Chap-5 Introduction to New Elements in HTML 5

5.1 The Mark-up Element HTML5:

Mark-up Elements are used to create Basic structure of HTML. We all know that Web page created in different sections. In Older versions of HTML div tag is used to create different sections. In HTML-5 the new mark-up elements such as Header, footer, section, article, aside have replaced the div element.

1 **Article:** Article tag is used to add content in webpage. Use the ARTICLE element when the content is an independent part of the site that can stand alone. Content of page can be blog, user submitted comment or forum post.

2 **Aside:** This tag is used to represent content that may be related to Article. This is an inside or outside part of Article tag. When used inside the content of the aside element must be relevant to the article content. You can also use Aside to show relative links with your webpage. This type of content is often represented in sidebars.

3 **Section:** This tag is used to group the relative content. It's advisable to use a heading element (<h1> – <h6>) to define the topic for the section. You could use <section> elements that represent each of the individual parts within the post.

4 **Header:** This tag is used to set header of webpage. It is used top of the web page. It is a container tag in which you can add different html elements. You can use h1-h6 head tag hgroup, image tag for setting logo of company,anchor <a> tag for set navigation Menu in header tag. header element belongs to Flow Content.

5 **nav:** This Element generally contain website navigation links.

6 **Footer:** Footer tag represents a footer of a section or document. Usually, copyright information, address of the author, links related to the document including social links related to the document is placed within the footer tag.

7 **Figure:** This tag is used to add images, graph and diagram in your page. It is a container tag. In this tag you have to use image tag to set images. You can also set more than one images in one figure tag.

8 **figure caption:** This tag is used to give Caption to the figure.

9 **Hgroup:** This tag is used to set h1 to h6 heading tag in group. When there are more than one heading in you page like main heading then subheading at that time you can use this tag.

10 **Time:** This tag is used for declaring the user define date and/or time within an HTML document. You can set time in hh:mm in 24hours format and date in yyyy-mm-dd format. **For Example:**

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On Saturdays, we open at <time>09:00</time> am.

India was independent on<time>1947-08-15</time>.

11 **Details:** This tag is used to show additional information in webpage .User can view this information on demand means it shows information in hide and show format. By default this will hide the information you will look a triangle symbol on left side of title clicking on that triangle or title it will show you information. It is beneficial to use while the content of website is large no of text under different titles. It is compulsory to start and end with <details></details> tag. This tag is group tag you can use heading, summary, paragraph, div etc. tags inside details tag which are used for text content. It has only one attribute and it is open. If you wants to show information without click on title or arrow you have to set open attribute in details tag. **For Example:**

```
<details open>
    <p> this is a details tag used to show information </p>
</details>
```

12 **Summary:** This tag is used to give a title inside details tag. It is also used for summary, caption and legend for details tag. It is most probably used in side details tag. This tag is indicate user to click here for open a hide information inside detail tag. This tag will only show on browser while used with details rest of tags are hide. If this tag is not used as a first child of details tag then it will appear "Details" word as a title. **For Example:**

```
<details>
    <summary>Summary tag</summary>
    <p>this is the details tag which use summary tag for caption</p>
</details>
```

13 **Mark:** This tag is used for indicating a text highlighted or marked for reference purpose. It will use in between paragraph, div etc. tag which used for large amount of text content. This tag is used like text formatting tag bold, italic, and small and underline. It is compulsory to start and end this tag. In between starting and ending of this tag the content will highlighted by yellow color this is indicating that you have make this as a reference. **For Example:**

This is the <mark> new Element in HTML-5</mark> is used for <mark>marking purpose</mark>

14 **Meter:** This tag is used to show graphical vertical bars which is indicate fraction value of measurement. This element is used to represent a range or scalar value. It is not used for single value.

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Attributes:

value	Specifies the "measured" value. For defining better range it will consider optimum value, according to that it will change meter bar colour. The value is lower than low value at that time it will indicate the meter bar with red colour. If the value is between the low and high value at that time it will indicate the meter bar with yellow colour. If the value is higher than high value but not higher than max value it will indicate meter bar with green colour.
min	Specifies the lower bound of the range. Default is 0.
low	Specifies the range that is considered to be a "low" value.
high	Specifies the range that is considered to be a "high" value.
max	Specifies the upper bound of the range. Default is 1.
optimum	Specifies the value that is considered to be the "optimum", or best, value. If this value is higher than the "high" value then it indicates that the higher the value, the better. If it's lower than the "low" mark then it indicates that lower values are better. If it is in between then it indicates that neither high nor low values are good.

For Example:

```
<label for="Mobile Sale">Mobile Sale:</label>
<meter min="0" max="100" low="33" high="66" optimum="80 value="50">
</meter>
<br>
<label for="Mobile Sale">Laptop Sale:</label>
<meter min="0" max="100" low="33" high="46" optimum="70" value="22">
</meter>
```

Progress:

This tag is used to show you graphical vertical bars which is indicate some measurements.

While we want some results like progress card, task completion etc. we used this tag. It is similar like meter but it is indicating range in between min and max value only. You have to mention value between min and max value.

Attributes:

Max: it is used to show maximum value of measurements.

Min: It is used to show minimum value of Measurement by default min value is 0.

Value: It is show current completion value between Minimum to Maximum.

For Example:

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```
<!DOCTYPE>
<html>
<body>
<h3>Sales Report of 2017-18</h3>
January <progress value="43" max="100"></progress><br>
February <progress value="33" max="100"></progress><br>
March <progress value="49" max="100"></progress><br>
April <progress value="23" max="100"></progress><br>
May <progress value="57" max="100"></progress><br>
June <progress value="69" max="100"></progress><br>
July <progress value="36" max="100"></progress><br>
August<progress value="23" max="100"></progress><br>
September <progress value="55" max="100"></progress><br>
October <progress value="70" max="100"></progress><br>
November<progress value="32" max="100"></progress><br>
December <progress value="50" max="100"></progress><br>
</body> </html>
```

5.2 The Media Elements:

The HTML5 Media elements are used to add audio, video, flash and other animation in your webpage. In older version only embed tag is used to add audio, video and flash files. Now a day HTML5 is very popular for its new tags it has also added media tags for adding audio, video and flash file.It defines individual tags for audio format, video format and flash format. Following tags are used with its attributes.

5.2.1 Audio Tags:

This tag is used to add audio file in your web page. This tag defines music or any other audio streams formats. Currently it supports three format MP3, ogg, AAC and wav.

Attributes of Audio tag:

Controls: It will show the control panel of audio tag. Through this panel you can control the audio track via simple button like play, pause, stop and volume button.

Autoplay: Auto play will start your audio file automatic while your page is load on browser.

Loop: if you want to repeat same audio then you set loop attribute.

Muted: It will make zero volume or no volume of your audio file.

Src: Source path of Audio file it may not support to your browser. you need source tag for it.

5.2.2 Source Tag:

This tag is used to add source or path of the audio video and image file. This tag is support <audio>,<video> and <picture> tag. This tag is useful for adding multiple audio and video files in one common tag. **Attributes of Source Tag:**

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Src: This is used to set path/Url of any media file.

Type: Define the MIM- type of the resource.

For Example:

```
<!DOCTYPE html>
<html>
        <head>
                <title>
                Audio tag Demo
                </title>
        </head>
        <body>
                <h2> Example of Audio Tag</h2>
                <audio controls autoplay loop>
                        <source src="Ik Vaari Aa .mp3">
                </audio>
        </body>
</html>
```

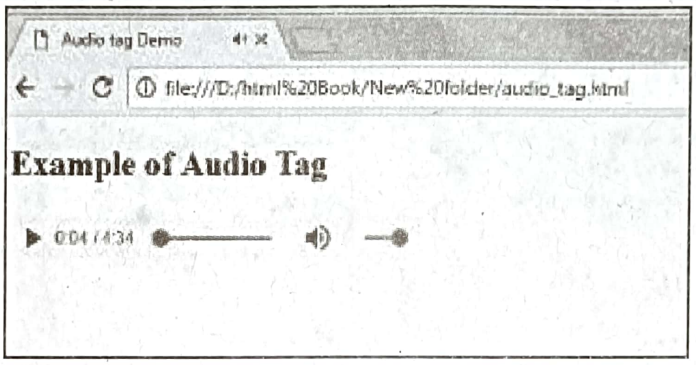

Figure 5.1 Audio panels using audio tag.

5.2.3 Video Tag:

This tag is used to add video file in your page. This tag defines video streams formats. It has same attribute like audio tag. There are only three attributes different than audio tag.

Height: For set height of the video Player.

Width: For set width of the video player.

Poster: Specifies an image to be shown while the video is downloading, or until the user hits the play button.

Controls: It will show the control panel of audio tag. Through this panel you can controlling the audio track via simple button like play, pause, stop and volume button.

Autoplay: Auto play will start your video file automatic while your page is load on browser.

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Loop: If you want to repeat same video then you set loop attribute.

Muted: it will make zero volume or no volume of your audio file.

Src: Source path of Video file if it not support to your browser then you need source tag for path of video file. **For Example:**

```
<!DOCTYPE html>
<html>
    <head> <title> Video tag Demo </title>
    </head>
    <body>
        <h2> Example of Video Tag</h2>
        <video controls width="20% height="40%" poster="poster.jpg">
<source src="johny.mp4" type="video/mp4">
</video>  </body>
</html>
```

Figure 5.2 Video panels using video Tag

5.2.4 Embed Tag: There is another technic for adding video and audio file in your web page. In side Embed tag src attribute is used to add video and audio in you page. Source tag is not used in embed tag. Also it will auto start your audio or video.

Src: is used to set path/Url of any media file.

Type: Define the MIM- type of the resource.

Height: for set height of the Player.

Width: for set width of the player.

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For Example.

```
<! DOCTYPE html>
<html> <head> <title> Embed Tag Demo </title> </head>
        <body>
                <h2> Example of Embed Tag</h2>
                <embed src="Ik Vaari Aa .mp3" width="20%" height="20%">
                <br>  <embed src="Johny.mp4" width="30%" height="40%">
        </body>
</html>
```

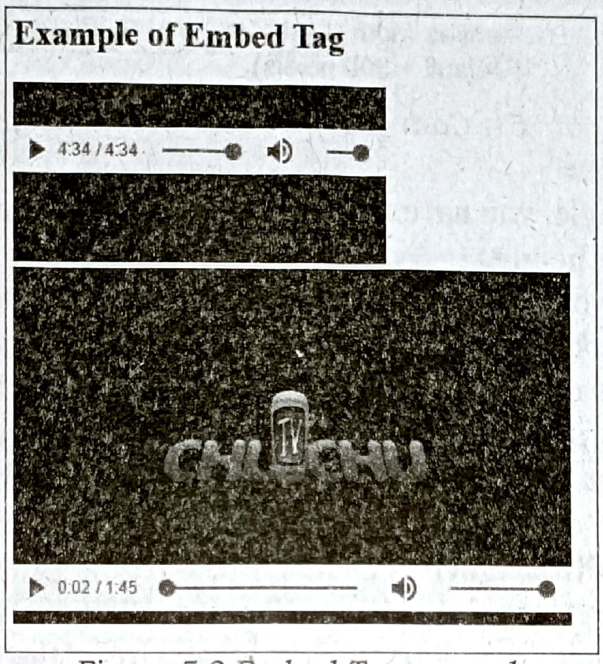

Figure 5.3 Embed Tag example

5.3 Canvas Element:

In HTML5 Canvas element is used to draw graphics in your page. Where you can draw an object such as 2D shapes or graphics with the use of JavaScript. In canvas tag you must apply id which is unique identification of canvas tag. ID is use for JavaScript to know which canvas tag is accessing. This tag is also used for visual effects to the graphics such as animation. Canvas tag draw a shape in between the x and y coordinates. X is a top side of your screen and y is left of your screen so it start drawing from top left corner (is origin of canvas area).Default canvas height is 150px while width is 300px. You can draw following shapes using canvas.

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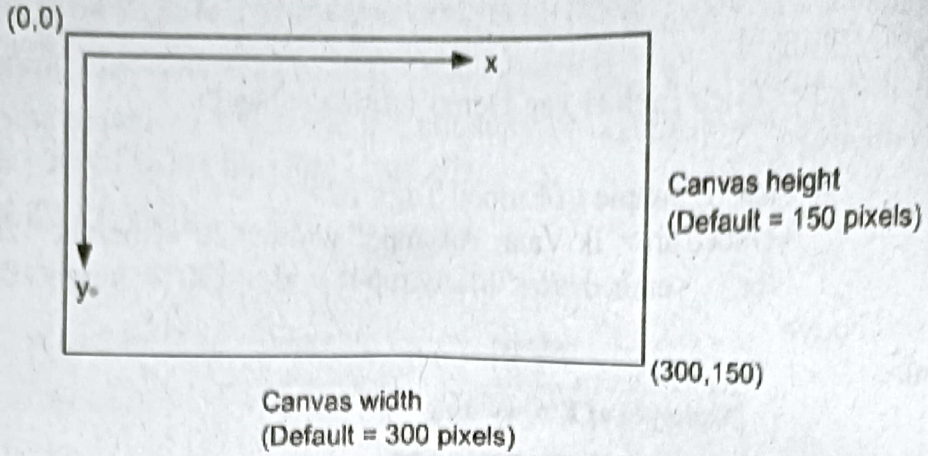

Figure 5.4 Canvas Area in width and height

5.3.1 Draw Rectangle:

For drawing rectangle, you have to use rectangle drawing methods of JavaScript.

fillRect(x, y,width,height)

Where x and y is your coordinates from where you want to start rectangle (relative to the origin) of the top-left corner of the rectangle. And width and height is used for rectangle size. This method will draw filled rectangle **clearRect(x,y,width,height)** This method clears the specified area and makes it fully transparent. x and y specify the position on the canvas (relative to the origin) of the top-left corner of the rectangle and *width* and *height* are width and height of the rectangle.

strokeRect(x,y,width,height)

This method draw rectangular outline. Whre x and y specify the origin of the top-left corner of the rectangle and width and height are size of the rectangle.

```
<!DOCTYPE HTML>
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=utf-8">
<title>Untitled Document</title>
<script type="text/javascript" language="javascript">
function draw()
{
        var can2=document.getElementById("can2");
        var ctx2=can2.getContext("2d");
        ctx2.fillRect(0,0,300,100);
        ctx2.clearRect(50,10,200,80);
        ctx2.strokeRect(60,20,180,60);
}
</script>
</head>
<body onload="draw()">
<h2> Demo of Canvas Tag</h2>
```


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```
<canvas id="can1" width="300px" height="200px" style="border:1px red dashed";></canvas>
<canvas id="can2"></canvas>
</body> </html>
```

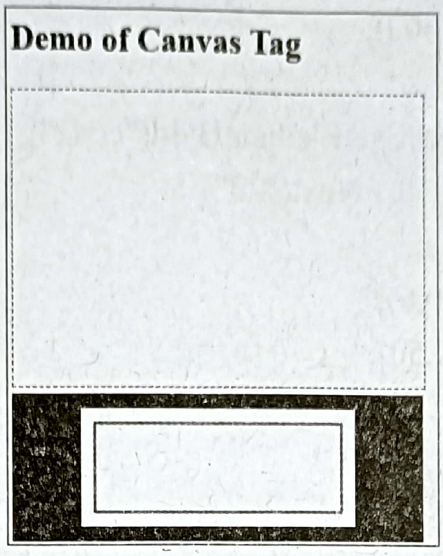

Figure 5.5 draw rectangle using rectangle functions

5.3.2 Draw path:

Path is a list of points, connected by segments of lines. You can draw different shapes using these functions.

biginpath(): This method reset the current path.

moveTo(x,y): This method creates a new sub path with a given point. The starting point can also be changed by using the moveTo() method.

lineTo(x,y): Draws a line from the current drawing position to the position specified by x and y. The starting point is dependent on previously drawn paths, where the end point of the previous path is the starting point for the following, X and y coordinate are end of line point. If you set x 50 and y 80 then line will end at (50,80) coordinate.

stroke(): This function will draw line with default color black.

```
<!DOCTYPE HTML>
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=utf-8">
<title>Canvas Tag</title>
<script type="text/javascript" language="javascript">
function draw()
{
```


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```
        var can=document.getElementById("can");
        var path=can.getContext("2d");
        path.beginPath();
        path.moveTo(0,0);
        path.lineTo(500,400);
        path.stroke();
        var can2=document.getElementById("can2");
        var path2=can2.getContext("2d");
        path2.beginPath();
        path2.moveTo(50,0);
        path2.lineTo(100,50);
        path2.lineTo(40,50);
        path2.lineTo(100,0);
        path2.lineTo(70,80);
        path2.lineTo(50,0);
        //path2.closePath();
        path2.stroke();
}
</script>
</head>
<body onload="draw()">
<h2>Draw Object using path Functions</h2>
<br>
<canvas id="can" width="500px" height="400px" style="border:1px solid
blue";></canvas>
<br><br>
<canvas id="can2"></canvas>
</body>
</html>
```

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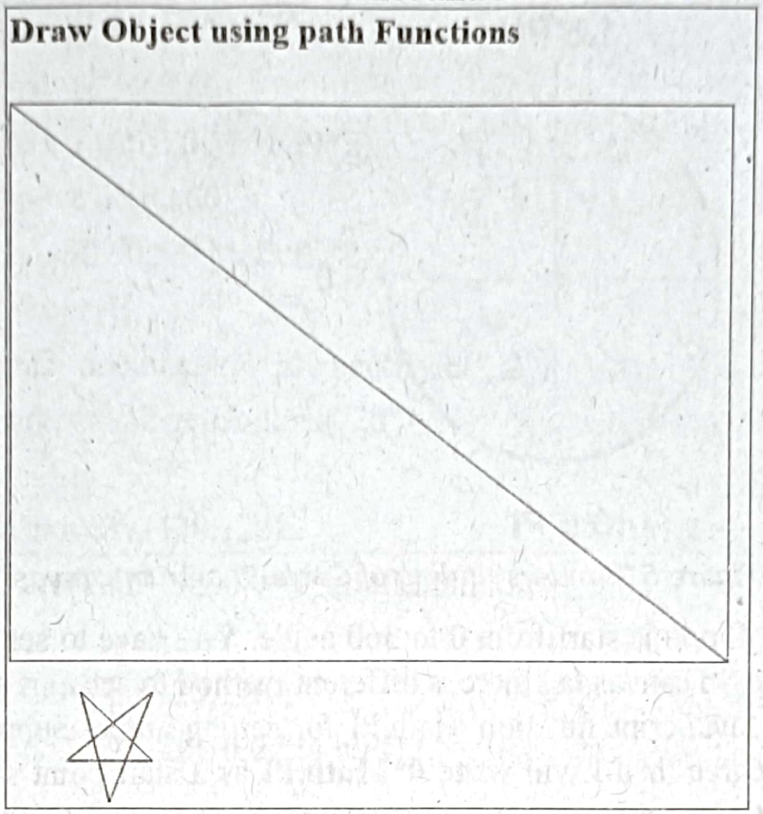

Figure 5.6 Draw Rectangle and Star using draw path functions

5.3.3 Arcs:

To Draw Circle or Half Circle We need to use arc() or arcTo() function.

Arc(x, y, radius, startangle, endangle, anticlockwise)

This function draw arc using following parameters. Where x and y is position used center point of arc. Radius defines the radius of arc which start from startangle and ending with endangle in the given direction anticlockwise or clockwise (default direction is clockwise).

For draw arc you need to understand center point, start point and end point of arc.

Center Point: For setting center point in arc you need to set x and y position from top left corner from that position to radius there is one starting line of circle.

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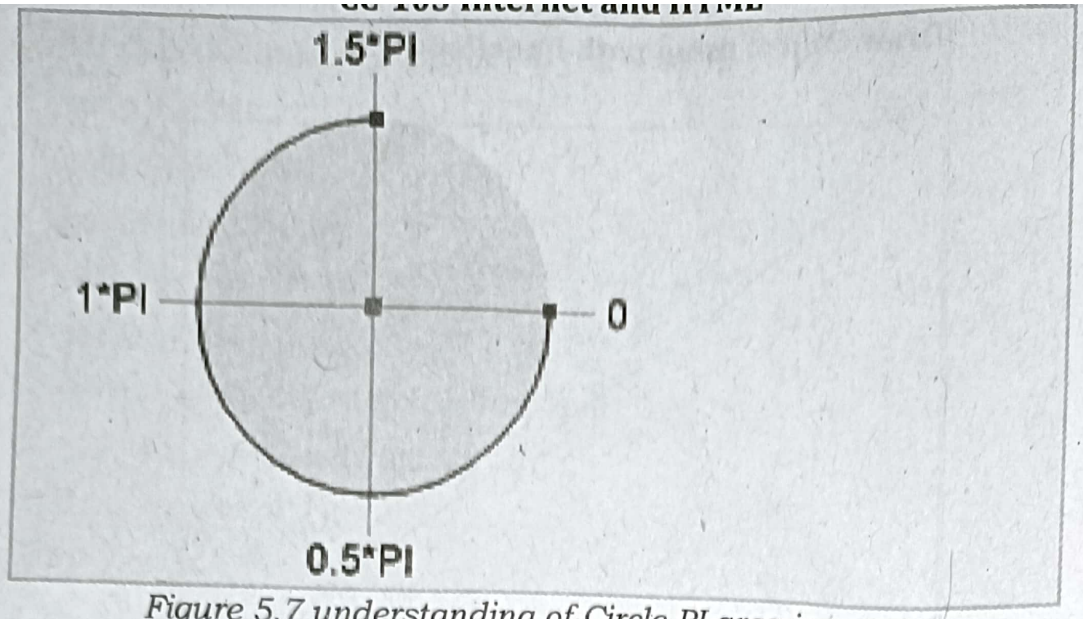

Figure 5.7 understanding of Circle PI area in canvas

Start Point: Circle is start from 0 to 360 angle. You have to set angle in between o to 360 degree. In canvas tag there is different method to set start angle of circle. You have to use JavaScript function Math.PI for setting angle. Suppose I want to start circle at o degree then I will write **0*Math.PI** as a start point same as if I want to start circle at 45 degree then you have to write **0.5*Math.PI** if I want to start at 90 degree then I will write **1*Math.PI** etc.

End Point: Same as start point circle also end with o to 360 angle.you have to set above angle as an endangle. For example I want to end circle at 45 degree then I will write **0.5*Math.PI** etc.

For Example:

```
<!DOCTYPE HTML>
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=utf-8">
<title>Untitled Document</title>
<script type="text/javascript" language="javascript">
function draw()
{
        var can=document.getElementById("can");
        var path=can.getContext("2d");
        path.beginPath();
        path.moveTo(75,75);

        path.arc(75,75,50,0,Math.PI*2);
        path.moveTo(50,75);
```


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```
        path.arc(75,75,35,0,Math.PI);
        path.moveTo(60,60)
        path.arc(60,60,5,0,Math.PI*2);
        path.moveTo(90,60)
        path.arc(90,60,5,0,Math.PI*2);
        path.stroke();
        var can2=document.getElementById("c2");
        var path2=can2.getContext("2d");

        path2.moveTo(120,120);
        path2.arc(120,120,90,0*Math.PI,Math.PI*2);

        path2.moveTo(120,120);
        path2.arc(120,120,70,0,Math.PI*1.5);

        path2.moveTo(120,120);
        path2.arc(120,120,50,0,Math.PI*1);

        path2.moveTo(120,120);
        path2.arc(120,120,30,0,Math.PI*0.5);
        path2.stroke();
        }
</script>

</head>
<body onLoad="draw()">
<h2> Draw Arc using arc function</h2>
<canvas id="can" width="250" height="250" style="border:1px dotted
#F00;"></canvas>
<canvas id="c2" width="250" height="250" style="border:1px dotted
#F00;"></canvas>
</body>
</html>
```


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Draw Arc using arc function

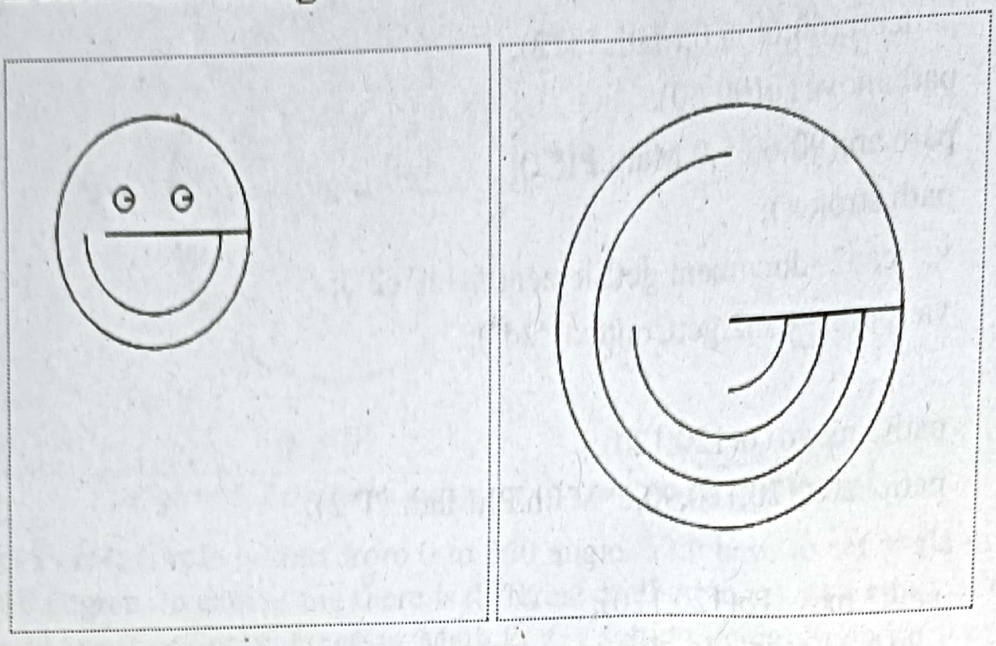

Figure 5.8 Draw Circle using arc functions

5.3.4 Fill Color in Object:

If you want to draw, you object with color or you want to add fill color in your object you need to add following functions.

strokeStyle: This function is used to draw your object with color. For giving color you need to add color name or color code in hexadecimal value.
Syntax: strokeStyle="red" or strokeStyle="#3388cc"

FillStyle: This function is used to add color inside your object.For adding color you need to add color name or color code in hexadecimal value.

Syntax: fillStyle="red" or fillStyle="#aa0099"

For Example:

```
<!DOCTYPE HTML>
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=utf-8">
<title>Canvas Demo2</title>
<script type="text/javascript" language="javascript">
function draw()
{
        var can=document.getElementById("can");
        var path=can.getContext("2d");
        path.fillStyle="red";
        path.beginPath();
        path.moveTo(0,0);
```


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```
        path.lineTo(0,150);
        //path.moveTo(300,150);
        path.lineTo(300,150);
        path.lineTo(300,0);
        path.lineTo(0,0);
        path.closePath();
        path.fill();
        path.stroke();
        var can2=document.getElementById("can2");
        var path2=can2.getContext("2d");
        path2.fillStyle="rgb(200,100,80)";
        path2.beginPath();
        path2.moveTo(100,90);
        path2.arc(100,75,75,0,Math.PI*2);
        path2.fill();
        path2.fillStyle="rgb(80,30,80)";
        path2.beginPath();
        path2.moveTo(100,90);
        path2.arc(100,75,60,0,Math.PI*1.5);
        path2.fill();
        path2.fillStyle="rgb(20,100,20)";
        path2.beginPath();
        path2.moveTo(100,90);
        path2.arc(100,75,50,0,Math.PI*1);
        path2.fill();
        path2.fillStyle="yellow";
        path2.beginPath();
        path2.moveTo(100,90);
        path2.arc(100,75,40,0,Math.PI*0.5);
        path2.fill();
        }
        </script>
</head>
<body onload="draw()">
<h2> Draw Object with fill color</h2>
<br>
<canvas id="can"></canvas>
<br><br>
<canvas id="can2"></canvas>
</body>
</html>
```


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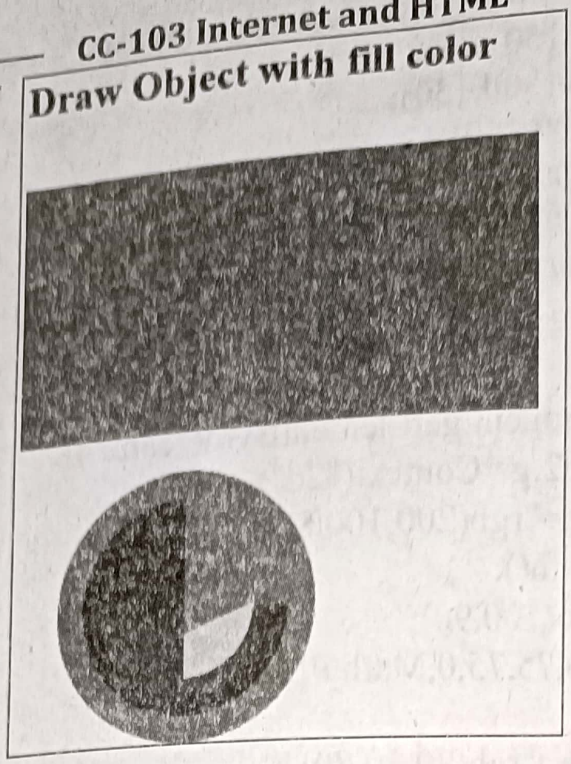

Figure 5.9 Fill color in object using fill color functions

5.4 The Form Elements:

HTML form elements are used for displaying and presenting a webpage help in creating interactive web applications. With the help of form element you can create client – server communication web page. HTML Forms are required to collect different kinds of user inputs, such as contact details like name, email address, phone numbers, or details like credit card information, etc. Some of the forms elements are also used to make controls in detail.

Here I have list down form elements. In Unit 4 we will discuss in detail.

Form Element	Description
Input	This element is used to take input from user.
Text Area	This element is used to take multi-line input from user.
Select	This element is used to select one or more item using dropdown list option.
data list	This element is creating list of option to input data from user.
Output	This element is used to show output of calculations.
Button	This element is used to define button on page.

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keygen	This element is generate security key for authenticate user.it generates two keys private and public.
Label	Define label for an input element.
Field set	This tag is used to group related elements in a form.
Legend	It defines the caption for field set element.
Out-group	This element used to group related options in a drop-down list.

The new Input type attribute:

This element is used to get detail from user in webpage and send the detail to the database server.In old html there are some limited types are used like, text, password, check box, radio button, submit, reset etc. But in html 5. Some more new types are define so user can easily understand the form field value and the purpose of that value. Here I just list out the types. In detail, we will study in unit 4.

Input Type	Description
Text	To get data in text format. You can write alphabets, numbers and special characters.
Password	This type is used to define password it will convert your text in to asterisks or circles.
Submit	Define the button for submitting form.
Reset	Define the button for reset the form value.
Radio	This field is used for options in form. Only one option can select at a time
Checkbox	This field is used for options in form. One or more option can select at a time.
Number	Defines a numeric input field.
Color	Defines color picker to select color.
Range	This field is also used for numeric input it is look like a slider. It has min and max range up to that course is drag and number selected.
Data	It used to select date. Date picker will pop up to select date.

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Datetime	Defines the date and time.
Datetime-local	Specifies a date and time input field, with no time zone.
Month	Specifies a hole month and year in input field. Month picker will pop up to select month.
Week	Allows the user to select a week and year.
Tel	Define the telephone number as a value.
Search	Define search field as an input value.
Url	This input type allows collection of an absolute URL.
Email	Defines email id as a value.

☺ ☺ ☺ ☺ ☺

Exercise

1. Explain Figure,Figurecaption,time and hgroup in detail
2. Explain Audio tag with all attributes. **[Dec.2017]**
3. Explain Video tag with all attributes. **[Dec.2017]**
4. Explain Embed tag with all attributes. **[Dec.2017]**
5. Explain Canvas tag with all attributes. **[Dec.2017,2018]**
6. Explain rectangle functions of canvas tag.
7. Explain line draw functions of canvas tag.
8. Explain arc function of canvas tag.
9. Explain any seven new Mark-up element in brief. **[Dec.2017,2018]**

Multiple Choice Questions:

1. _____ tag is used to group the heading tag

   (A) h1 (B) head (C) hgroup (D) header

2. _____ Tag is used to print standard time and date format.

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