Uses the fonts that are used by dropdown menus
message-box	Uses the fonts that are used by dialog boxes
small-caption	A smaller version of the caption font
status-bar	Uses the fonts that are used by the status bar
initial	Sets this property to its default value.
inherit	Inherits this property from its parent element.

1. Explain Color and Background Properties in detail with an example

The background property is a shorthand property for:

- background-color
- background-image
- background-position
- background-size
- background-repeat
- background-origin
- background-clip
- background-attachment

Color Property:

The color property in CSS is used to set the color of HTML elements. Typically, this property is used to set the background color or the font color of an element.

In CSS, we use color values for specifying the color. We can also use this property for the border-color and other decorative effects.

Value	**Description**
background-color	Specifies the background color to be used
background-image	Specifies ONE or MORE background images to be used
background-position	Specifies the position of the background images
background-size	Specifies the size of the background images
background-repeat	Specifies how to repeat the background images
background-origin	Specifies the positioning area of the background images
background-clip	Specifies the painting area of the background images
background-attachment	Specifies whether the background images are fixed or scrolls with the rest of the page

We can define the color of an element by using the following ways:

- RGB format.
- RGBA format.
- Hexadecimal notation.
- HSL.
- HSLA.
- Built-in color.

RGB Format

RGB format is the short form of '**RED GREEN** and **BLUE**' that is used for defining the color of an HTML element simply by specifying the values of R, G, B that are in the range of 0 to 255.

The color values in this format are specified by using the **rgb()** property.

Syntax

```
color: rgb(R, G, B);
```

RGBA Format

It is almost similar to RGB format except that RGBA contains A (Alpha) that specifies the element's transparency. The value of alpha is in the range 0.0 to 1.0, in which 0.0 is for fully transparent, and 1.0 is for not transparent.

Syntax

```
color:rgba(R, G, B, A);
```

Hexadecimal Notation

Hexadecimal can be defined as a six-digit color representation. This notation starts with the **# symbol** followed by six characters ranges from **0 to F**. In hexadecimal notation, the first two digits represent the **red (RR)** color value, the next two digits represent the **green (GG)** color value, and the last two digits represent the **blue (BB)** color value.

Syntax

```
color:#(0-F)(0-F)(0-F)(0-F)(0-F)(0-F);
```

HSL

It is a short form of Hue, Saturation, and Lightness. Let's understand them individually.

Syntax

```
color:hsl(H, S, L);
```

HSLA

It is entirely similar to HSL property, except that it contains A (alpha) that specifies the element's transparency. The value of alpha is in the range 0.0 to 1.0, in which 0.0 indicates fully transparent, and 1.0 indicates not transparent.

Syntax

```
color:hsla(H, S, L, A);
```

Built-in Color

As its name implies, built-in color means the collection of previously defined colors that are used by using a name such as red, blue, green, etc.

Syntax

```
color: color-name;
```

CHAPTER III

XML & DHTML

SECTION-A

3.1 What is XML?

- **Xml** (eXtensible Markup Language) is a markup language.
- XML is designed to store and transport data.
- Xml was released in late 90's. it was created to provide an easy to use and store self-describing data.
- XML became a W3C Recommendation on February 10, 1998.
- XML is not a replacement for HTML.
- XML is designed to be self-descriptive.
- XML is designed to carry data, not to display data.
- XML tags are not predefined. You must define your own tags.
- XML is platform independent and language independent.

What is the use of XML?

XML is one of the most widely-used formats for **sharing structured information** today: between programs, between people, between computers and people, both locally and across networks. If you are already familiar with HTML, you can see that XML is very similar.

Give any three Advantages of XML?

Advantages of XML

- XML uses human, not computer, language. XML is readable and understandable, even by novices, and no more difficult to code than HTML.
- XML is completely compatible with Java™ and 100% portable. Any application that can process XML can use your information, regardless of platform.
- XML is extendable.

Give some features of XML?

XML Features

- Excellent for handling data with a complex structure or atypical data.
- Data described using markup language.
- Text data description.
- Human- and computer-friendly format.
- Handles data in a tree structure having one-and only one-root element.
- Excellent for long-term data storage and data reusability.

What is meant by XHTML?

XHTML stands for **EXtensible HyperText Markup Language**. XHTML is a stricter, more XML-based version of HTML. XHTML is HTML defined as an XML application. XHTML is supported by all major browsers.

What is WSDL?

The Web Services Description Language is an XML-based interface description language that is used for describing the functionality offered by a web service.

3.2 Define DHTML?

Dynamic HTML is not a markup or programming language but it is a term that combines the features of various web development technologies for creating the web pages dynamic and interactive.

What is meant by DOM?

DOM is the document object model. It is a w3c standard, which is a standard interface of programming for HTML. It is mainly used for defining the objects and properties of all elements in HTML.

Give the Components of DHTML?

Components of Dynamic HTML:

DHTML consists of the following four components or languages:

- HTML 4.0
- CSS
- JavaScript
- DOM.

What is meant by Event Bubbling?

Event bubbling is a type of DOM event propagation where the event first triggers on the innermost target element, and then successively triggers on the ancestors (parents) of the target element in the same nesting hierarchy till it reaches the outermost DOM element or document object .

Give Some DHTML Events?

DHTML Events

An event is defined as changing the occurrence of an object. It is compulsory to add the events in the DHTML page. Without events, there will be no dynamic content on the HTML page. The event is a term in the HTML, which triggers the actions in the web browsers.

Suppose, any user clicks an HTML element, then the JavaScript code associated with that element is executed. Actually, the event handlers catch the events performed by the user and then execute the code.

Example of Events:

- Click a button.
- Submitting a form.
- An image loading or a web page loading, etc.

Define Data Binding?

Data binding is a feature that allows you to bind single elements in the page with data from other sources. It also means that when you change the outer representation, the underlying data will automatically be updated. However, with JavaScript and the HTML DOM, you can dynamically change the style of any HTML element.

What is Event Object?

Event listener functions passed an Event object typically sub-classed MouseEvent, KeyboardEvent, etc.

Some Event properties: type - The name of the event ('click', 'mouseDown', 'keyUp', …) timeStamp - The time that the event was created currentTarget - Element that listener was registered on target - Element that dispatched the event

MouseEvent and KeyboardEvent

Some MouseEvent properties (prototype inherits from Event) button - mouse button that was pressed pageX, pageY: mouse position relative to the top-left corner of document screenX, screenY: mouse position in screen coordinates

Some KeyboardEvent properties (prototype inherits from Event) keyCode: identifier for the keyboard key that was pressed Not necessarily an ASCII character! charCode: integer Unicode value corresponding to keypress, if there is one

3.3 Dynamic HTML Object Model

What is Dynamic Style?

By calling element. style. color = "red"; you can apply the style change dynamically. Below is a function that turns an element's colour to red when you pass it the element's id .

This is a collection of methods which give you the ability to query the stylesheets collection in a document, add and remove rules, and dynamically create new sheets.

Give some Usages of DHTML?

Usages of DHTML:

DHTML **allows authors to add effects to their pages that are otherwise difficult to achieve, by changing the Document Object Model (DOM) and page style**. The combination of HTML, CSS, and JavaScript offers ways to: Animate text and images in their document.

SECTION-B

Explain in detail about the features of XML?

The main features of XML are. **XML separates data from HTML.** If you need to display dynamic data in your HTML document, it will take a lot of work to edit the HTML each time the data changes.

With XML, data can be stored in separate XML files. With a few lines of JavaScript code, you can read an external XML file and update the data content of your web page.

XML Simplifies Data Sharing

In the real world, computer systems and databases contain data in incompatible formats.

XML data is stored in plain text format. This provides a software- and hardware-independent way of storing data. This makes it much easier to create data that can be shared by different applications.

XML Simplifies Data Transport

Exchanging data as XML greatly reduces this complexity, since the data can be read by different incompatible applications.

XML Simplifies Platform Change

Upgrading to new systems (hardware or software platforms), is always time consuming. Large amounts of data must be converted and incompatible data is often lost.

XML Increases Data Availability

With XML, your data can be available to all kinds of "reading machines" (Handheld computers, voice machines, news feeds, etc), and make it more available for blind people, or people with other disabilities.

XML can be used to create new Internet Languages

A lot of new Internet languages are created with XML.

Here are some examples:

- **XHTML**
- **WSDL** for describing available web services
- **WAP** and **WML** as markup languages for handheld devices
- **RSS** languages for news feeds
- **RDF** and **OWL** for describing resources and ontology
- **SMIL** for describing multimedia for the web

Describe the Advantages of XML?

THE ADVANTAGES OF XML ARE:

- XML separates data from HTML
- XML simplifies data sharing
- XML simplifies data transport
- XML simplifies Platform change
- XML increases data availability
- XML can be used to create new internet languages

Explain in detail about the Components of DHTML?

HTML 4.0

HTML is a client-side markup language, which is a core component of the DHTML. It defines the structure of a web page with various defined basic elements or tags.

CSS

CSS stands for Cascading Style Sheet, which allows the web users or developers for controlling the style and layout of the HTML elements on the web pages.

JavaScript

JavaScript is a scripting language which is done on a client-side. The various browser supports JavaScript technology. DHTML uses the JavaScript technology for accessing, controlling, and manipulating the HTML elements. The statements in JavaScript are the commands which tell the browser for performing an action.

DOM

DOM is the document object model. It is a w3c standard, which is a standard interface of programming for HTML. It is mainly used for defining the objects and properties of all elements in HTML.

Explain briefly about DOM?

The Document Object Model (DOM) is **a programming interface for web documents**. It represents the page so that programs can change the document structure, style, and content. The DOM represents the document as nodes and objects; that way, programming languages can interact with the page. The DOM is separated into three parts: **Core, HTML, and XML**. The Core DOM provides a low-level set of objects that can represent any structured document. In the DOM, all HTML elements are defined as objects. **The programming interface is the properties and methods of each object**. A property is a value that you can get or set (like changing the content of an HTML element). A method is an action you can do (like add or deleting an HTML element).

Give the Uses of DHTML?

DHTML is used **to create interactive and animated web pages that are generated in real-time**, also known as dynamic web pages so that when such a page is accessed, the code within the page is analyzed on the web server and the resulting HTML is sent to the client's web browser.

Explain the Features of DHTML?

Following are the various characteristics or features of DHTML (Dynamic HTML):

- Its simplest and main feature is that we can create the web page dynamically.
- **Dynamic Style** is a feature that allows the users to alter the font, size, color, and content of a web page.
- It provides the facility for using the events, methods, and properties. And, also provides the feature of code reusability.
- It also provides the feature in browsers for data binding.
- Using DHTML, users can easily create dynamic fonts for their web sites or web pages.
- With the help of DHTML, users can easily change the tags and their properties.
- The web page functionality is enhanced because the DHTML uses low-bandwidth effect.

Explain in detail about Event Bubbling?

DOM communicates to JavaScript with Events Event types:

- Mouse-related: mouse movement, button click, enter/leave element
- Keyboard-related: down, up, press
- Focus-related: focus in, focus out (blur)
- Input field changed, Form submitted
- Timer events
- Miscellaneous:
  - Content of an element has changed
  - Page loaded/unloaded
  - Image loaded
  - Uncaught exception

Explain in detail about Capturing and Bubbling Events?

Capturing and Bubbling Events

- Capture phase (or "trickle-down"):
  - Start at the outermost element and work down to the innermost nested element.
  - Each element can stop the capture, so that its children never see the event event.stopPropagation() element.addEventListener(eventType, handler, true);
- Bubble phase - Most on handlers (e.g. onclick) use bubble, not onfocus/blur
- Invoke handlers on the innermost nested element that dispatches the event (mostly right thing)
- Then repeat on its parent, grandparent, etc. Any given element can stop the bubbling:

event.stopPropagation()element.addEventListener (eventType, handler, false);

- Handlers in the bubble phase more common than capture phase

Examples

Run myfunc once, 5 seconds from now: token = setTimeout(myFunc, 5*1000); Function is called in specified number of milliseconds

Run myfunc every 50 milliseconds: token = setInterval(myfunc, 50);

S.No.	Event	When it occurs
1.	onabort	It occurs when the user aborts the page or media file loading.
2.	onblur	It occurs when the user leaves an HTML object.
3.	onchange	It occurs when the user changes or updates the value of an object.
4.	onclick	It occurs or triggers when any user clicks on an HTML element.
5.	ondblclick	It occurs when the user clicks on an HTML element two times together.
6.	onfocus	It occurs when the user focuses on an HTML element. This event handler works opposite to onblur.

7.	onkeydown	It triggers when a user is pressing a key on a keyboard device. This event handler works for all the keys.
8.	onkeypress	It triggers when the users press a key on a keyboard. This event handler is not triggered for all the keys.
9.	onkeyup	It occurs when a user released a key from a keyboard after pressing on an object or element.
10.	onload	It occurs when an object is completely loaded.
11.	onmousedown	It occurs when a user presses the button of a mouse over an HTML element.
12.	onmousemove	It occurs when a user moves the cursor on an HTML object.
13.	onmouseover	It occurs when a user moves the cursor over an HTML object.
14.	onmouseout	It occurs or triggers when the mouse pointer is moved out of an HTML element.
15.	onmouseup	It occurs or triggers when the mouse button is released over an HTML element.
16.	onreset	It is used by the user to reset the form.
17.	onselect	It occurs after selecting the content or text on a web page.

18.	onsubmit	It is triggered when the user clicks a button after the submission of a form.
19.	onunload	It is triggered when the user closes a web page.

Cancel a Timer:

Explain about Mouse Events?

The MouseEvent interface represents events that occur due to the user interacting with a pointing device (such as a mouse). Common events using this interface include click, dblclick, mouseup, mousedown. MouseEvent derives from UIEvent, which in turn derives from Event. Though the MouseEvent.

Some MouseEvent properties (prototype inherits from Event) button - mouse button that was pressed pageX, pageY: mouse position relative to the top-left corner of document screenX, screenY: mouse position in screen coordinates

Explain about Keyboard Events?

KeyboardEvent objects describe a user interaction with the keyboard; each event describes a single interaction between the user and a key (or combination of a key with modifier keys) on the keyboard. The event type (keydown , keypress , or keyup) identifies what kind of keyboard activity occurred.

Some KeyboardEvent properties (prototype inherits from Event) keyCode: identifier for the keyboard key that was pressed Not necessarily an ASCII character! charCode: integer Unicode value corresponding to keypress, if there is one

SECTION-C

3.4 DHTML Events:

DHTML Events

An event is defined as changing the occurrence of an object.

It is compulsory to add the events in the DHTML page. Without events, there will be no dynamic content on the HTML page. The event is a term in the HTML, which triggers the actions in the web browsers.

Suppose, any user clicks an HTML element, then the JavaScript code associated with that element is executed. Actually, the event handlers catch the events performed by the user and then execute the code.

Example of DHTML Events:

- Click a button.
- Submitting a form.
- An image loading or a web page loading, etc.

Explain in detail about Data Binding?

Data binding is a feature that allows you to bind single elements in the page with data from other sources. It also means that when you change the outer representation, the underlying data will automatically be updated. However, with JavaScript and the HTML DOM, you can dynamically change the style of any HTML element.

Explain in detail about Event handlers in DHTML?

For handling event in DHTML we attach event handler to HTML elements. The event handler waits until a certain event, for instance a click on a link, takes place. When it happens it handles the event by executing some JavaScript code that has been defined by us.

Explain in detail about the Advantages of XML?

Advantages of XML include:

- XML uses human, not computer, language. XML is readable and understandable, even by novices, and no more difficult to code than HTML.
- XML is completely compatible with Java™ and 100% portable. Any application that can process XML can use your information, regardless of platform.
- XML is extendable. Create your own tags, or use tags created by others, that use the natural language of your domain, that have the attributes you need, and that makes sense to you and your users.

Explain in detail about the Advantages of DHTML?

- It makes a webpage dynamic and be used to create animations, games, applications along with providing new ways of navigating through websites.
- The functionality of a webpage is enhanced due to the usage of low-bandwidth effect by DHTML. -→DHTML also facilitates the use of methods, events, properties, and codes.

CHAPTER IV

JAVASCRIPT

SECTION – A (3 MARKS)

4.1 Introduction to JavaScript

1. What are the Features of JavaScript?

Features of JavaScript

1. Interpreted languages
2. Easy to learn
3. Easy to Debug and Test
4. Event-Based Programming
5. Procedural Capabilities
6. Platform Independence

2. What are the Advantages of JavaScript?

Advantages of JavaScript

There are lot of advantages of using JavaScript in Web Technologies.

1. **Interpreted Languages:** JavaScript is an interpreted language. It requires no compilation process so no compiler is required. The browser interprets JavaScript as it HTML tags.

2. **Easy to Learn:** The syntax of JavaScript is very easy. Any person can learn it very easily and use it to develop dynamic and attractive websites.

3. **Easy to Debug and Test:** JavaScript code is interpreted line by line. The errors are indicated along with line number. It is very easy to find error in the code, correct it and test it gain.

4. **Event-Based Programming:** JavaScript is an event-based language. It means that different code segment are executed when certain event occur. For example, a code segment may execute when the user clicks button or moves a mouse over an object etc.

5. **Procedural Capabilities:** JavaScript provides all capabilities of a procedural language. It provides condition checking, loops and branching facilities that can be executed in a web page.

6. **Platform Independence**: JavaScript is platform independent language. Any JavaScript-enabled browser can understand and interpreted JavaScript code. Any JavaScript code is executed on different types of hardware a JavaScript program written for.

3. How can you create an Array in JavaScript?

The JavaScript **Array** object is a global object that is used in the construction of arrays; which are high-level, list-like objects.

Create an Array

```
var fruits =['Apple','Banana'];
```

4. What is the difference between == and ===?

The main difference between the == and === operator in JavaScript is that the == means equal to and === means equal value and equal data type.

5. What is the difference between null & undefined?

Null means it is intentional absence of the value. It is one of the primitive values of JavaScript Undefined: it occurs when a variable has not been declared but has not been assigned with any value.

6. What are the ways to define a variable in JavaScript?

Variables are declared with the var keyword as follows.

```
<scripttype="text/javascript">
var money;
        var name;
</script>
```

Example: in x + 2 = 6, x is the variable.

6. What is the difference between undeclared & undefined?

Undeclared: it occurs when we try to access any variable that is not initialized or declared earlier using var or constant. Undefined: it occurs when a variable has not been declared but has not been assigned with any value.

7. What is NaN in JavaScript?

isNaN	This function is intended to determines whether value is a legal number or not.

Syntax

```
isNan(0);
isNan('isNan');
isNan(-1.895);
```

8. What would be the result of 2+5+"3"?

Since 2 and 5 are integers they, will be added numerically. And since 3 is a string its concatenation will be done. so the result would be 73

9. What is a prompt box in JavaScript?

Prompt Dialog Box.

The prompt dialog box is very useful when user wants to get input. Thus, it enables the user to interact. The user needs to fill in the field and then click OK.

This dialog box takes two parameters: (i) a label which you want to display in the text box and (ii) a default string to display in the text box. This dialog box has two buttons: OK and Cancel. If the user clicks the OK button, the window method prompt() will return the entered value from the text box. If the user clicks the Cancel button, the window method prompt()returns null.

Syntax:

Prompt("message", "default value");

example :

prompt("Enter your name : ", "abc");

10. What are JavaScript Data Types?

JavaScript Data Types

JavaScript provides different data types to hold different types of values. There are two types of data types in JavaScript.

1. Primitive data type
2. Non-primitive (reference) data type

JavaScript is a dynamic type language, it means no need to specify type of the variable because it is dynamically used by JavaScript engine. Just use var here to specify the data type. It can hold any type of values such as numbers, strings etc.

For example:

```
var a=40;//holding number
var b="Rahul";//holding string
```

11. What are all the looping structures in JavaScript?

FOR –LOOP

- The JavaScript for loop iterates the elements for the fixed number of times.
- The syntax of for loop is given below.

```
for (initialization; condition; increment)
{
code to be executed
}
```

- The loop initialization, initialize the counter variable.
- The test statement which will test the ccondition. If the condition is true, then the code given inside the loop will be executed, otherwise the control will come out of the loop.
- The iteration statement can increase or decrease the counter.

DO-WHILE

JavaScript supports all the necessary loops to ease down the pressure of programming.

- The while Loop
- The purpose of a while loop is to execute a statement or code block repeatedly as long as an expression is true. Once the expression becomes false, the loop terminates.

Syntax

The syntax of while loop in JavaScript is as follows −

```
while (expression)
{
Statement(s) to be executed if expression is true
}
```

THE DO...WHILE LOOP

The JavaScript do while loop iterates the elements for the infinite number of times like while loop. But, code is executed at least once whether condition is true or false.

Syntax

The syntax for do-while loop in JavaScript is as follows −

```
do
        {
                Statement(s) to be executed;
        } while (expression);
```

12. What is the difference between an Alert Box and a Confirmation Box?

Alert Dialog Box.

An alert dialog box is mostly used to give a warning message to the users. As a part of validation, you can use an alert box to give a warning message. Alert box gives only one button "OK" to select and proceed.

Syntax:

alert(“Message”);

example :

alert(“Welcome to javascript”);

Confirm Dialog Box:

It displays a dialog box with two buttons: ok and Cancel. If the user clicks on the OK button, the window method confirm() will return true. If the user clicks on the Cancel button, then confirm() returns false.

Syntax:

confirm("Message");

<u>example :</u>

confirm("Do you want to save the changes");

13. What are Escape Characters?

Escape Character

Because strings must be written within quotes, JavaScript will misunderstand this string let text = "We are the so-called "Vikings" from the north.";

The string will be chopped to "We are the so-called". The solution to avoid this problem, is to use the **backslash escape character**. The backslash (\) escape character turns special characters into string characters. The sequence \" inserts a double quote in a string.

Example

let text = "We are the so-called \"Vikings\" from the north.";

14. What is Break and Continue Statements?

The break and the continue statements are the only javascript statements that can jump out of a code block

syntax:

break labelname;
continue labelname;

The continue statement (with or without a label refference)can only be used to skip one loop iteration.

SECTION – B (8 MARKS)

4.2 Primitive Data Types & Loop and for in loop in JavaScript

JavaScript Primitive Data Types

There are five types of primitive data types in JavaScript. They are as follows:

Data Type	Description
String	Represents sequence of characters e.g. "hello"
Number	Represents numeric values e.g. 100
Boolean	Represents boolean value either false or true
Undefined	Represents undefined value
Null	Represents null i.e. no value at all

How to use for Loop and for in loop in JavaScript?

FOR –LOOP with example.

- The JavaScript for loop iterates the elements for the fixed number of times.
- The syntax of for loop is given below.

```
for (initialization; condition; increment)
{
code to be executed
}
```

- The loop initialization, initialize the counter variable.
- The test statement which will test the ccondition. If the condition is true, then the code given inside the

loop will be executed, otherwise the control will come out of the loop.

- The iteration statement can increase or decrease the counter.

Example:

```
<html>
<body>
<script>
var count;
document.write("Starting Loop" + "<br />");
for(count = 0; count < 10; count++)
{
document.write("Current Count : " + count );
document.write("<br />");
}
document.write("Loop stopped!");
</script></body></html>
```

Output:

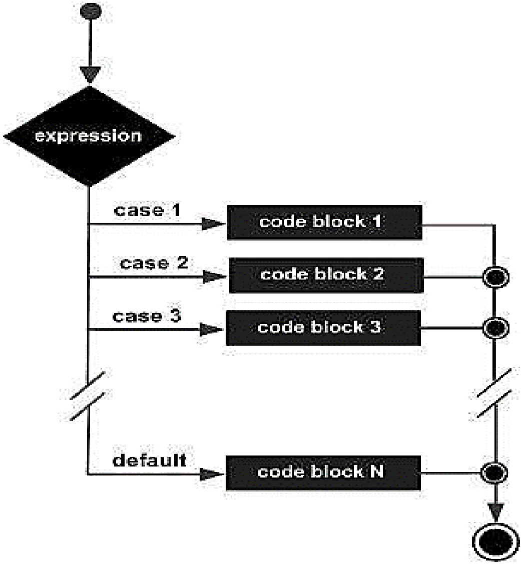
```
Starting Loop
Current Count : 0
Current Count : 1
Current Count : 2
Current Count : 3
Current Count : 4
Current Count : 5
Current Count : 6
Current Count : 7
Current Count : 8
Current Count : 9
Loop stopped!
```

3. Explain the Switch Case Statement in JavaScript?

Switch-Case

Flow Chart

The following flow chart explains a switch-case statement works.



Syntax

The objective of a **switch** statement is to give an expression to evaluate and several different statements to execute based on the value of the expression. If nothing matches, a **default** condition will be used.

```
switch(expression)
{
case condition 1: statement(s)
break;

case condition 2: statement(s)
break;
...
case condition n: statement(s)
break;
default: statement(s)
}
```

4. What is Loop Though the Properties of an Object?

The JavaScript loop through will iterate over all enumerable properties of the object itself and those the object inherits from its prototypes chain (properties of nearer prototypes take precedence over those of prototypes further away from the object in its prototype chain).

Loop Though the Properties using JAVA SCRIPT ARRAYS Object :

An array is a special variable, which can hold more than one value:

```
const cars = ["Saab", "Volvo", "BMW"];
```

Why Using an Array?

If you have a list of items (a list of car names, for example), storing the cars in single variables could look like this:

```
let car1 = "Saab";
let car2 = "Volvo";
let car3 = "BMW";
```

However, what if you want to **loop through** the cars and find a specific one? And what if you had not 3 cars, but 300?

The solution is an array!

An array can hold many values under a single name, and you can access the values by referring to an index number.

5. What is the use of a Date object in JavaScript?

JavaScript Date Objects

JavaScript Date Object lets us work with dates:
Mon Nov 29 2021 19:25:00 GMT+0530 (India Standard Time)

Example: const d = new Date();

JavaScript Date Output

By default, JavaScript will use the browser's time zone and display a date as a full text string:Mon Nov 29 2021 19:25:00 GMT+0530 (India Standard Time)

6. What is the use of a Number object in JavaScript?

Number object:

The JavaScript number object enables to represent a numeric value. It may be integer or floating-point.By the help of Number() constructor, it can create number object in JavaScript. For example: var n=new Number(value);

7. Explain about Identifiers and keywords in JavaScript

Keywords

Keywords are reserved words in JavaScript which cannot be used to name the variables labels or function names. Here are a total of 63 keywords which JavaScript provides the programmers.Here some of them are shown in the below-mentioned diagram.

JavaScript Reserved Keywords List abstract, byte, const, delete, eval, float, arguments, case, continue, do, false, for, char,final

Identifiers

Identifiers are names.

- In JavaScript, identifiers are used to name variables (and keywords, and functions, and labels).
- The rules for legal names are much the same in most programming languages.
- In JavaScript, the first character must be a letter, or an underscore (_), or a dollar sign ($).
- Subsequent characters may be letters, digits, underscores, or dollar signs.
- Numbers are not allowed as the first character.
- All JavaScript identifiers are case sensitive.

Example:

```
var lastname, lastName;
lastName = "Doe";
lastname = "Peterson";
```

8. Explain any 2 dialog boxes with examples

The prompt dialog box is very useful to get user input. Thus, it enables to interact with the user. The user needs to fill in the field and then click OK.

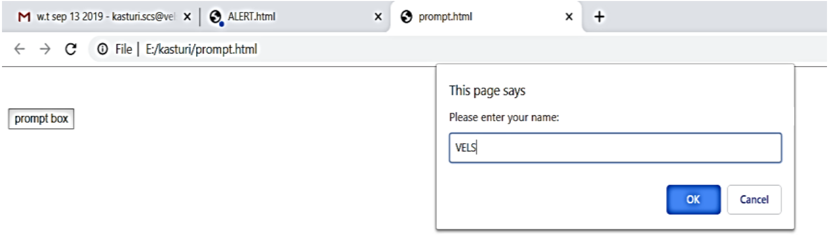
This dialog box takes two parameters: (i) a label (ii) a default string to display in the text box.

This dialog box has two buttons: **OK** and **Cancel**. If the user clicks the OK button, the window method **prompt()** will return the entered value from the text box. If the user clicks the Cancel button, the window method **prompt()**returns **null**.

Example:

```
<html>
<head>
<script>
functionprompt_fun()
 {
varfname=prompt("Please enter your name:","Your
name");
document.write("Greetings " + fname);
 }
</script>
</head>
<body>
<br><br>
<input type="button" onClick="prompt_fun()"
value="prompt box" />
</body>
</html>
```

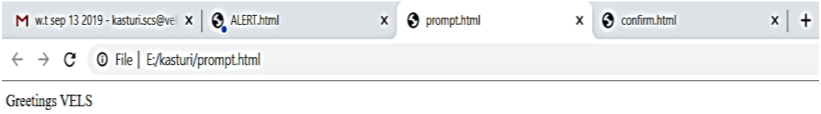
OUTPUT


w.t sep 13 2019 - kasturi.scs@vel
ALERT.html
prompt.html
File | E:/kasturi/prompt.html
prompt box
OK
Cancel

This page says

Please enter your name:

VELS


w.t sep 13 2019 - kasturi.scs@vel
ALERT.html
prompt.html
confirm.html
File | E:/kasturi/prompt.html

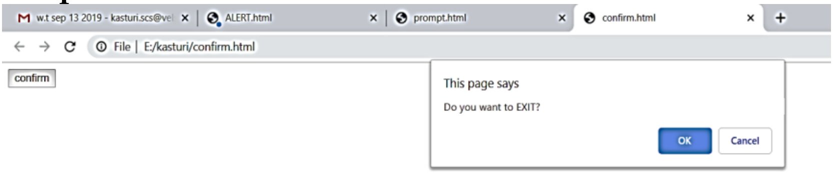
Greetings VELS

Confirm Dialog Box:

It displays a dialog box with two buttons: OK and Cancel.If the user clicks on the OK button, the window method confirm() will return true. If the user clicks on the Cancel button, then confirm() returns false.

```
<html>
<head>
<script>
function display()
{
confirm("Do you want to EXIT?")
 }
</script>
</head>
<body>
<input type="button" onclick="display()"
value="confirm" />
</body>
</html>
```

Output:


w.t sep 13 2019 - kasturi.scs@vel
ALERT.html
prompt.html
confirm.html
File | E:/kasturi/confirm.html
confirm
OK
Cancel

This page says

Do you want to EXIT?

4.3 Array in JavaScript.

JavaScript array is an object that represents a collection of similar type of elements.

There are 3 ways to construct array in JavaScript

1. By array literal
2. By creating instance of Array directly (using new keyword)
3. By using an Array constructor (using new keyword).

1. JavaScript array literal

The syntax of creating array using array literal is given below:

1. var arrayname=[value1,value2.....valueN];

As you can see, values are contained inside [ ] and separated by, (comma).

Let's see the simple example of creating and using array in JavaScript.

```
<script>
var emp=["Sonoo","Vimal","Ratan"];
for (i=0;i<emp.length;i++)
{
document.write(emp[i] + "<br/>");
}
</script>
```

The .length property returns the length of an array.

Output of the above example

```
Sonoo
Vimal
Ratan
```

2. JavaScript Array directly (new keyword)

The syntax of creating array directly is given below:

1.var arrayname=new Array();

Here, **new keyword** is used to create instance of array.

Let's see the example of creating array directly.

```
<script>
.var i;
var emp = new Array();
emp[0] = "Arun";
emp[1] = "Varun";
.emp[2] = "John";
for (i=0;i<emp.length;i++){
document.write(emp[i] + "<br>");
}
</script>
```

Output of the above example:

```
Arun
Varun
John
```

3. JavaScript array constructor (new keyword)

Here, you need to create instance of array by passing arguments in constructor so that we don't have to provide value explicitly.

The example of creating object by array constructor is given below.

```
<script>
var emp=new Array("Jai","Vijay","Smith");
for (i=0;i<emp.length;i++){
document.write(emp[i] + "<br>");
}
</script>.
```

Output of the above example

```
Jai
Vijay
Smith.
```

4.4 Java Script Strings:

JavaScript strings are for storing and manipulating text. A JavaScript string is zero or more characters written inside quotes.

Example

```
let text = "John Doe";
```

Example

```
let carName1 = "Volvo XC60";  // Double quotes
let carName2 = 'Volvo XC60';  // Single quotes
```

Example

```
let answer1 = "It's alright";
let answer2 = "He is called 'Johnny'";
let answer3 = 'He is called "Johnny"';
```

String Length

To find the length of a string, use the built-in length property:

Example

```
let text = "ABCDEFGHIJKLMNOPQRSTUVWXYZ";
let length = text.length;
```

SECTION – C (15 MARKS)

4.5 Conditional Statement in JavaScript

JavaScript if else and else if

Conditional statements are used to perform different actions based on different conditions.

Conditional Statements

In JavaScript we have the following conditional statements:

- Use if to specify a block of code to be executed, if a specified condition is true
- Use else to specify a block of code to be executed, if the same condition is false
- Use else if to specify a new condition to test, if the first condition is false
- Use switch to specify many alternative blocks of code to be executed

The if Statement

Use the if statement to specify a block of JavaScript code to be executed if a condition is true.

Syntax

```
if (condition) {
  //  block of code to be executed if the condition is true
}
```

Note that if is in lowercase letters. Uppercase letters (If or IF) will generate a JavaScript error.

Example

Make a "Good day" greeting if the hour is less than 18:00:

```
if (hour < 18) {
  greeting = "Good day";
}
```

The result of greeting will be:

```
Good day
```

The else Statement

Use the else statement to specify a block of code to be executed if the condition is false.

```
if (condition) {
  //  block of code to be executed if the condition is true
} else {
  //  block of code to be executed if the condition is false
}
```

Example

If the hour is less than 18, create a "Good day" greeting, otherwise "Good evening":

```
if (hour < 18) {
  greeting = "Good day";
} else {
  greeting = "Good evening";
}
```

The result of greeting will be:

```
Good day
```

The else if Statement

Use the else if statement to specify a new condition if the first condition is false.

Syntax

```
if (condition1) {
  //  block of code to be executed if condition1 is true
} else if (condition2) {
  //  block of code to be executed if the condition1 is false
and condition2 is true
} else {
  //  block of code to be executed if the condition1 is false
and condition2 is false
}
```

Example

If time is less than 10:00, create a "Good morning" greeting, if not, but time is less than 20:00, create a "Good day" greeting, otherwise a "Good evening".

```
if (time < 10) {
  greeting = "Good morning";
} else if (time < 20) {
  greeting = "Good day";
} else {
  greeting = "Good evening";
}
```

The result of greeting will be:

Good day

4.6 Do and Do...While loops in JavaScript

DO-WHILE and WHILE –DO with an example.

JavaScript supports all the necessary loops to ease down the pressure of programming.

The while Loop

The purpose of a while loop is to execute a statement or code block repeatedly as long as an expression is true. Once the expression becomes false, the loop terminates.

Syntax

The syntax of while loop in JavaScript is as follows −

```
while (expression)
{
  Statement(s) to be executed if expression is true
}
```

Example:

```
<script>
var i=11;
while (i<=15)
{
document.write(i + "<br/>");
i++;
}
</script>
```

The do...while Loop

The JavaScript do while loop iterates the elements for the infinite number of times like while loop. But, code is executed at least once whether condition is true or false.

Syntax

The syntax for do-while loop in JavaScript is as follows −

```
do
    {
            Statement(s) to be executed;
    } while (expression);
```

Example:

```
    <script>
        var i=21;
        do
        {
        document.write(i + "<br/>");
        i++;
        }while (i<=25);
</script>
```

3. Explain details about JavaScript Built-in functions with examples.

Javascript Built in Functions
Here is a list of built in functions with description.

Function	**Description**
isNaN	This function is intended to determines whether value is a legal number or not.

Syntax

```
isNan(0);
isNan('isNan');
isNan(-1.895);
```

Javascript isNaN Function Example

```
<!DOCTYPE html>
<html>
<head><!-- www.techstrikers.com -->
<title>My first Javascript code</title>
</head>
<body bgcolor="#bnde45">
<fieldset>
<legend>Javascript isNaN Function</legend>
<script>
document.write(isNaN(0));
document.write("</br>");
document.write(isNaN("isNan"));
document.write("</br>");
document.write(isNaN(-1.891));
document.write("</br>");
document.write(isNaN("12"));
document.write("</br>");
document.write(isNaN("2015/4/8"));
```

```
</script>
</fieldset>
</body>
</html>
```

Function	**Description**
isFinite	This function is intended to find whether a number is a finite legal number

Syntax

```
isFinite("5678");
isFinite("isFinite");
isFinite("5678-34");
```

Javascript isFinite Function Example

```
<!DOCTYPE html>
<html>
<head><!-- www.techstrikers.com -->
<title>My first Javascript code</title>
</head>
<body bgcolor="#bnde45">
<fieldset>
<legend>Javascript isFinite Function</legend>
<script>
document.write(isFinite(0));
document.write("</br>");
document.write(isFinite("isFinite"));
document.write("</br>");
document.write(isFinite(-1.891));
document.write("</br>");
document.write(isFinite("12"));
document.write("</br>");
document.write(isFinite("2015/4/8"));
```

```
</script>
</fieldset>
</body>
</html>
```

eval	This function is intended to execute Javascript source code.

Syntax

```
var num = 2;
eval("num + 200");
```

Javascript Eval() Function Example

```
<!DOCTYPE html>
<html>
<head><!-- www.techstrikers.com -->
<title>My first Javascript code</title>
</head>
<body bgcolor="#bnde45">
<fieldset>
<legend>Javascript eval Function</legend>
<script>
var num = 2;
document.write(eval("num + 200"));
document.write("
");
var code = '{ foo: 123 }';
document.write(eval(code));
document.write("
");
eval("var foo = 1")
document.write(foo);
document.write("
");
```

```
</script>
</fieldset>
</body>
</html>
```

number	**This function is intended to converts object to the corresponding number value.**

Syntax

```
var obj1=new String("7893");
document.write(Number(obj1));
```

Javascript Number Function Example

```
<!DOCTYPE html>
<html>
<head><!-- www.techstrikers.com -->
<title>My first Javascript code</title>
</head>
<body bgcolor="#bnde45">
<fieldset>
<legend>Javascript Number Function</legend>
<script>
var obj1=new String("7893");
document.write(Number(obj1));
document.write("</br>");
var obj2=new String("NaN");
document.write(Number(obj2));
document.write("</br>");
var obj3=new Boolean("false");
document.write(Number(obj3));
document.write("</br>");
var obj4=new Date();
document.write(Number(obj4));
document.write("</br>");
```

```
var obj5=new String("9191 9999");
document.write(Number(obj5));
document.write("</br>");
</script>
</fieldset>
</body>
</html>
```

string	**This function is intended to converts object to the corresponding string value.**

Syntax

```
var obj1=new String("7893");
document.write(String(obj1));
var obj2=new Boolean(0);
document.write(String(obj2));
```

Javascript String Function Example

```
<!DOCTYPE html>
<html>
<head><!-- www.techstrikers.com -->
<title>My first Javascript code</title>
</head>
<body bgcolor="#bnde45">
<fieldset>
<legend>Javascript String Function</legend>
<script>
var obj1=new String("7893");
document.write(String(obj1));
document.write("</br>");
var obj2=new String("NaN");
document.write(String(obj2));
document.write("</br>");
var obj3=new Boolean("false");
```

```
document.write(String(obj3));
document.write("</br>");
var obj4=new Date();
document.write(String(obj4));
document.write("</br>");
</script>
</fieldset>
</body>
</html>
```

4.7 JavaScript Dialog Boxes:

Dialogue Boxes in Java Script

Alert Dialog Box.

An alert dialog box is mostly used to give a warning message to the users.

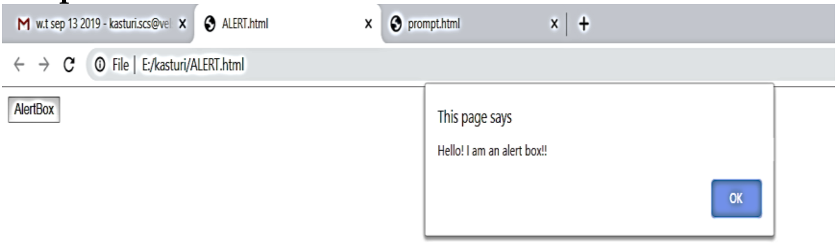
As a part of validation, an alert box can be used to give a warning message.

Alert box gives only one button "OK" to select and proceed.

```
<html>
<head>
<script>
function display()
  {
alert("Hello! I am an alert box!!");
 }
</script>
</head>
```

```
<body>
<input type="button" onclick="display()"
value="AlertBox" />
</body>
</html>
```

Output:


w.t sep 13 2019 - kasturi.scs@vel
ALERT.html
prompt.html
File | E:/kasturi/ALERT.html
AlertBox
OK

This page says

Hello! I am an alert box!!

The prompt dialog box is very useful to get user input. Thus, it enables to interact with the user. The user needs to fill in the field and then click OK.

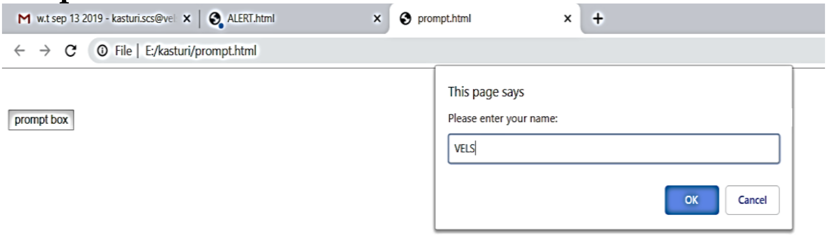
This dialog box takes two parameters: (i) a label (ii) a default string to display in the text box.

This dialog box has two buttons: **OK** and **Cancel**. If the user clicks the OK button, the window method **prompt()** will return the entered value from the text box. If the user clicks the Cancel button, the window method **prompt()**returns **null**.

Example:

```
<html>
<head>
<script>
functionprompt_fun()
 {
varfname=prompt("Please enter your name:","Your
name");
document.write("Greetings " + fname);
 }
</script>
</head>
<body>
<br><br>
<input type="button" onClick="prompt_fun()"
value="prompt box" />
</body>
</html>
```

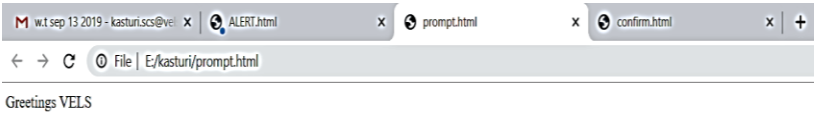
Output


w.t sep 13 2019 - kasturi.scs@vel
ALERT.html
prompt.html
File | E:/kasturi/prompt.html
prompt box
OK
Cancel

This page says

Please enter your name:

VELS


w.t sep 13 2019 - kasturi.scs@vel
ALERT.html
prompt.html
confirm.html
File | E:/kasturi/prompt.html

Greetings VELS

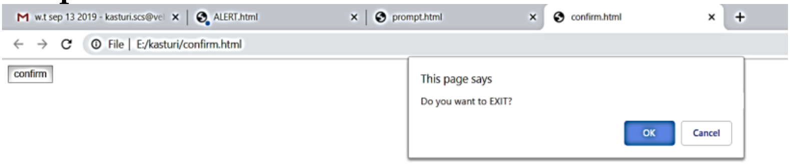
Confirm Dialog Box:

It displays a dialog box with two buttons: OK and Cancel.If the user clicks on the OK button, the window method confirm() will return true. If the user clicks on the Cancel button, then confirm() returns false.

```
<html>
<head>
<script>
```

```
function display()
{
confirm("Do you want to EXIT?")
 }
</script>
</head>
<body>
<input type="button" onclick="display()"
value="confirm" />
</body>
</html>
```

Output


w.t sep 13 2019 - kasturi.scs@vel
ALERT.html
prompt.html
confirm.html
File | E:/kasturi/confirm.html
confirm
OK
Cancel

This page says

Do you want to EXIT?

4.8 DOM and Events

Document Object Model (DOM)

- The document object represents the whole html document.
- When html document is loaded in the browser, it becomes a document object.
- It is the root element that represents the html document.
- It has properties and methods. By the help of document object, we can add dynamic content to our web page.
- Document Object Model (DOM) is a platform and language-neutral interface that allows programs and scripts to dynamically access and update the content, structure, and style of a document.

Javascript Events

The change in the state of an object is known as an Event. In html, there are various events which represents that some activity is performed by the user or by the browser. When javascript code is included in HTML, js react over these events and allow the execution. This process of reacting over the events is called Event Handling. Thus, js handles the HTML events via Event Handlers. For example, when a user clicks over the browser, add js code, which will execute the task to be performed on the event.

Some of the HTML events and their event handlers are:

Mouse events:

Event Performed	Event Handler	Description
click	onclick	When mouse click on an element
mouseover	onmouseover	When the cursor of the mouse comes over the element
mouseout	onmouseout	When the cursor of the mouse leaves an element
mousedown	onmousedown	When the mouse button is pressed over the element
mouseup	onmouseup	When the mouse button is released over the element
mousemove	onmousemove	When the mouse movement takes place.

Keyboard Events:

Event Performed	Event Handler	Description
Keydown & Keyup	onkeydown & onkeyup	When the user press and then release the key

Form events:

Event Performed	Event Handler	Description
Focus	onfocus	When the user focuses on an element
submit	onsubmit	When the user submits the form
blur	onblur	When the focus is away from a form element
change	onchange	When the user modifies or changes the value of a form element

Window / Document Events:

Event Performed	Event Handler	Description
Load	onload	When the browser finishes the loading of the page
unload	onunload	When the visitor leaves the current webpage, the browser unloads it
resize	onresize	When the visitor resizes the window of the browser

Form Object Properties

Property	Description
Enctype	It sets and returns the value of the enctype attribute in a form.
Length	It returns the number of elements in a form.
Method	It sets and returns the value of the method attribute in a form that is GET or POST.
Name	It sets and returns the value of the name attribute in a form.

CHAPTER V

AJAX

SECTION – A (3 MARKS)

1. What is AJAX. Expand?

AJAX = Asynchronous JavaScript and XML. AJAX is a technique for creating fast and dynamic web pages.AJAX allows web pages to be updated asynchronously by exchanging small amounts of data with the server behind the scenes. This means that it is possible to update parts of a web page, without reloading the whole page. Classic web pages, (which do not use AJAX) must reload the entire page if the content should change.

Examples of applications using AJAX: Google Maps, Gmail, Youtube, and Facebook tabs.

2. What are the different technologies used in AJAX?

- XHTML and CSS for presenting information.
- Document Object Model (DOM) for dynamically interacting with and displaying the presented information.
- XMLHttpRequest object to manipulate data asynchronously with the web server.

3. What is Asynchronous request in AJAX?

Asynchronous (in Ajax) processes incoming requests in a constant event stack and sends small requests one after the other without waiting for responses. In other words, asynchronous ajax call allow the next line of code to execute, whereas synchronous call stop JavaScript execution until the response from server.

4. What are the different ready states in AJAX?

- **readyState = 0** After you have created the XMLHttpRequest object, but before you have called the open() method.
- **readyState = 1** After you have called the open() method, but before you have called send().
- **readyState = 2** After you have called send().
- **readyState = 3** After the browser has established a communication with the server, but before the server has completed the response.
- **readyState = 4** After the request has been completed, and the response data has been completely received from the server.

State	Description
0	The request is not initialized.
1	The request has been set up.
2	The request has been sent.
3	The request is in process.
4	The request is completed.

5. What is XMLHTTP Request object?

XMLHttpRequest (XHR) objects are used to interact with servers. You can retrieve data from a URL without having to do a full page refresh. This enables a Web page to update just part of a page without disrupting what the user is doing. XMLHttpRequest is used heavily in AJAX programming.

6. What are AJAX Applications in Web development?

Web development refers to building, creating, testing, and maintaining websites. It includes aspects such as web design, web publishing, web programming, and database management. It is the creation of an application that works over the internet i.e. websites. A website has two basic systems that are frontend and backend.

7. What are all the controls of Ajax?

- ScriptManager. The ScriptManager manages all ASP.NET AJAX resources on a web page. ...
- ScriplManagerProxy. A page can have only one ScriptManager control. ...
- Timer. Timer Control is used to perform postbacks at defined time intervals.
- UpdatePanel.
- UpdateProgress.

8. What is the name of the DLL that contains Ajax control tool kit?

Name of DLL is Ajaxcontroltoolkit.dll. Ajaxcontroltoolkit.dll is used for Ajax control tool kit and it can be downloaded from the internet. It can be added in the tool box or copied directly in the bin folder.

9. What role of #&& in Query String?

# is treated as fragment delimiter to delimit the history state and && precedes is used to check on the information in the query string.

10. What are the Advantages of Ajax?

- Reduce the server traffic in both side request. Also reducing the time consuming on both side response.
- AJAX is much responsive, whole page (small amount of) data transfer at a time.
- XMLHttpRequest has an important role in the Ajax web development technique.
- XMLHttpRequest is special JavaScript object that was designed by Microsoft.
- AJAX make asynchronous calls to a web server. This means client browsers are avoid waiting for all data arrive before start the rendering.

11. What are all the Features of AJAX?

- User Friendly.
- It make web page faster.
- Independent of server technology.
- Increase the Performance of web page.
- Support for Live data binding.
- Support for the Data View control.
- Support for Client-side template rendering.
- Rich and, responsive user interfaces.

12. What is JSON in AJAX?

JSON is frequently used for sending and retrieving data from the server. JSON stands for JavaScript Object Notation. JSON is a data format that very close to a JavaScript object, except that it can't contain any functions or dynamic code.

13. Where AJAX cannot be used?

Users cannot use AJAX if,

- If Page need to show in a search engine
- If browser does not support JavaScript
- If user wants to create secure application

14. Is JavaScript knowledge is required to do AJAX?

To be more specific, AJAX is a technology that uses javascript for 'part of the work' (it stands for Asyncronous JavaScript and XML), and handling it properly requires knowing at least something about javascript. Also, using a javascript library such as jQuery or Prototype make it much easier to work with AJAX.

15. What are all the browsers support AJAX?

- Mozilla Firefox 1.0 and above
- Netscape version 7.1 and above.
- Apple Safari 1.2 and above.

SECTION – B (8 MARKS)

5.1 What is AJAX?

AJAX is about updating parts of a web page, without reloading the whole page.

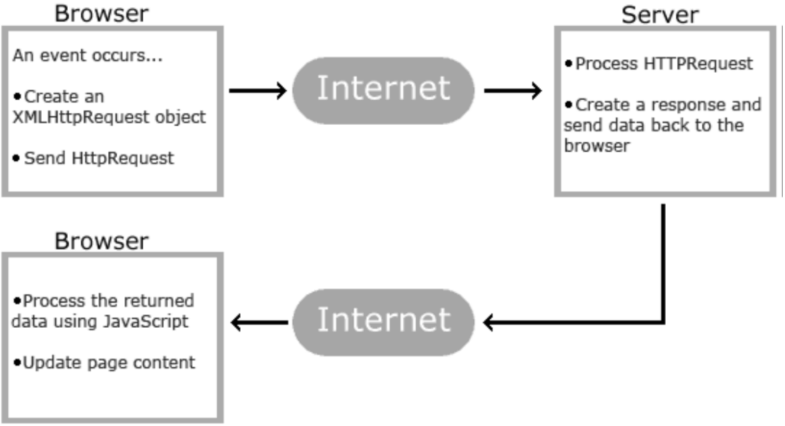
AJAX = Asynchronous JavaScript and XML. AJAX is a technique for creating fast and dynamic web pages.

AJAX allows web pages to be updated asynchronously by exchanging small amounts of data with the server behind the scenes. This means that it is possible to update parts of a web page, without reloading the whole page.

Classic web pages, (which do not use AJAX) must reload the entire page if the content should change.

Examples of applications using AJAX: Google Maps, Gmail, Youtube, and Facebook tabs.

How AJAX Works:


Browser
An event occurs...
•Create an XMLHttpRequest object
•Send HttpRequest
Internet
Server
•Process HTTPRequest
•Create a response and send data back to the browser
Browser
•Process the returned data using JavaScript
•Update page content
Internet

AJAX is based on Internet Standards

AJAX is based on internet standards, and uses a combination of:

- XML Http Request object (to exchange data asynchronously with a server)
- JavaScript/DOM (to display/interact with the information)
- CSS (to style the data)
- XML (often used as the format for transferring data)
- AJAX applications are browser- and platform-independent!

5.2 What is the Synchronous Request in AJAX?

Synchronous request means that the processing will stop once the request has been sent to the server till the reply comes back. The browser freezes and you are not allowed to perform any task or send any request.

Synchronous AJAX is a process that makes a java script to halt or stop the processing an application until a result is sent by a server. The browser is frozen, while the request is processed. The response time is 99.99% quick and fast enough. In case of intrusion for a request or transfer of the file, the browser freezes may be for two minutes until the time is out for the request. The advantages of using synchronous AJAX are, simple to code and can be used in the events 'onunload' and 'onbeforeunload'.

1. What are the different stages and processes in AJAX ready states?

Different AJAX readyStates:

- When a request is sent, while reaching the server, there are many possibilities of the request getting broken. If it is not broken and the connection is successful means the status will become 1
- When the request is received in the server, readystate status is changed to 2
- While processing the request, the status is changed to 3.
- When the request is finished, the status is changed to 4.

States	**Ready State Values**	**Explanation**
UNSENT	**0**	The request has not been initialized yet. So initially readyState is 0.
OPENED	**1**	When an open() method is called, the connection is getting established, and hence the status changes to 1.
HEADERS_ RECEIVED	**2**	When the send() method is called, the request is received, and hence the status changes to 2 & the headers and status will be available accordingly.
LOADING	**3**	During the time of processing the request, the downloading will be performed & the responseText carries the partial data & the status will change to 3.
DONE	**4**	When the request is finished processing and it is about to deliver the response, then the status changes to 4.

During the readystate 4, we need to check the status of the request object, i.e., when the status code is 200, we will get a successful response.

What are the uses of XMLHTTPRequest Object in AJAX?

Uses of XMLHTTPRequest object:

- It is used to make AJAX calls to exchange data from a remote web server.
- With the help of this object, users send requests to the server asynchronously and the server sends the data which we requested for ajax.
- XMLHTTPRequest object is used to prevent attacks from the server-side
- It is used in different protocols to make requests like HTTP, HTTPS, FTP, and FRPS.
- It is used to retrieve any type of data like XML, JSON, etc.
- With the help of this, there is no need to load the whole page it extracts some parts and does changes.
- It is used in data exchange with the help of API.

2. How many types of triggers are present in update panel?

There are two types of triggers used in update panel:

- PostBackTrigger
- AsyncPostBackTrigger

PosbackTrigger:

Use the PostBackTrigger control to enable controls inside an UpdatePanel to cause a postback instead of performing an asynchronous postback. Use the RegisterPostBackControl method of the ScriptManager control to programmatically register a postback control.

AsynchPostBackTrigger:

<asp:AsyncPostBackTrigger> Specifies a control and event that will cause a partial page update for the UpdatePanel that contains this trigger reference. <asp:PostBackTrigger> Specifies a control and event that will cause a full page update (a full page refresh)

5.3 What is the difference between AJAX and JavaScript?

S.No	AJAX	JavaScript
1.	AJAX is a technology, not a programming language.	JavaScript is a programming language used to complete client-side tasks in web development.
2.	AJAX is a part of JavaScript programming.	JavaScript is used to control and manage a web page once downloaded.
3.	AJAX allows the coder send request data asynchronously in order load new data without changing the web page.	JavaScript is a client side scripting language that allows the creation of dynamic web pages by providing new level of interactive
4.	AJAX supports the server side scripting languages.	JavaScript provides support to the client side scripting languages.

5.	AJAX can load the web page after is been loaded for the first time.	JavaScript cannot load the page after side scripting language.
6.	AJAX does not install Trojan in the computer.	JavaScript can install Trojan in the computer.

5.4 What is Script Manager?

Script Manager is a server-side control that sits on your Web Form and enables the core of ASP.NET AJAX. Its primary role is the arbitration of all other ASP.NET AJAX controls on the Web Form and the addition of the right scripting libraries to the Web browser so that the client portion of ASP.NET AJAX can function.

Script Management is an example of another common use of service workers: managing requests. It monitors requests from the page and compares them to the Script Management policy.

If it sees a request for a script that it should block, it stops the request before it is sent. If it sees a request for a script that it should defer, it moves it to the background, loading it in a way that doesn't block the page's content from rendering.

Role of Script Manager in Ajax:

The Script Manager controls client script for ASP.NET AJAX pages. It also registers the script for the AJAX Library.

Script Manager, as the name suggests is used to manage the client side script of Ajax. Since Ajax uses Java Script, there needs to be a mediator to manage this script and restrict a particular version to a browser.

A Script manager is present on every page where Ajax is used to enable the Ajax Libraries. These Libraries in turn helps to implement the core Functionality of Ajax: Partial rendering.

5.5 Security Issues of AJAX

AJAX Security: Server Side:

- AJAX-based Web applications use the same server-side security schemes of regular Web applications.
- You specify authentication, authorization, and data protection requirements in your web.xml file (declarative) or in your program (programmatic).
- AJAX-based Web applications are subject to the same security threats as regular Web applications.

AJAX Security: Client Side:

- JavaScript code is visible to a user/hacker. Hacker can use JavaScript code for inferring server-side weaknesses.
- JavaScript code is downloaded from the server and executed ("eval") at the client and can compromise the client by mal-intended code.
- Downloaded JavaScript code is constrained by the sand-box security model and can be relaxed for signed JavaScript.

Ajax may encourage developers to use multiple server side pages thereby introducing multiple entry points for attackers

Security issues of AJAX:

- A JavaScript can not access the local file system without the user's permission.
- An AJAX interaction can only be made with the servers-side component from which the page was loaded.
- A proxy pattern could be used for AJAX interactions with external services.
- The application model should not be exposed as some user might be able to reverse engineer the application.
- HTTPS can be used to secure the connection when confidential information is being exchanged.

5.6 What is AJAX Framework?

An **Ajax framework** is a cross-browser framework or library that assists developers in the creation of rich internet applications, that use Ajax.

Ajax frameworks consist of libraries written in either client-based Javascript or nearly any server-based programming language to construct web applications through the Ajax engine, i.e. the suite of technologies that facilitates communication between client web browser requests and server without re-loading an entire page. Ajax can provide more interactivity to web applications and can improve their overall functionality. These frameworks are mostly free, and the majority of them JavaScript libraries of functions that simplify and standardize Ajax techniques.

Features of an Ajax Framework:

Any Ajax framework is able to communicate with the server, and thus, to read data or to send it data or commands. In the last case a server-side script is required.

The frameworks often add components that make use of the asynchronous communication with the server.

The classical examples are buttons, tabbed panels, grids, listboxs and other such widgets.A more innovative example, the "boxes", are more and more often implemented, and Lightbox and Slimbox are two of them.

There are image galleries that place them side by side on the screen and that are making use of Ajax to display them instantanously.

Framework may be server-driven also, and in this case, component are created on the server with a scripting language such as PHP, and sent to the browser. Ajax is used to transmit user actions to the server part, and to handle the results.

The ability to work offline as it is offered by HTML 5 is a complement to the Ajax framework as well.

How to cancel the current request in AJAX?

XMLHttpRequest is an object that we use to send an HTTP request to the server to get the required data from the server. XMLHttpRequest provides an abort() method to cancel the sent request to the server.

XMLHttpRequest.abort() Method: This method is used to abort or cancel the HTTP request. It will change the readyState of the request to 0, which means the state is not being initialized and the request will not be processed further.

Syntax:

```
var request = new XMLHttpRequest();
request.abort();
```

Note: The abort() method will not accept any argument or parameter, but it will return undefined when the request has aborted any value.

abort() method aborts the request if it has already been sent. When a request is aborted, its readyState is changed to XMLHttpRequest. UNSENT (0) and the request's status code is set to 0.

How to send AJAX requests in JavaScript?

The XMLHttpRequest object is used to request data from a server.

Send a Request To a Server: To send a request to a server, we use the open() and send() methods of the XMLHttpRequest object:

```
xhttp.open("GET", "ajax_info.txt", true);
xhttp.send();
```

Method	**Description**
open(method, url, async)	Specifies the type of request method: the type of request: GET or POST url: the server (file) location async: true (asynchronous) or false (synchronous)
send()	Sends the request to the server (used for GET)
send(string)	Sends the request to the server (used for POST)

The url - A File On a Server:

The url parameter of the open() method, is an address to a file on a server:

```
xhttp.open("GET", "ajax_test.asp", true);
```

The file can be any kind of file, like .txt and .xml, or server scripting files like .asp and .php (which can perform actions on the server before sending the response back).

Asynchronous - True or False?:

Server requests should be sent asynchronously.

The async parameter of the open() method should be set to true:

```
xhttp.open("GET", "ajax_test.asp", true);
```

By sending asynchronously, the JavaScript does not have to wait for the server response, but can instead:

- Execute other scripts while waiting for server response
- Deal with the response after the response is ready

The default value for the async parameter is async = true. You can safely remove the third parameter from your code.

Synchronous XMLHttpRequest (async = false) is not recommended because the JavaScript will stop executing until the server response is ready. If the server is busy or slow, the application will hang or stop.

GET or POST?

GET is simpler and faster than POST, and can be used in most cases.

However, always use POST requests when:

- A cached file is not an option (update a file or database on the server).
- Sending a large amount of data to the server (POST has no size limitations).
- Sending user input (which can contain unknown characters), POST is more robust and secure than GET.

GET Requests:

A simple GET request:

Example:

```
  xhttp.open("GET", "demo_get.asp");
xhttp.send()
```

Differentiate between Synchronous and Asynchronous AJAX requests?

	Synchronous	**Asynchronous**
1.	Process gets starts its operation while client waits for the response from the Synchronous OSB process	Process gets starts its operation while client also continues to perform its operations.
2.	A synchronous request blocks the client until operation completes	An asynchronous request doesn't block the client
3.	browser is unresponsive	browser is responsive
4.	JavaScript engine of the browser is blocked.	JavaScript engine of the browser is not blocked.
5.	Call setup is simple	Call setup is more complex

6.	Synchronous process does not maintains Correlation mechanism.	Asynchronous process maintains corelation mechanism to uniquely identify the requester or client.
7.	Synchronous message passing does not allow parallelism.	Asynchronous message passing allows more parallelism.
8.	Synchronous process consumes more processor cycle as compare to synchronous process.	Asynchronous process consumes less processor cycle as compare to Synchronous process.

5.7 Features of JQuery

- jQuery is a lightweight, "write less, do more", JavaScript library.
- The purpose of jQuery is to make it much easier to use JavaScript on your website.
- jQuery takes a lot of common tasks that require many lines of JavaScript code to accomplish, and wraps them into methods that you can call with a single line of code.
- jQuery also simplifies a lot of the complicated things from JavaScript, like AJAX calls and DOM manipulation.

The jQuery library contains the following features:

- HTML/DOM manipulation
- CSS manipulation
- HTML event methods
- Effects and animations
- AJAX
- Utilities

Tip: In addition, jQuery has plugins for almost any task out there.

Query Feature and Explanation.

- **Simple and easy:** It have predefined method using you can perform any task easily compare to JavaScript. And it is easy to learn.
- **Lightweight:** It is very lightweight library - about 19KB in size (Minified and gzipped).
- **CSS manipulation:** It have predefined css() method for manipulate style for any Html elements.
- **Html manipulation:** The jQuery made it easy to select DOM elements, traverse them and modifying their content.
- **Cross browser support:** It support all modern web-browser including IE-6.
- **Event handling:** It support event handling like click mouse button.
- **JavaScript Library:** It is JavaScript library.
- **Ajax Support:** It support ajax, you can develop a responsive and feature-rich site using AJAX technology.
- **Built-in Animation:** It have predefined method "animate()" for create custom animation on web-page.
- DOM manipulation:The jQuery made it easy to select DOM elements in our web pages.They can traverse and able to modify the content by using the selectors(Selecting DOM Objects).