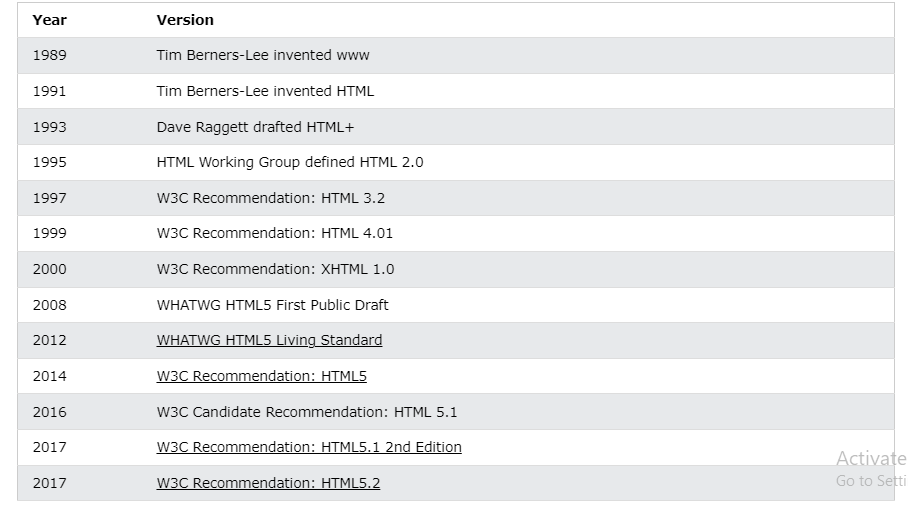
**HTML**

**Introduction**

* HTML stands for **Hyper Text Markup Language**.
* HTML is the standard **markup** language used for creating web pages.
* **Hyper Text** refers to linking web pages together.
* A **markup** **language** is a set of rules that define how the layout and presentation of text, and images should appear in a digital document.
* HTML describes the structure of a web page.
* HTML is not Case Sensitive i.e. <p> = <P>.

**History**

* The first version of HTML was invented in 1991 by Tim Berners-Lee.
* The present version of HTML is HTML5.
* HTML Version chart:



* HTML5 has included lot of features for creating dynamic web pages.
* For all the **features** refer to this link: [HTML5 features](https://www.browserstack.com/guide/top-html5-features)

**Why HTML is used in Web Pages**

* It provides basic structure to a web page.
* The html tags help browser to understand the content of the web page.
* HTML forms enable us to collect information.

**Features of HTML**

* Simplicity
* Platform Independent
* Link ability
* Embedding Media
* Some basic **features** of HTML5:

1. *Audio and Video Support*
2. *Geolocation API*
3. *Local Storage*
4. *Responsive Images*
5. *Drag and Drop API*

**Editors**

* VS Code
* Notepad: File -> Save As -> FileName.htm or FileName.html -> run in browser

**Comments in HTML**

* We can comment html code by placing it in: **<! ------- >**
* A valid comment should not have space between “<” & “!” , always starts as <!---->
* To comment script content also same comments work.
* To comment style content, we need to use **/\* ----- \*/**
* ***Example: <!--<h1> I am commented Line </h1>-->***
* We can also add conditional comments as shown below:
* ***Example:***

***<!--[if IE 6]>***

***Special instructions for IE 6 here***

***<endif]-->***

**Standard HTML Template Structure**

<!DOCTYPE html>  
<html>  
<head>  
<title>Page Title</title>  
</head>  
<body>  
<h1>My First Heading</h1>  
</body>  
</html>

**Breakdown**

* **<!DOCTYPE html>:** It indicates the document is written in html and declares that the document is written in HTML5.
* **<html> </html>:** It is the root/parent tag for all elements and everything like css, js required to create an html page are placed within this.
* **<head> </head>:** It is a container tag for all those elements that are not directly displayed but are required for page functionality.

It contains meta tags which are used for Search Engine Optimization (SEO).

* **<title> </title>:** It is used to define the title of a web page which is displayed in the browser tab, bookmark list and search engine results.

It is also used for SEO and helps the search engine to understand about the page content.

* **<body> </body>:** It is the container tag for all elements which are used to represent the main content of webpage.

**HTML Tags & Elements**

* Tags are the keywords that are used to display and format the content of a web page.
* Elements are the basic building blocks that are made up of tags and content.
* Elements consist of <open tag> content </close tag>.
* Void elements like <br> contain no content.

**HTML Element types**

HTML elements are classified into three categories which are Inline, Block and Void.

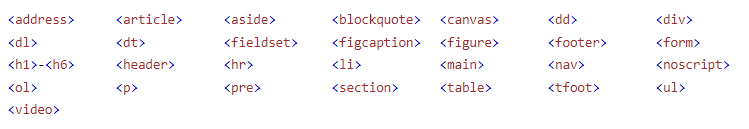
**Block-Level Elements**

* Used to structure the layout of a webpage.
* Always start on a new line and take up full width.

***Examples:***

* **<div>:** used as a generic container for grouping elements.
* **<p>:** used to define a paragraph.
* **<h1> to <h6>:** used for headings, from largest (<h1>) to smallest (<h6>).
* **<ul> / <ol>:** used to create unordered or ordered lists.
* **<li>:** used to define list items inside <ul> or <ol>.
* **<section>:** used to define a section of content.
* **<article>:** used to define independent, self-contained content.
* **<pre>:** Used to display preformatted text exactly as it is written in the HTML source.

**Block Level Elements List:**



**Inline Elements**

* Used to style or markup small parts of content.
* Do not start on a new line; only take up as much width as needed.

***Examples:***

* **<span>:** used as a generic inline container for styling.
* **<a>:** used to create hyperlinks.
* **<strong>:** used to indicate strong importance (usually bold).
* **<em>:** used to emphasize text (usually italic).
* **<label>:** used to label form inputs.
* **<img>:** used to embed images (also a void element).
* **<input>:** used to create form fields (also a void element).

**INLINE ELEMENTS LIST**

![A screenshot of a computer code

Description automatically generated

**Void Elements**

* Self-closing elements that do not have content or a closing tag.
* Often used for inserting media, line breaks, or metadata.

***Examples:***

* **<br>:** used to insert a line break.
* **<img>:** used to embed an image.
* **<hr>:** used to insert a horizontal line.
* **<input>:** used to create form input fields.
* **<meta>:** used to define metadata about the document.
* **<link>:** used to link external resources like CSS files.

**<div> vs <section> vs <article>**

* **<div>** is used purely for grouping elements with no semantic meaning and used when we just need to group content for styling or scripting.
* **<section>** represents a thematic grouping of content, typically with a heading and is used to divide a page into logical sections like chapters, tabs, or parts of a document.
* **<article>** represents self-contained, reusable content that could stand alone and used for blog posts, news articles, forum posts, or any content that could be reused.

**HTML Attributes**

* Attributes are used with HTML elements to provide additional information and used to configure element behavior.
* Attributes are used at element open tag and are always in the form of name: value pairs.

**Core Attributes**

There are **four core attributes** that can be used with almost all but not with all elements and they are **id, title, class, style.**

**ID Attribute**

* It is used to uniquely identify an element and its content in an HTML Page.
* It is also used in scenarios where we have multiple elements with same name, and we want to style or distinguish them individually.
* In styling it is accessed using **dot (.)** and in scripting **getElementById().**

**Title Attribute**

* It is used to give a suggested title for an element.
* It is always displayed as a tooltip when cursor is hovered over the element, or the element is still loading.

**Class Attribute**

* It is used to specify one or more css classes for an HTML element.
* The value of this attribute is a space-separated list of class names if you are specifying multiple classes & allows sharing.
* In styling it is accessed by **hash (#)** & in scripting **getElementByClassName().**

**Style Attribute**

* It allows us to write inline css rules for an element.
* ***<p style="font-family:arial; color:#FF0000;">Welcome</p>***

**HTML Internationalization Attributes**

There are three internationalization attributes that are available for almost all but not every element and they are **dir, lang, Boolean.**

**dir attribute**

* It is used to specify the text direction within an html element.
* It has the following 2 values:
  + **ltr:** left to right (default one)
  + **rtl:** right to left

**lang attribute**

* It is used with root html tag to indicate that the main language used in a document, and it is mostly used in older versions of html.

**boolean attributes**

* They are used to represent true and false and doesn’t require any value with the attributes name.
* To set them as true you need to write the attributes name and to set it false you should omit it.
* ***Examples:*** required, readonly, disabled

**HTML Heading Tag**

* The headings in html are defined using **<h1> </h1>** tag.
* HTML provides a hierarchical order to for headings, it ranges from **<h1/> to <h6/>.**
* **<h1>** indicates the top-level heading and **<h6>** indicates the lowest level heading.

**HTML Span Tag**

* The **<span>** tag is used to apply inline styles or classes to specific portions of a text within a heading.
* ***Example:*** <h2>This is a <span style="color: blue;">blue</span> word.</h2>

**Some Other Tags**

* **<a>:** Defines a hyperlink to another page or location.
* **<em>:** Emphasizes text, usually shown in italic.
* **<strong>:** Indicates strong importance, usually shown in bold.
* **<abbr>:** Represents an abbreviation with a tooltip for full form.
* **<sup>:** Displays text as superscript (above the line).
* **<sub>:** Displays text as subscript (below the line).
* **<mark>:** Highlights text with a yellow background.
* **<p>:** Defines a paragraph of text.

**HTML Images**

* HTML Images provide visual content for web pages, enhancing user experience and conveying information.
* Images can be photographs, graphics, icons or illustrations.
* HTML supports following type of image formats:
* Joint Photographic Experts Group (.JPEG or .JPG)
* Portable Network Graphics (.PNG)
* Scalable Vector Graphics (SVG)
* Graphics Interchange Format (.GIF)
* Icon File (ICO)
* ***Example:*** <img src=”FILE PATH” alt=”SOME ALTERNATE TEXT” width=”150px” height=”200px” />
* To render an image in html **<img/> tag** is used with the following attributes:
* **src:** It is used to specify the image stored location.
* **alt:** It is used to provide an alternative text and appears in place of Image when image is not found.
* **width & height:** This are used to specify dimensions in pixels.

**HTML Iframe**

* **HTML Iframe** is an inline element that allows us to embed another html document with the current document.
* It is used whenever we want to display another webpage within the webpage.

**Example:**

**<iframe src=”first.html” width=”500” height=”300”> ALT TEXT </iframe>**

**HTML Meta Tag**

* It lets us specify metadata, which is additional information about a document in many ways.
* This information is used by search engines and helpful for SEO.
* It is used to **Specify Keywords**, **Provide Document Description**, **Refreshing Documents**, **Page Redirection**, **Set** **Document Revise Date**, **Set Author Name**.

**Meta Specify Keywords**

It is used to specify important keywords related to the document and later these keywords are used by search engines while indexing the page**.**

**Example:** <meta name="keywords" content="HTML, Meta Tags, Metadata" />

**Meta Document Description**

It is used to provide description about the document which is again used by search engines for searching purposes.

**Example:** <meta name="description" content="Learning about Meta Tags." />

**Meta Document Revised Date**

It is used to provide a revised date for the document indicating that on provided date changes were made to document.

**Example:** <meta name="revised" content="Tutorialspoint, 3/7/2014" />

**Meta Document Refreshing**

It is used to specify a duration after which your web page will keep refreshing automatically.

**Example:** <meta http-equiv="refresh" content="5" />

**Meta Document Redirecting**

It is like refresh but along with refreshing we can provide a redirection URL such that the page will be redirected after configured time.

**Example:** <meta http-equiv="refresh" content="5; url=http://www.klu.in" />

**Meta Author Name Setting**

It is used to set an author name for the document, used by search engines.

**Example:** <meta name="author" content="REDDY VENKAT KALYAN" />

**HTML Quotations**

**A screenshot of a computer

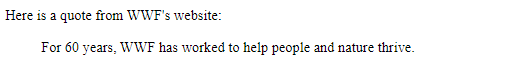
Description automatically generated**

**Examples:**

*<p>Here is a quote from WWF's website:</p>*

*<blockquote>For 60 years, WWF has worked to help people and nature thrive.*

*</blockquote>*



<p>My goal is to: <q>Build a future.</q></p>



<p>The <abbr title="World Health Organization">WHO</abbr> was founded in 1948.</p>

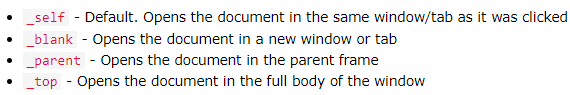


<bdo dir="rtl">This text will be written from right to left</bdo>



**HTML Links**

* Html links are hyperlinks which can be used to jump to another document by clicking.
* When we move our mouse arrow over a link, the mouse arrow will turn into a little hand.
* HTML links can be texts, images & the html <a> tag defines a link.
* <a href = “https://r-venkat-kalyan.github.io/”>Portfolio</a>
* By default, the links will be opened on the same page, but to configure the link to open in other tabs we can use the **target** attribute of <a> tag.
* The **target** attribute can have one of the following values:



* We can even create links in html that opens email program:
* <a href = “mailto:2100030959cseh@gmail.com”>Mail</a>
* This link named as “Mail” will open user’s mail program like Gmail to send a mail to specified mail.
* By default, whenever we hover over a link it displays an underline, we can remove that underline by adding style as follows:
* <a href = <“mailto:rvk@kl.in”>style = “text-decoration: none;”>Mail</a>

**HTML Favicon**

* A favicon is a small image displayed next to the page title in the browser tab.
* To add a favicon icon, ­­­­we need to use **<link>** tag.
* ***Example:*** <link rel = “icon” href="C:\Users\DELL\Downloads\logo.png">

**HTML Tables**

* Tables are used to organize data in the form of rows and columns.
* The useful html tags while dealing with tables are **<table>, <tr>, <th>, <td>, <caption>.**
* **<table>:** This is the root tag that is used to create a table. **</table>**
* **<tr>:** It stands for **table row** which is used to define a row. **</tr>**
* **<th>:** It stands for **table header** which is used to define a cell as header. **</th>**
* **<td>:** It stands for **table data** which is used to define the content of a table. **</td>**
* **<caption>:** It is used to define a caption to our table. **</caption>**

**Example:**

<body>

    <h1> Welcome To HTML Tables</h1>

    <table border="1px">

        <caption>My Details</caption>

        <tr>

            <th>Name</th>

            <th>Age</th>

            <th>Email</th>

        </tr>

        <tr>

            <td>Kalyan</td>

            <td>20</td>

            <td>kalyan@gmail.com</td>

        </tr>

        <tr>

            <td>Venkat</td>

            <td>20</td>

            <td>venky@gmail.com</td>

        </tr>

    </table>

</body>

**Output:**

**A close-up of a contact box

Description automatically generated**

* In the above code I have given table border as 1px to format the table with proper look.

**HTML Lists**

* **Lists** allow us to group a set of related items.
* Lists can be nested also, and list items can contain other html elements.
* The list item should be defined using **<li>** tag.
* In HTML we have 3 types of lists:
  + ***Unordered Lists (<ul></ul>)***
  + ***Ordered Lists (<ol></ol>)***
  + ***Description Lists (<dl></dl>)***

**Unordered Lists**

* An **Unordered list** can be defined using **<ul>** tag.
* By default, the <ul> list item will be marked with bullet points.
* We can change the type of <ul> list markers by using **list-style-type** property.
* The **list-style-type** property of <ul> tag defines the type of the list item marker.
* Types of markers for <ul> list item:

A screenshot of a list

Description automatically generated

Example:

<ul style="list-style-type:square;">

        <li>RR</li>

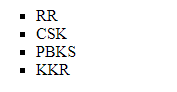
        <li>CSK</li>

        <li>PBKS</li>

        <li>KKR</li>

</ul>

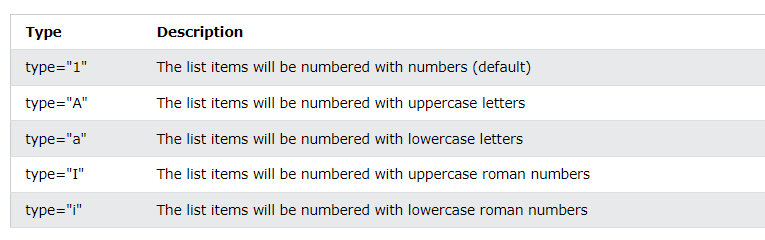
Output:

* + ****Here I have used **list-style-type: square** to

get the li items with **squares**.

**Ordered Lists**

* An **ordered list** can be defined using **<ol></ol>** tag.
* By default, the <ol> list items will be marked with numbers.
* We can change the type of <ol> list markers by using **type** attribute.
* The **type** attribute of <ol> tag defines the type of the list item marker.
* Types of markers for <ol> list items:



**Example:**

<body>

    <h3>Ordered List with default type marker</h3>

    <ol>

        <li>RR</li>

        <li>CSK</li>

        <li>PBKS</li>

        <li>KKR</li>

    </ol>

    <h3>Ordered List with customized type marker</h3>

    <ol type="A">

        <li>RR</li>

        <li>CSK</li>

        <li>PBKS</li>

        <li>KKR</li>

    </ol>

</body>

**A list of type markers

Description automatically generatedOutput:**

* We can even control the starting of

type markers by using **start** attribute

of **<ol> tag.**

**<ol type="A" start="5">.**

* This above list will start with the type

marker from **‘E’** as it is the **5th**

alphabet.

**Description Lists**

* A description list is a list of terms with description to each term.
* The main tags that are used under description list are **<dl> <dt> <dd>.**
* The **<dl>** tag is used to define a description list.
* The **<dt>** tag is used to define the description term.
* The **<dd>** tag is used to describe the term.

Example

    <h3>My Projects Description</h3>

    <dl>

        <dt>TaskPrompter</dt>

        <dd>Next Level Task Management System. </dd>

        <dd>Sends Timely Email Notifications. </dd>

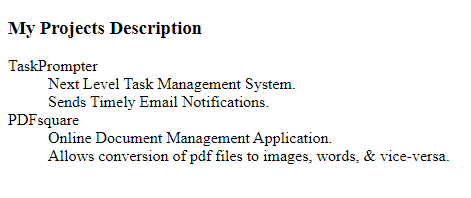
        <dt>PDFsquare</dt>

        <dd>Online Document Management Application. </dd>

        <dd>Allows conversion of pdf files to images, words, & vice-versa. </dd>

    </dl>

**Output**

****

**HTML Forms**

* Forms are used to collect data or user input.
* In HTML forms can be defined using the **<form>** tag.

Attributes of Form Element

* **action**: It defines the action to be performed when a form is submitted.
* **method**: It specifies an http method to be used when submitting the form.
* **target**: It is used to specify the page where action is going to be performed.
* **autocomplete**: It is an attribute having two values as ‘on’ or ‘off’, when it is ‘on’ browser automatically suggests the values for inputs based on our previous entries and by default the form tag takes it as ‘on’.

**Input Tag**

* The most used tag inside form is **<input>** tag.
* The **<input>** tag is used to take input from user.
* An **<input>** tag can be displayed in many ways, depending on the **type** attribute using which we can specify the value type which we want to collect from user.
* The default type of **<input>** is text only.
* The <input> tag in html also has so many attributes.
* Some of them are:
  + 1. **required:** *validates the field as mandatory field.*
    2. **readonly:** *makes the field readable only.*
    3. **disabled:** *marks the field as disabled i.e. no data can be provided here.*
    4. **max:** *defines a maximum value as boundary constraint.*
    5. **min:** *defines a minimum value as boundary constraint.*
    6. **maxlength:** *restricts the length of the input text.*
    7. **multiple:** *used when working with files to drag multiple files at a time.*

A screenshot of a computer program

Description automatically generatedA screenshot of a computer program

Description automatically generated

Example

<body>

    <h3>HTML Forms</h3>

    <form action="https://r-venkat-kalyan.github.io/" method="get" target="\_blank" autocomplete="on">

        <label for="name">Enter Your Name: </label><br>

        <input type="text" id="name" placeholder="Name"/><br>

        <label for="email">Email Address:</label><br>

        <input type="email" id="mail" placeholder="Email"/><br>

        <label for = "age">Your Age: </label><br>

        <input type="number" id="age" placeholder="Age" min="1" max="100"/><br>

        <label for = "ID">Your 10-digit ID: </label><br>

        <input type="number" id="id" placeholder="ID" /><br>

        <label for = "gender">Your Gender: </label><br>

        <input type="radio" id="genderM" value="Male"/>

        <label for = "male">Male </label>

        <input type="radio" id="genderF" value="FeMale"/>

        <label for = "female">FeMale </label><br>

        <label for="graduation">Graduation date</label>

        <input type="date" id="date” required/><br>

        <label for="Time for graduation” >Select Time:</label>

        <input type="time" id="time" /> <br>

        <label for="Rate">Rating:</label><br>

        <input type="range" id="range" /><br>

        <input type="checkbox" id="check1" required/>

        <label for = "terms">Accept Terms and Conditions</label><br>

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

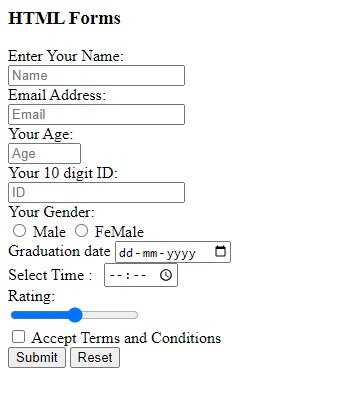
        <input type="reset" value="Reset"/>

    </form>

</body>

* Here after we click the **submit** button some **validations** will happen for **graduation date: required, age: 1-100, must select Accept Terms**.
* If all validations are successful, then we will be redirected to **Portfolio page** in a new tab as we have specified **form action as Portfolio-URL and target as \_blank.**
* While filling in the form the browser will auto suggest values for some fields as we have provided **autocomplete= “on”.**
* Here I have used the form method as **‘get’** which is not that preferable when dealing with sensitive data as it displays all the data entered in the form in the URL in the format of **name: value pairs**.
* Whenever we deal with sensitive data it is always preferable to go with the **‘post’** method which appends the data inside the body of the HTTP request.

Output

****

**HTML Drop-Down**

* To create a drop-down list, we need to use **<select>** tag.
* To define an option element, we need to use **<option>** tag.
* In drop-down lists the first option is selected by default.
* To define a pre-selected option, add the **selected** attribute to the option.

Example:

    <h4>HTML Drop-Downs</h4>

    <select name="movies">

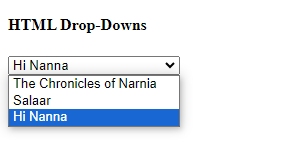
        <option value="chroncile">The Chronicles of Narnia</option>

        <option value="12th Fail">Salaar</option>

        <option value="Hi Nanna" selected>Hi Nanna</option>

    </select>

Output:

****

**HTML <textarea>**

* The **textarea** element defines a multi-line input field.
* It mainly consists of two attributes **rows** and **cols**.
* The **rows** attribute specifies the visible number of lines.
* The **cols** attribute specifies the visible width.
* The difference between **<input type=”text”>** and <**textarea>** is that in in <**textarea**> we can have multiple lines.

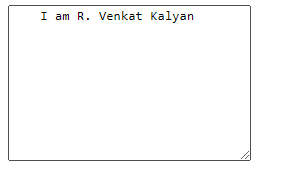
Example

    <textarea rows="10" cols="30">

    I am R. Venkat Kalyan

    </textarea>

**Output**

****

**HTML Canvas**

* The HTML **Canvas** is used to draw graphics in our web pages using **javascript**.
* The **<canvas>** element is only a container; we need to use **javascript** to draw the graphics.
* A **canvas** is a rectangular box on a html page with no borders.

**HTML SVG**

* **SVG** stands for Scalable Vector Graphics.
* **SVG** defines vector-based graphics in XML which can be embedded directly into HTML pages.
* **SVG** graphics are scalable and do not lose any quality if they are zoomed in or resized.

**HTML Media**

* **Media** on the web is **sound, music, video, movies, etc**.
* **HTML5** includes some elements to support **audio** and **video** content to the web pages.
* The HTML **<video>** element is used to show a video on our web page.
* The HTML **<audio>** element is used to play audio on our page.
* Both **video** and **audio** tags need to include another tag within them which is called as <**source**> tag which is used to provide the path of the video.
* Some attributes for this <**video**> and <**audio**> tags are as follows:
  + **controls**: It adds controls like **play**, **pause** and **volume**.
  + **autoplay**: To start a video **automatically** we use the **autoplay** attribute.
  + **autoplay muted**: It starts a video **automatically** but **mutes** the volume.
  + source **type:** It is used to specify the **type** like **mp4**, **ogg**, **webm.**

Video Example

    <h1>HTML Videos</h1>

    <video width="500" height="400" controls>

        <source src="shiva.mp4" type="video/mp4">

    </video>

Output

****

* A controllable video is displayed, we can also include attributes like **autoplay**, **autoplay** **muted** in the above code.

Audio Example

<h4>HTML Audios</h4>

    <br>

    <audio width="500" height="400" controls>

        <source src="Jay Shri ram.mp3" type="audio/mp3">

    </audio>

Output

**A screen shot of a computer

Description automatically generated**

**CSS (Cascading Style Sheets)**

* It is a tool that defines how web documents look on a screen.
* Cascading Style Sheets (CSS) provide easy and effective alternatives to specify various attributes for the HTML tags.
* Using CSS, you can specify multiple style properties for a given HTML element.
* Cascading means that a style applied to a parent element will also apply to all children elements within the parent. So when you are applying any style to an element, you must be careful about child elements. You can apply different styles to children also.
* Ways to use CSS:
  + External CSS
  + Internal CSS
  + Inline CSS
* **External CSS** can be configured using an .css file and including that file in html file using **<link> tag**.
* **Internal CSS** can be configured directly in the html file by placing the css code in **<style> tag.**
* **Inline CSS** can be configured directly with html elements using **style** attribute.

Disclaimer

* The following notes are general summaries and overviews of the topics discussed.
* These notes are not exhaustive and do not cover all aspects of the subject matter.
* The information provided herein is intended for educational purposes only and should not be used as a substitute for professional advice, detailed study, or official course materials.

**References**

For more detailed information, please refer to the following resources:

**Reference 1:** [Complete HTML Tutorial](https://www.w3schools.com/html/default.asp)

**Reference 2:** [All HTML Elements List](https://www.w3schools.com/tags/default.asp)

**Reference 3:** [All HTML attributes List](https://www.w3schools.com/tags/ref_attributes.asp)

**Reference 4:** [Most Asked HTML Questions](https://www.interviewbit.com/html-interview-questions/)

**Reference 5:** [HTML Cheat Sheet](https://www.geeksforgeeks.org/html-cheat-sheet/)

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