HTML Canvas Basics

Difficulty Level : Hard • Last Updated : 10 Dec, 2021

In this article, we will know **HTML Canvas Basics**, their implementation through the examples.

The HTML "canvas" element is used to draw graphics via JavaScript. The "canvas" element is only a container for graphics. One must use JavaScript to actually draw the graphics. Canvas has several methods for drawing paths, boxes, circles, text, and adding images. The canvas would be a rectangular area on an HTML page. By default, a canvas has no border and no content.

Syntax:

```
<canvas>
    Content...
</canvas>
```

It is recommended to have an id attribute (to be referred to in a script), and a width and height attribute to define the size of the canvas. To add a border, use the style attribute.

to the HTML Canvas Complete Reference article for the details.

Example 1: This example illustrates the use of canvas with a linear gradient & stroke style text in HTML.

HTML

```
<html>

<body>
    <canvas id="gfg"
            width="300px"
            height="100px"
            style="border:1px solid #d3d3d3;">
    </canvas>
    <script>
        var g = document.getElementById("gfg");
        var geeks = g.getContext("2d");
        var gradient = geeks.createLinearGradient(1, 4, g.width, 2);
        gradient.addColorStop("0", "green");
        gradient.addColorStop("0.4", "yellow");
        gradient.addColorStop("1.0", "aqua");
        geeks.font = "40px sans-serif";
        geeks.fillStyle = "red";
        geeks.strokeStyle = gradient;
        geeks.strokeText("GeeksforGeeks", 10, 60);
    </script>
</body>

</html>
```

Output:

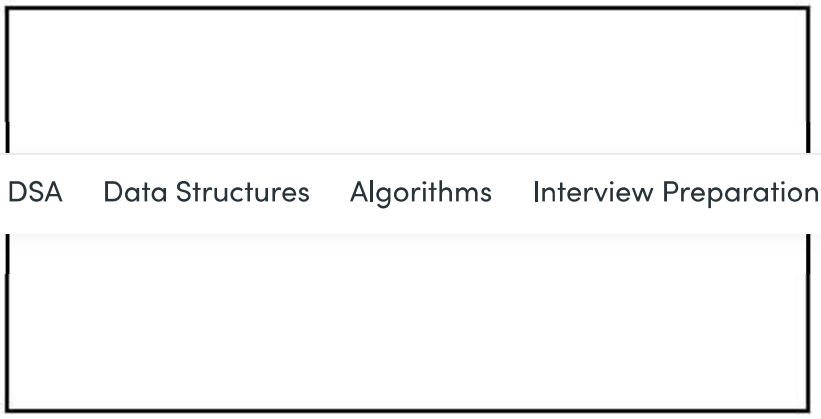
HTML canvas with a linear gradient

```
<!DOCTYPE html>
<html>

<body>
    <canvas id="myCanvas"
            width="400"
            height="200"
            style="border:2px solid #000000;">
    </canvas>
</body>

</html>
```

Output:



HTML empty canvas

There are various shapes that can be possible to draw using Canvas, which are discussed below.

Example 1: This example shows the HTML Canvas to draw a circle.

HTML

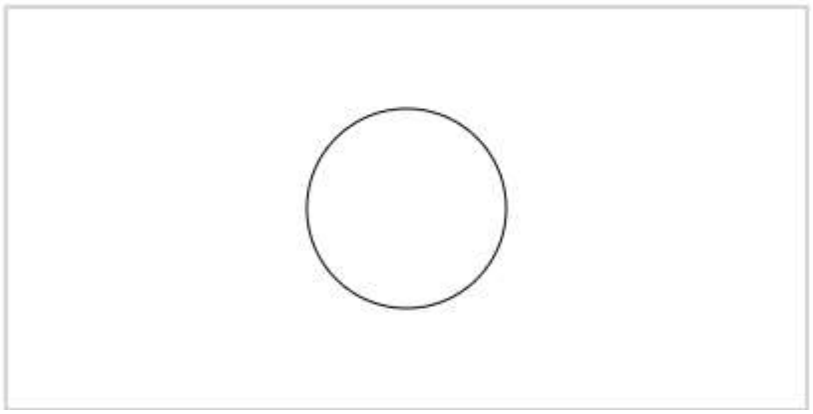
```
<!DOCTYPE html>
<html>

<body>
    <canvas id="GFG"
```

```
    <script>
        var g = document.getElementById("GFG ");
        var geeks = g.getContext("2d ");
        geeks.beginPath();
        geeks.arc(200, 100, 50, 0, 2 * Math.PI);
        geeks.stroke();
    </script>
</body>

</html>
```

Output:



Drawing Circle with HTML Canvas

Example 2: In this example, we will write a text using HTML Canvas.

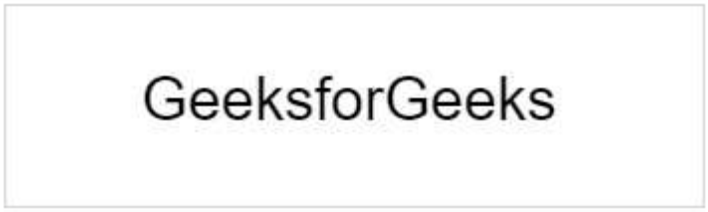
HTML

```
<!DOCTYPE html>
```

```
            width="600"
            height="200"
            style="border:1px solid #d3d3d3;">
    </canvas>
    <script>
        var g = document.getElementById("GFG");
        var geeks = g.getContext("2d");
        geeks.font = "30px Arial";
        geeks.fillText("GeeksForGeeks", 170, 50);
    </script>
</body>

</html>
```

Output:



Writing text with HTML Canvas

Example 3: This example illustrates the use of linear-gradient property in HTML Canvas.

HTML

```
<!DOCTYPE html>
<html>

<body>
    <canvas id="GFG"
            width="400"
            height="200"
            style="border:2px solid #d3d3d3;">
    </canvas>
    <script>
        var G = document.getElementById("GFG");
        var geeks = G.getContext("2d");
        var grd = geeks.createLinearGradient(0, 0, 200, 0);
        grd.addColorStop(0, "yellow");
        grd.addColorStop(1, "grey");
```

```
</html>
```

Output:

HTML Canvas with linear-gradient

Example 4: In this example, we will draw the image by using the <canvas> tag.

HTML

```
<!DOCTYPE html>
<html>

<body>

<p>Image to use:</p>


    <img id="image"
         src=
"https://media.geeksforgeeks.org/wp-content/uploads/20210916184234/gfg3-300x300.png"
         alt="GeeksforGeeks logo"
         width="250"
         height="200">

<p>Canvas to fill:</p>


    <canvas id="gfg"
            width="300"
```

```
<p>
        <button onclick="gfg()">Click to Try</button>
    </p>


    <script>
    function gfg() {
        var g = document.getElementById("gfg");
        var geeks = g.getContext("2d");
        var img = document.getElementById("image");
        geeks.drawImage(img, 0, 0);
    }
    </script>
</body>

</html>
```

Output:

Drawing image with <canvas> tag

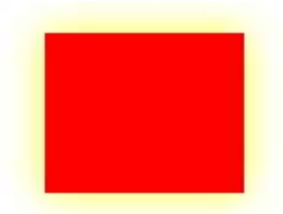
Example 5: This example demonstrates the use of the Shadow blur property in HTML Canvas.

HTML

```
<!DOCTYPE html>
<html>
<body>
    <canvas id="GFG"
            width="500"
            height="250" ;>
      </canvas>
```

```
        geeks.fillStyle = "red";
        geeks.fillRect(30, 20, 100, 80);
    </script>
</body>
</html>
```

Output:



HTML Canvas with Shadow blur property

Example 6: In this example, we will use rotate() method in the HTML Canvas.

HTML

```
<!DOCTYPE html>
<html>
<body>
    <canvas id="GFG"
            width="300"
            height="150;">
    </canvas>
    <script>
        var g = document.getElementById("GFG");
        var geeks = g.getContext("2d");
        geeks.rotate(20 * Math.PI / 180);
        geeks.fillRect(100, 20, 100, 50);
    </script>
</body>
</html>
```

Output:

HTML Canvas with rotate() method

Example 7: In this example, we have used the translate() method to remaps the (0,0) position on the canvas.

HTML

```
<!DOCTYPE html>
<html>
<body>
    <canvas id="GFG"
            width="300"
            height="150;">
      </canvas>
    <script>
        var g = document.getElementById("GFG");
        var geeks = g.getContext("2d");
        geeks.fillRect(10, 10, 100, 50);
        geeks.translate(80, 90);
        geeks.fillRect(10, 10, 100, 50);
    </script>
</body>
</html>
```

Output:

HTML

```
<!DOCTYPE html>
<html>
<body>
    <canvas id="GFG"
            width="300"
            height="150;">
    </canvas>
    <script>
        var g = document.getElementById("GFG");
        var geeks = g.getContext("2d");
        geeks.fillStyle = "yellow";
        geeks.fillRect(0, 0, 250, 100)
        geeks.transform(1, 0.5, -0.5, 1, 30, 10);
        geeks.fillStyle = "grey";
        geeks.fillRect(0, 0, 250, 100);
        geeks.transform(1, 0.5, -0.5, 1, 30, 10);
        geeks.fillStyle = "black";
        geeks.fillRect(0, 0, 250, 100);
    </script>
</body>
</html>
```

Output:

HTML Canvas with transform() method

Creating Animation in HTML Canvas: JavaScript helps to simulate good animation over an HTML5 canvas. Two important JavaScript methods which can be used to animate an image on a canvas:

a given time.

Supported Browser:

- Google Chrome 93.0
- Microsoft Edge 93.0
- IE 11.0
- Firefox 92.0
- Opera 78.0
- Safari 14.1

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