# Web Designing
# Working with Forms, Images and Media in HTML5

Car Skeleton (only body) is **HTML**

Car Painted or Decorated is **CSS**

Car Engine and Internal logic is **JS**

## Outline

o Working with Forms, Images and Media in HTML5

- Inserting Image in a Web Page
- Image Map
- Introduction to Canvas
- Video Element
- Audio Element
- Embed Element
- Object Element
- Figure and Figcaption Element.

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## Images, Color and Canvas

- While creating a website, developers try to make it as attractive as possible by providing the information in an effective and reader friendly manner.
- A website provides information in the two forms, namely text and images. Information presented in the form of images is easier to retain for users in comparison to the information written in plain text.
- HTML provides a tag named **IMG** which is used to add or insert images in a Web page.
- You can use images in various forms, such as a **logo**, a **diagram** or an **icon**. You can also apply an images as a background of a Web page or website.

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## Images, Color and Canvas

- In addition to images, you can use different **colors** in the content of your website to change its appearance.
- This can be done by using one of the following three ways:
  - Color names
  - Hexadecimal (Hex) value
  - Red Green Blue (RGB) value
- To further enhance the appearance of a website, HTML also provides **CANVAS** tag.
  - This tag allows you to make your images more appealing by changing their brightness and contrast. You can also draw 2D shapes and graphs on a Web page by using the CANVAS tag.

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## Inserting Images

o  HTML allows you to insert an image in a Web page with the help of the **IMG** tag. This tag uses several attributes, such as **src, id, lang, dir** and **alt**.

o  **Note** - Out of all the attributes of the **IMG** tag, only the **src** attribute is necessary.

o  The **src** attribute provides the information about the path of the image file to the Web browser.

  o  If your image and HTML files are stored in the same folder, then there is no need to specify the full path of the image file in the src attribute.

  o  If your image and HTML files are in different folders, you have to specify the full path of the image file in the src attribute of the IMG tag

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## Inserting Images

| Img tag Attribute | Description |
|---|---|
| id | Assigns a unique identifier to a tag. This identifier must be used only once in a document. This attribute is optional |
| class | Assigns a single name or a set of class names to a tag. However, one or more tags can be assigned with a same class name. This attribute is optional |
| lang | Specifies the base language used for the IMG tag. This attribute is optional |
| dir | Assigns a direction to entire or a section of HTML file. This attribute is optional |
| title | Describes the objective of the use of the IMG tag. This attribute is optional |

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## Inserting Images

| Img tag Attribute | Description |
| --- | --- |
| style | Applies inline CSS style on individual tags in an HTML file. This attribute is optional |
| src | Specifies the URL or the location of the image. This attribute is mandatory |
| alt | Specifies the alternate text to be used, if the Web browser cannot render the image. This attribute is optional |
| height | Specifies the height of the image. This attribute is optional |
| width | Specifies the width of the image. This attribute is optional |

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## Inserting Images

| Img tag Attribute | Description |
| --- | --- |
| ismap | Indicates that the image is used as an image map. This attribute is optional |
| usemap | Associates a tag with an image map. This attribute is optional |

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## Inserting an image

```
<!DOCTYPE HTML>
<HTML>
      <HEAD>
            <TITLE>Images</TITLE>
      </HEAD>
      <BODY>
            <H2>Inserting an Image in a Web page</H2>
            <IMG src="progressbar.png"/>
      </BODY>
<HTML>
```

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## HTML Image Format

o You can use different types of image formats in Web pages. Some of the commonly used image formats are:

   o **GIF (Graphic Interchange Format)** - used to create illustrations, such as logos or cartoons

   o **JPEG (Joint Photographic Expert Group)** - used to generate complex images, such as photographs

   o **PNG (Portable Network Graphics)**- used with the images that have more number of colors

o GIF and JPEG are supported by all the Web browser whereas, PNG is supported by some of the Web browsers.

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## GIF image

```
<!DOCTYPE HTML>
<HTML>
      <HEAD>
            <TITLE>Images</TITLE>
      </HEAD>
      <BODY>
            <H2>Displaying a GIF Image </H2>
            <IMG src="ProgressBar.gif"/>
      </BODY>
<HTML>
```

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## alt attribute

- The alt attribute specifies an alternate text for the image, if it cannot be displayed
- The value of the alt attribute should describe the image in words:

  **<img src="html5.jpg" alt="The official HTML5 Icon">**

- **Note :** The alt attribute is required. A web page will not validate correctly without it
- **Note :** Always specify the width and height of an image. If width and height are not specified, the page will flicker while the image loads

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## Alternate Text for an image

<!DOCTYPE HTML>
<HTML>
<HEAD>
<TITLE>Alternate Text for an Images</TITLE>
</HEAD>
<BODY>
<H2>Displaying Alternate Text for an Image</H2>
        <IMG src="progressBar.png" alt="Progress Bar"/>
</BODY>
<HTML>

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## Image Size - Width and Height

o Use the style attribute to specify the width and height of an image

o The values are specified in pixels (use px after the value). Here is an example demonstrates how to set width and height of an image in a web page:

**<img src="html5.jpg" alt="HTML5 Official Icon" style="width:128px;height:128px">**

**Or**

**<IMG src="html5.jpg" height="100" width="100"/>**

o It will produce the same result as above.

o Both the width, the height, and the style attributes, are valid in the latest HTML5 standard.

o We suggest you to use the style attribute. It prevents style sheets from changing the default size of images.

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## Image as specified size

```
<!DOCTYPE HTML>
<HTML>
      <HEAD>
              <TITLE>Size of Image</TITLE>
      </HEAD>
      <BODY>
              <H2>Specifying the size of an Image</H2>
              <P> The height of the following image is 100 and
               width is 100.</P>
              <IMG src="car.jpg" height="100" width="100"/>
              <BR/>
              <P> The height and width of the following image is
               not specified.</P>
              <IMG src="car.jpg" />
      </BODY>
<HTML>
```
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## Image Floating

o Use the style attribute to specify the width and height of an image

```
<!DOCTYPE HTML>
<HTML>
      <HEAD>
              <TITLE>Floating of Image</TITLE>
      </HEAD>
      <BODY>
              <H2>floating image on right</H2>
              <IMG src="car.jpg"
               style="width:128px;height:128px;float:right;"/>
      </BODY>
<HTML>
```
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## Image as hyperlink

```
<!DOCTYPE HTML>
<HTML>
      <HEAD>
            <TITLE>Images as hyperlink</TITLE>
      </HEAD>
      <BODY>
            <H2> Using Images as Hyperlink</H2>
            <A href="Target.html">
                  <IMG src="progressBar.png" height="100"
                    width="100"/>
            </A>
      </BODY>
<HTML>
```
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## Image as hyperlink

```
Target.html
<!DOCTYPE HTML>
<HTML>
      <HEAD>
            <TITLE>target page</TITLE>
      </HEAD>
      <BODY>
            <H2>Welcome to target page</H2>
      </BODY>
<HTML>
```
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## Image Map

o The HTML <map> tag defines an image map. An image map is an image with clickable areas. The areas are defined with one or more <area> tags.

o In image mapping an image is specified with certain set of coordinates inside the image which act as hyperlink areas to different destinations.

o It is different from an image link since in image linking, an image can be used to serve a single link or destination whereas in a mapped image, different coordinates of the image can serve different links or destinations.

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## Elements Required in Mapping an Image

o There are three basic html elements which are required for creating a mapped image.

1. **Map** : It is used to create a map of the image with clickable areas.

2. **Image** : It is used for the image source on which mapping is done.

3. **Area** : It is used within the map for defining clickable areas.

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## Steps to create a Mapped Image

o The first step is to display an image using a <image> tag.

   **Syntax:** <img src = "image.jpeg">

o While displaying an image, make sure you provide the correct dimensions to the image. To give a proper size to the image, you can use the height and width attributes of the image tag. Determining the size of the image is very important because if the size of the image is changed then the area coordinates will also require updation.

   **Syntax:** <img src = "image.jpeg" height = "" width = "">

o After displaying the image, add the usemap attribute in an image tag.

   **Syntax**: <img src="image.jpeg" usemap = "#mapname">

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## Steps to create a Mapped Image

o Now, create a map for overlaying the image.

   **Syntax:** <map name = "mapname">

o (The value which is set for the usemap attribute in the image tag should be the same for the name attribute in the map tag.)

o Finally, determine the coordinates of the areas where you want to map using the tag inside the tag. Coordinates can be found easily by using MS-Paint.

   **Syntax:** <area shape="rect" coords="150, 130, 650, 240" href="#">

o We can use shape as rectangle, circle and polygon.

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## Image Map

```
<!DOCTYPE HTML>
<HTML>
      <HEAD>
              <TITLE>Using Image Maps</TITLE>
      </HEAD>
      <BODY>
              <H2> Creating the Image Maps</H2>
              <IMG src="progressBar.png" usemap="#mymap" />
              <MAP name="mymap">
                      <AREA shape="rect" coords="0,0,82,126"
                       href="Target1.html" />
                      <AREA shape="circle" coords="190,158,130"
                       href="Target2.html" />
              </MAP>
      </BODY>
</HTML>
```
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## Image Map

```
Target1.html
<!DOCTYPE HTML>
<HTML>
      <HEAD>
              <TITLE>target1 page</TITLE>
      </HEAD>
      <BODY>
              <H2>Welcome to target1 page</H2>
      </BODY>
<HTML>
```

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## Image Map

Target2.html
```
<!DOCTYPE HTML>
<HTML>
      <HEAD>
            <TITLE>target2 page</TITLE>
      </HEAD>
      <BODY>
            <H2>Welcome to target2 page</H2>
      </BODY>
<HTML>
```

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## Mapped Image

- ⟨!-- displaying image -->
  ```
  <img src="img_map.jpeg" usemap="#example">
  ```
- ⟨!-- using map tag to create clickable areas -->
  ```
  <map name="example">
  ```
- ⟨!-- defining clickable areas -->
- ⟨!-- clickable area of Polygon -->
  ```
  <area href="https://en.wikipedia.org/wiki/Polygon"
  coords="60,0,105,70,51,107,62,81,0,75,42,7" shape="poly">
  ```
- ⟨!-- clickable area of Rectangle -->
  ```
  <area href="https://en.wikipedia.org/wiki/Rectangle"
    coords="217,44,393,135" shape="rect">
  ```
- ⟨!-- clickable area of Circle -->
  ```
  <area href="https://en.wikipedia.org/wiki/Circle"
   coords="147,154,55" shape="circle">
   </map>
  ```

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## Image Mapped and JavaScript

o We can also call a JavaScript function with the help of Image Map.

o Let us see a simple example where we will be creating a simple keypad. On pressing each number, an alert function will be called.
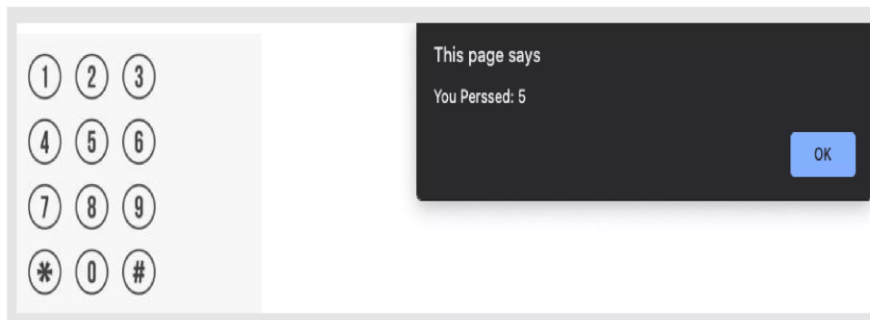


## Image Mapped and JavaScript

o Code

```
<!-- js and image map -->
  <script>
    function myFunction(key){
        alert("You Perssed: "+key);
    }
  </script>
  <img src="keypad.jpeg" usemap="#keypad">
  <map name="keypad">
    <area shape="circle" coords="122,31,15" title="1"
      onclick="myFunction(1)">
    <area shape="circle" coords="166,31,15" title="2"
     onclick="myFunction(2)">
    <area shape="circle" coords="213,31,15" title="3"
     onclick="myFunction(3)">
```

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## Image Mapped and JavaScript

```
<area shape="circle" coords="122,77,15" title="4"
 onclick="myFunction(4)">
<area shape="circle" coords="166,77,15" title="5"
 onclick="myFunction(5)">
<area shape="circle" coords="213,77,15" title="6"
onclick="myFunction(6)">
<area shape="circle" coords="122,123,15" title="7"
onclick="myFunction(7)">
<area shape="circle" coords="166,123,15" title="8"
onclick="myFunction(8)">
<area shape="circle" coords="213,123,15" title="9"
onclick="myFunction(9)">
<area shape="circle" coords="122,171,15" title="*"
onclick="myFunction('*')">
<area shape="circle" coords="166,171,15" title="0"
 onclick="myFunction(0)">
```

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## Image Mapped and JavaScript

```
<area shape="circle" coords="213,171,15" title="#"
 onclick="myFunction('#')">
</map>
```

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## Color

- In HTML, you can specify the colors for the text and background of a web page to make it more attractive and appealing.
- HTML defines 16 widely known colors that you can apply to a Web page by specifying the name of the color as the value of the text attribute of the BODY element.
- Alternately, you can use the hexadecimal (Hex) values of colors, which imply that the value of the text attribute must be the hexadecimal value of the color. You can also apply colors to a Web page by using the RGB color mode. In this case, the text attribute contains the RGB value of the color.
- You can apply colors in a Web page with the help of
    - Color names
    - Hex values
    - RGB configuration
    - Web-safe colors

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## Color Name

- You can use a color in a Web page by simply specifying its name.
- However, there are only 16 colors that can be specified by their names. For example, you need to design a Web page, in which you want to display the text in red color. You can do so by using the text attribute of the BODY element. You can specify a color by typing the name of the color as the value of the text attribute in the BODY element.
- HTML Color Hex Values : The Hex values, also referred as hexadecimal numbers, are 6 digits or three bytes number that start with the # sign. The three bytes present in every hexadecimal number represent the following :
- Byte 1 - Represents the red color
- Byte 2 - Represents the green color
- Byte 3 - Represents the blue color

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## Color Name

o Each byte contains some numbers from 00 to 99 and alphabets from AA to FF in hexadecimal notation.

o The Hex values are defined through the combination of values assigned to red, green, and blue colors.

o In Hex value, 0 represents the darkest color that is black and F represents the lightest color that is white.

o For example, the hexadecimal number for black is #000000. The first two digits (00) represent the amount of red color.

o The second two digits (00) represent the amount of green color, and the last two digits (00) represent the amount of blue color.

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## Color RGB Value

o The process of displaying colors by using the different combinations of red, green, and blue is known as the RGB configuration.

o It is a set of three dials, where the first dial represents red, second dial represents green, and the third dial represents the blue color.

o In the RGB configuration, the value of each color (red, green, and blue) ranges from 0 to 255 in decimal.

o The color specified by 255, 0, 0 represents the red color because its first dial contains the value 255 that represents the red color, while the second dial representing the green color and the third dial representing the blue colors contains 0 (means no color).

o In the same way, the color specified by 0, 255, 0 represents the green color, and the color specified by 0, 0, 255 represents the blue color.

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## Color RGB Value

- If all the three dials are turned off, such as 0, 0, 0 then this is the condition of the absence of color or simply black color.
- On the other hand, if all the dials are turned on, such as 255, 255, 255 then it represents the white color.

| Color Name | RGB Value | Color Name | RGB Value |
|---|---|---|---|
| Black | rgb(0, 0, 0) | Lime | rgb(0, 255, 0) |
| Silver | rgb(192, 192, 192) | Olive | rgb(128, 128, 0) |
| Gray | rgb(128, 128, 128) | Yellow | rgb(255, 255, 0) |
| White | rgb(255, 255, 255) | Navy | rgb(0, 0, 128) |
| Maroon | rgb(128, 0, 0) | Blue | rgb(0, 0, 255) |
| Red | rgb(255, 0, 0) | Teal | rgb(0, 128, 128) |
| Purple | rgb(128, 0, 128) | Aqua | rgb(0, 255, 255) |
| Fuchsia | rgb(255, 0, 255) | Green | rgb(0, 255, 0) |

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## Web safe Color

- Earlier, a computer system is used to support only 256 colors, out of which 216 colors are Web standard colors displayed correctly by all computer systems.
- These colors are known as Web-safe colors that are only defined by using the values, 00, 33, 66, 99, AA, CC, or FF.
- A Web-safe color can use any combination of these values. For example, #99FF00 is a Web-safe color but #221144 is not a Web-safe color.
- The 00 represents the darkest value for each color and the FF represents the brightest value for each color.

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## Body text color by name

```
<!DOCTYPE HTML>
<HTML>
      <HEAD>
              <TITLE>using color names</TITLE>
      </HEAD>
      <BODY text="Red">
              <H2>Welcome to the World of HTML</H2>
      </BODY>
</HTML>
```

o Text attribute is deprecated in HTML5

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## Body text color by hex value

```
<!DOCTYPE HTML>
<HTML>

      <HEAD>
              <TITLE>using color Hex Values</TITLE>
      </HEAD>

      <BODY text="#FF0000">
              <H2>Welcome to the World of HTML</H2>
      </BODY>

</HTML>
```

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## Body text color by rgb value

```
<!DOCTYPE HTML>
<HTML>
      <HEAD>
              <TITLE>using color RGB Values</TITLE>
      </HEAD>
      <BODY text="rgb(255,0,0)">
              <H2>Welcome to the World of HTML</H2>
      </BODY>
</HTML>
```

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## Canvas

o The CANVAS tag of HTML is introduced in HTML5, used to display 2D shapes and graphics on the Web page. This tag allows you to use graphs, games, and other visuals in the Web page.

o You can also use the CANVAS tag to apply various transformations, such as rotate and blur on an image.

o The content that is defined between the starting and the ending tags of the CANVAS tag is only displayed when the Web browser does not support the tag.

o The attributes of the CANVAS tag are height and width, which specify the height and width of the canvas.

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## Canvas

o HTML CANVAS Example

> <CANVAS id="canvas" width="50" height="100">
> </CANVAS>

o As shown in the above code snippet, we have also defined another attribute of the CANVAS tag that is the id attribute, which is used to specify a unique name to the tag. The id attribute of the CANVAS tag is used with the JavaScript code to display graphics on the Web page.

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## Canvas

o Basic syntax behind every code.

  o var canvas = document.getElementById("Canvas1");

o The code above is used to select all the elements with the ID 'Canvas1' and store them in the variable canvas. getElementbyId is a JavaScript method for selecting objects with the specified ID.

  o var context = canvas.getContext("2d");

o The code above makes use of the getContext('2d') method in JavaScript to render a 2D context space to work on 2D shapes and graphics. The variable context stores all the graphic operations in the context space.

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## Create a Rectangle

- The .rect() method can be used to create rectangles inside the canvas tag. Here is the sample code to create a rectangle.
- The Code

  context.beginPath();

  context.rect(20, 20, 200, 100);

  context.stroke();

- The above code is used to create a rectangle. The 1st line is used to begin the process of drawing the rectangle.
- The first two parameters of the .rect() method in the 2nd line are the x and y coordinates respectively. They are used for positioning the rectangle on the 2D plane. The 3rd and the 4th parameter are used for specifying the width (200 px) and the length (100 px) respectively.
- The 3rd line of code is finally used to draw the shape.

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## Create a Circle

- The .arc() method is used to define the creation of a circle on the canvas. The parameters accepted by it include:
    - the x coordinates , y coordinates,  the radius of the circle, starting angle, ending angle
- The starting angle is mainly set as 0 and the ending angle is set as 2Pi since a standard circle has an angular range from 0 to 2pi.
- The Code

  context.beginPath();

  context.arc(95,50,40,0,2*Math.PI);

  context.stroke();

- The 1st line of the code is used to start the process of drawing the circle. The 2nd line contains the aforementioned parameters of the .arc() method. The stroke() method is used to finally draw the curve.

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## Create a Line

o A straight line can also be drawn on the canvas tag. The moveTo and lineTo commands are used to describe the x and y coordinates of the starting position and the ending position of the line respectively.

o The Code

```
context.moveTo(0,0);
context.lineTo(300,300);
context.stroke();
```

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## Adding Text

o There are many methods of adding text using the canvas tag. A few of them are described below:

o fillText() : The first method uses the fillText() method to write solid text.

```
context.font = "30px Times New Roman";
context.fillText("Scaler",10,50);
```

**Scaler**

o The aforementioned code is used to type the text 'Scaler' with a font size of 30 pixels and the font face as Times New Roman. The last two parameters of the fillText() method are for the x and y-coordinate positioning. To add colored text, a new line of code should be written.

```
context.fillStyle = "red";
```

o For aligning the text towards the center, use command:

```
context.textAlign = "center";
```

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## Adding Text

o strokeText() : The 2nd method is the strokeText() method for writing text without filling the interiors.

context.font = "30px Times New Roman";

context.strokeText("Scaler",10,50);

o The last two parameters of the strokeText() method are for the x and y-coordinate positioning.

# Scaler

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## Canvas

```
<!DOCTYPE HTML>
<HTML>
  <HEAD>
    <SCRIPT type="application/x-javascript">
      function displayCanvas()
      {
        var mycanvas = document.getElementById("myCanvas");
        if (mycanvas.getContext)
        {
          var contex = mycanvas.getContext('2d');
          contex.fillStyle = "rgb(50,0,0)";
          contex.fillRect (0, 0, 150, 75);
          contex.fillStyle = "rgba(0, 200, 50, 0.5)";
          contex.fillRect (40, 30, 125, 100);
        }
      }
```

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## Canvas

```
    </SCRIPT>
  </HEAD>
  <BODY onload="displayCanvas();">
    <CANVAS id="myCanvas" width="300" height="200">
       Your browser does not support the CANVAS element.
    </CANVAS>
    This is not an image.
  </BODY>
</HTML>
```

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## HTML Multimedia

o The term media refers to various means of communicating and disseminating information, such as text, images, graphics, audio, video, and animation. All these mediums of communication are collectively termed as multimedia.

o A combination of video and audio files can also be used in websites to gain popularity in terms of viewership or provide information and entertainment to the users.

o HTML helps you to add multimedia files on your website by providing various multimedia tags, such as **AUDIO**, **VIDEO**, **EMBED** and **OBJECT.**

o The **AUDIO** tag is used to display the audio file on the Web page, whereas the **VIDEO** tag is used to display the video files on the Web page.

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## HTML Multimedia

o The **EMBED** and **OBJECT** tags display the multimedia files on a Web page as well as embed the files from other websites.

o You can play the multimedia files, which are stored in your local computer, on the Web page by specifying their location. The **src** attribute is used to specify the multimedia file to play it on the Web page.

o If the Web browser does not support AUDIO and VIDEO tags, then the text defined between the starting and the closing tags of these tags are displayed on the Web page.

o The AUDIO tag of HTML5 supports only three audio file formats i.e. .ogg, .mp3, .wav

o You can use the VIDEO tag to display a video file on the Web page. The VIDEO tag supports the .mp4, .webm and .ogg file formats.

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## Video

o A video file is a collection of images that is displayed in a sequence representing scenes in motion.

o You can also use the SOURCE tag within the opening and the closing tags of the VIDEO tag to provide the source of the video file.

o The SOURCE tag is used in a situation when the location of the video file is not confirmed. In this case, the VIDEO tag plays the first video file located in the specified path. The following code snippet shows the use of the VIDEO tag :

```
<VIDEO src="video.ogv" autoplay="true" loop="3" controls>
</VIDEO>
```

o In the above code snippet, we have defined a video.ogv file in the src attribute.

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## Video

- To show a video in HTML, use the <video> tag.

  <video width="320" height="240" controls>

    <source src="song.mp4" type="video/mp4"> <source src="song.ogg" type="video/ogg">

    Your browser does not support the video tag.

  </video>
- The controls attribute adds video controls, like play, pause, and volume.
- If height and width are not set, the browser does not know the size of the video. The effect will be that the page will change (or flicker) while the video loads.
- Text between the <video> and </video> tags will only display in browsers that do not support the <video> tag.
- Multiple <source> tags can link to different video files. The browser will use the first recognized format. 53

## Video

- We have also set the autoplay attribute to true, which implies that the video file start playing as soon as the Web page loads.
- The loop attribute is set to 3, which implies that the video file will be played three times. In addition, the controls attribute displays the controls on the video player.

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## Video Attribute

| Video Attribute | Description |
|---|---|
| audio | Controls the default state of the video's audio channel |
| autoplay | Plays the audio file as soon as the Web page loads |
| controls | Displays the controls on a Web page, such as play and pause buttons |
| height | Specifies the height of the VIDEO tag |
| loop | Replays the video file |
| preload | Specifies whether the video file is preloaded on the Web page or not |
| poster | Provides an image to be displayed when the video file is not available |
| src | Provides the location of the video file to play |
| width | Specifies the width of the VIDEO tag |

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## Video file Format

| Format | File | Description |
|---|---|---|
| MPEG | .mpg .mpeg | MPEG. Developed by the Moving Pictures Expert Group. The first popular video format on the web. Used to be supported by all browsers, but it is not supported in HTML5 (See MP4) |
| MPEG-4 or MP4 | .mp4 | MP4. Developed by the Moving Pictures Expert Group. Based on QuickTime. Commonly used in newer video cameras and TV hardware. Supported by all HTML5 browsers. Recommended by YouTube |
| AVI | .avi | AVI (Audio Video Interleave). Developed by Microsoft. Commonly used in video cameras and TV hardware. Plays well on Windows computers, but not in web browsers |
| QuickTime | .mov | QuickTime. Developed by Apple. Commonly used in video cameras and TV hardware. Plays well on Apple computers, but not in web browsers. (See MP4) |

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## Video file Format

| Format | File | Description |
|---|---|---|
| Flash | .swf .flv | Flash. Developed by Macromedia. Often requires an extra component (plug-in) to play in web browsers |
| RealVideo | .rm .ram | RealVideo. Developed by Real Media to allow video streaming with low bandwidths. It is still used for online video and Internet TV, but does not play in web browsers |
| WMV | .wmv | WMV (Windows Media Video). Developed by Microsoft. Commonly used in video cameras and TV hardware. Plays well on Windows computers, but not in web browsers |
| WebM | .webm | WebM. Developed by the web giants, Mozilla, Opera, Adobe, and Google. Supported by HTML5 |
| Ogg | .ogg | Theora Ogg. Developed by the Xiph.Org Foundation. Supported by HTML5 |

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## Using Video Element

```
<!DOCTYPE HTML>
<HTML>

        <HEAD>
               <TITLE>Using VIDEO Element</TITLE>
        </HEAD>

        <BODY>
               <H1>Using the VIDEO Element</H1>
               <VIDEO src="Bunny.ogv" controls></VIDEO>
        </BODY>

</HTML>
```

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## Audio

- An audio file is used to store audio data on various data, such as a computer system, mp3 players, and mobile phones.
- To store an audio data, you need to convert it into a digital format.
- The process of converting audio data into a digital file is called encoding of the raw audio data. It involves taking samples of audio data and storing them in a compressed format to reduce the file size.
- An audio player decodes these compressed sample files to make the audio waves audible. The process of converting a digital file into the audio data is known as decoding. A codec is performs the encoding and decoding of the raw audio data.

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## Audio

- To play an audio file in HTML, use the <audio> tag.

<audio controls>

   <source src="songs.ogg" type="audio/ogg">

   <source src="songs.mp3" type="audio/mpeg"> Your browser does not support the audio tag.

</audio>

- HTML Audio Working
  - The controls attribute adds audio controls, like play, pause, and volume.
  - Text between the <audio> and </audio> tags will display in browsers that do not support the <audio> tag.
  - Multiple <source> tags can link to different audio files. The browser will use the first recognized format.

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## Audio Attribute

| Audio Attribute | Description |
|---|---|
| autoplay | Plays the audio file as soon as the Web page loads |
| controls | Displays the controls on the Web page, such as play and pause buttons |
| loop | Replays the audio file |
| preload | Specifies whether the audio file is preloaded on the Web page or not |
| src | Provides the location of the audio file to play |

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## Audio File Format

| Format | File Extension | Description |
|---|---|---|
| MIDI | .mid .midi | MIDI (Musical Instrument Digital Interface). Main format for all electronic music devices like synthesizers and PC sound cards. MIDI files do not contain sound, but digital notes that can be played by electronics. |
| WMA | .wma | WMA (Windows Media Audio). Developed by Microsoft. Commonly used in music players. Plays well on Windows computers, but not in web browsers |
| RealAudio | .rm .ram | RealAudio. Developed by Real Media to allow streaming of audio with low bandwidths. Does not play in web browsers |
| WAV | .wav | WAV. Developed by IBM and Microsoft. Plays well on Windows, Macintosh, and Linux operating systems. Supported by HTML5 |
| AAC | .aac | AAC (Advanced Audio Coding). Developed by Apple as the default format for iTunes. Plays well on Apple computers, but not in web browsers |

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## Audio File Format

| Format | File Extension | Description |
|--------|----------------|-------------|
| MP3 | .mp3 | MP3 is the most popular format for music players. |
| Ogg | .ogg | Ogg. Developed by the Xiph.Org Foundation. Supported by HTML5 |
| MP4 | .mp4 | MP4 is a video format, but can also be used for audio. MP4 video is the upcoming video format on the internet. |

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## Setting Background sound

```
<!DOCTYPE HTML>
<HTML>
      <HEAD>
            <TITLE>Setting Background Sound</TITLE>

      </HEAD>
      <BODY >
            <H1>Playing Background Music </H1>
            <BR/>
            <AUDIO src="Music.ogg" autoplay="true">
                  Your browser does not support the AUDIO
                   element.
            </AUDIO>
      </BODY>
</HTML>
```

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## Other ways to add Audio

- o <audio> tag is not the only way to add audio files in your browser. There are 3 more ways to do so. Let's see each one of them -

- o **Object Element:** The object element is an HTML tag that was intended to allow us to include various sorts of media on our web pages, such as audio, video, photos, and PDFs. It is not frequently used because it is not supported by the majority of browsers. And the manner in which it is executed is dependent on the type of media we are attaching.

- o Let's see one example

```
<object data="image.jpg" width="300" height="200">
</object>
<object data="bridge.mp4" width="300" height="200">
</object>
```

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## Other ways to add Audio

- o As you can see, we have used object tag to display an image and video file instead of <img> and <video> tag.

- o **Anchor Tag:** The anchor tag <a> is used to create a link to your webpage that, when clicked, redirects you to that destination. Given that the anchor tag only requires a path, if we provide the path to our audio file, it will redirect to the audio. Let's see the following example.

  **<a href="audio1.mp3">Audio 1</a>**

  **<a href="audio2.mp3">Audio 2</a>**

- o This piece of code will create two links - Audio 1 and Audio 2. And if you click one of the links, it will open a new tab for you to play that particular audio file.

- o Generally, this method is not preferable because anchor tag creates unnecessary redirection on your website while users want to see content on the same page. 66

## Other ways to add Audio

○ **Embed Element :** This tag was built with a single objective in mind: to allow you to embed multimedia assets within your HTML document. As with the object tag, you can include any type of file in this. Let's see the example –

  **&lt;embed src="image.jpg"&gt;**

  **&lt;embed src="video.mp4"&gt;**

○ This will embed the audio file inside your webpage.

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## Embed Multimedia

○ HTML allows you to embed plug-ins in a Web page using the EMBED tag. This tag lets you embed multimedia in a Web page and play it while opening the page.

○ The EMBED tag is supported by Internet Explorer as well as Netscape Navigator. It is also supported across the Windows and Mac platforms.

○ The EMBED tag uses the three mandatory attributes, namely **src, height**, and **width**.

○ Following is an example of using the EMBED tag.

**&lt;EMBED src="Music.mp3" width=600 height=100&gt;**
**&lt;/EMBED&gt;**

○ In the above example, we have defined the src attribute to specify the source multimedia file to be played while the Web page loads in the browser. We have define height and width of the component on the page.
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## Embed Multimedia

- Following table lists various attributes of the EMBED tag in HTML.
  - Height -- Specifies the height of the embedded component
  - Hspace -- Sets the horizontal padding around the tag
  - Type -- Specifies the Multipurpose Internet Mail Extension (MIME) type for the components
  - Width -- Sets the width of the embedded component in the page

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## Embedding an audio file

```
<!DOCTYPE HTML>
<HTML>

        <HEAD>
                <TITLE>Embedding an Audio File</TITLE>
        </HEAD>

        <BODY>
                <H1>Playing Background Music</H1>
                <BR/>
                <EMBED src="Music.mp3" width=600
                 height=100> </EMBED>
        </BODY>

</HTML>
```

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## Embedding a video file

```
<!DOCTYPE HTML>
<HTML>

        <HEAD>
                <TITLE>Embedding a Video File</TITLE>
        </HEAD>

        <BODY>
                <H1>Playing Video "Wildlife"</H1>
                <BR/>
                <EMBED src="Wildlife.wmv" width=400
                 height=200></EMBED>
        </BODY>

</HTML>
```

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## Embedding a Video from other Websites

```
<!DOCTYPE HTML>
<HTML>
        <HEAD>
                <TITLE>Adding an video File</TITLE>
        </HEAD>
        <BODY>
            <H1>Embedding a video from other websites</H1>
            <OBJECT width="640" height="385">
            <PARAM name="movie"
value="http://www.youtube.com/v/W2VygftZSCs?fs=1&amp;hl=en
_US">
            </PARAM>
            <PARAM name="allowFullScreen" value="true">
            </PARAM>
            <PARAM name="allowscriptaccess" value="always">
            </PARAM>
```
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## Embedding a Video from other Websites

```
      <EMBED
src="http://www.youtube.com/v/W2VygftZSCs?fs=1&amp;hl=en_U
S"
      type="application/x-shockwave-flash"
      allowscriptaccess="always"
      allowfullscreen="true" width="640" height="385">
      </EMBED>
   </OBJECT>
  </BODY>
</HTML>
```

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## Object Tag

o HTML uses the OBJECT tag to include objects, such as images, audios, videos, Java applets, ActiveX controls, Portable Document Format (PDF), and Flash objects, in a Web page.

o The OBJECT tag allows you to specify the code that can be used to display or manipulate that data.

o An OBJECT tag can also be used inside the BODY tag. The text between the starting and the ending tags of the OBJECT tag is the alternate text for browsers that do not support this tag.

o The OBJECT tag initializes the object by passing the parameters to the object, which can be done using the PARAM tag.

o In HTML, you can use the PARAM tag to define parameters or variables for an OBJECT tag. An OBJECT tag can contains multiple PARAM tags.

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## Object Tag

o Code snippet.

```
<OBJECT data="movie.avi" type="video/quicktime"
id="video" width="200" height="100">
    <PARAM name="BorderStyle" value="1" />
    <PARAM name="autoplay value=true />
</OBJECT>
```

o In the above code snippet, we have defined an OBJECT tag, which includes a video file in a Web page.

o We have also used the PARAM tags to pass the parameters for the OBJECT tag.

o Attributes of the PARAM tag.

   o **Name** -- Specifies the name of the parameter

   o **Value** -- Specifies the value of the parameter

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## Object Tag

| Attribute | Description |
|-----------|-------------|
| data | Specifies the URL of the object's data |
| form | Specifies one or more forms to which the object belongs |
| height | Specifies the height of the object in pixels |
| name | Specifies the object's name |
| type | Specifies the MIME type for the component |
| usemap | Specifies the URL |
| width | Sets the width of the embedded components in the page |

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## Adding an audio file using an Object

```
<!DOCTYPE HTML>
<HTML>
      <HEAD>
            <TITLE>Adding an Audio File</TITLE>
      </HEAD>
      <BODY>
            <H1>Playing Background Music using the OBJECT
             Element</H1>
            <BR/>
            <OBJECT data="Music.mp3" >
            </OBJECT>
      </BODY>
</HTML>
```

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## Adding a video file using an Object

```
<!DOCTYPE HTML>
<HTML>
      <HEAD>
            <TITLE>Adding a Video File</TITLE>
      </HEAD>
      <BODY>
            <H1>Playing Video "Wildlife"</H1>
            <BR/>
            <OBJECT data="Wildlife.wmv" type="video/wmv"
             width="500" height="300" />
      </BODY>
</HTML>
```

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## Figure and Figcaption

o The FIGURE tag is newly introduced in HTML5 and is used to group or annotate various diagrams, images, illustrations, and code snippets.

o You can define various tags, such as IMG, CODE, and PRE, inside the FIGURE tag. The FIGCAPTION tag is used inside the FIGURE tag to provide the caption of the content.

o Example of FIGURE and FIGCAPTION Tags

```
<FIGURE>
    <FIGCAPTION>Listing 1: Showing the alert box</FIGCAPTION>
    <PRE><CODE>alert('Hello World!');</CODE></PRE>
</FIGURE>
```

o In the above example, we have defined the FIGURE tag, which contains the FIGCAPTION tag to display the figure caption on a Web page. In addition, we have also defined the PRE and the CODE tags to display the code in the predefined formatting.

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## Using Figure and Figcaption

```
<!DOCTYPE HTML>
<HTML>
    <HEAD>
        <TITLE>Using the FIGURE and FIGCAPTION
        Elements</TITLE>
    </HEAD>
    <BODY>
        <H1>Displaying an Image of a Car</H1>
        <BR/>
        <FIGURE>
            <IMG src="car.jpg" alt="A small Car." <BR/>
            <FIGCAPTION>Figure showing you a small
             car. </FIGCAPTION>
        </FIGURE>
    </BODY>
</HTML>
```
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## Figcaption Style

o The <figcaption> element has no attributes, but it does accept global attributes such as id, class and style.

o A <figcaption> tag that is styled to match the image colors.

<figure>

  <img src="/img/html/vangogh-lg.jpg">

  <figcaption style="color:red;font-weight:bold;">

   Fig.1 - Van Gogh, Self Portrait

  </figcaption>

</figure>

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## Changing the position of a <figcaption>

o By default, a <figcaption> displays at the bottom of a <figure> element.

o With CSS the position and orientation of the caption can be changed.

<figure style="position:relative;color:white;

      width:300px;height:360px;

      background-color:darkred;">

  <img src="/img/html/vangogh-lg.jpg">

  <figcaption style="position:absolute; top:0; right:0;

       writing-mode:vertical-rl;">

      Fig.1 - Van Gogh, Self Portrait

  </figcaption>

</figure>

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