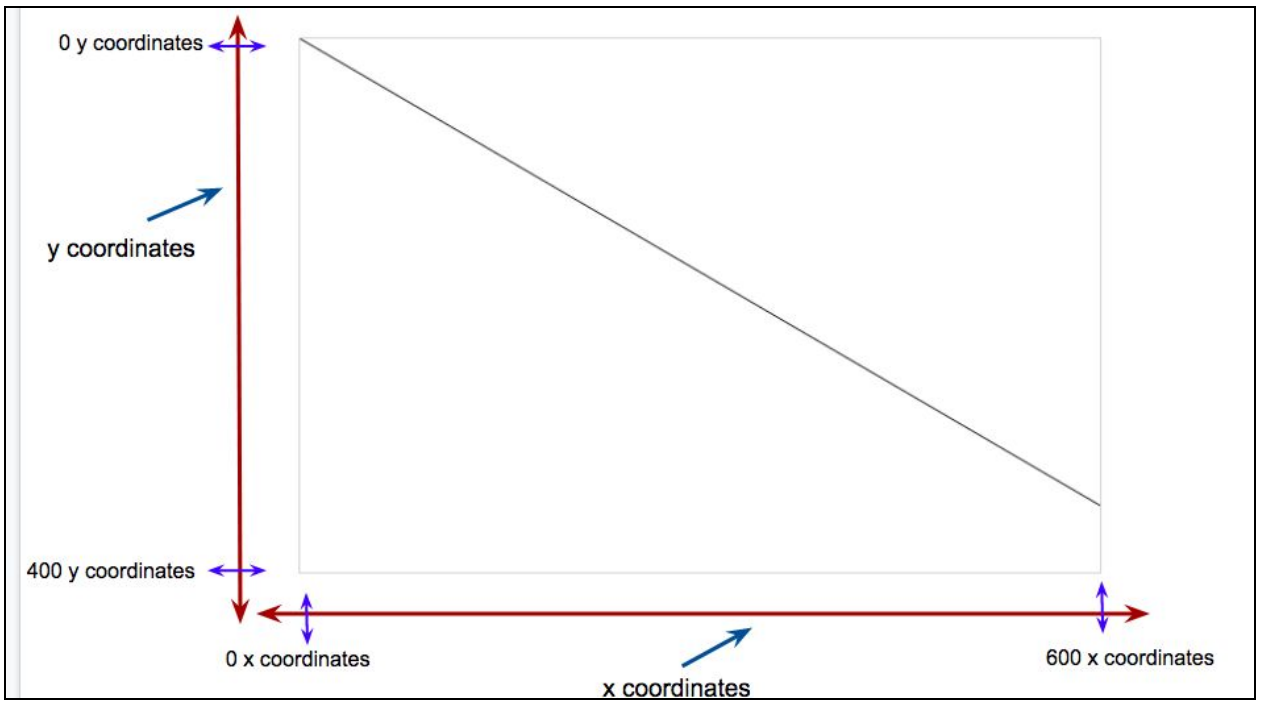
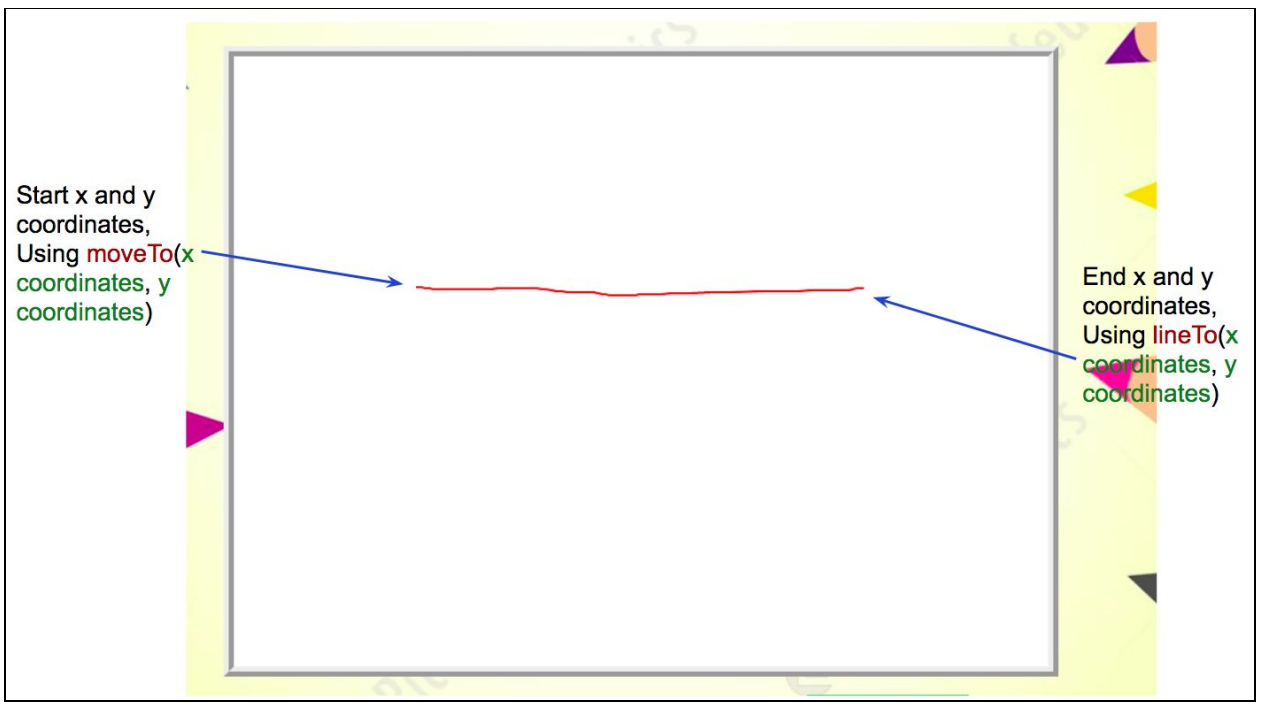
- **Understanding x and y coordinates on canvas [Section-1]**



The x coordinate starts from left of the canvas with value 0, and as we move on towards right the value of x coordinate will increase till the width of the canvas, in this case the width is 600.

The y coordinate starts from top of the canvas with value 0, and as we move on down the value of y coordinate will increase till the height of the canvas, in this case the height is 400.

- **Understanding Canvas, moveTo and lineTo with respect to x and y coordinates [Section-2]**



- **HTML code prewritten**

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

<meta name="viewport" content="width=device-width, initial-scale=1">
<link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.0/css/bootstrap.min.css">
<script src="https://ajax.googleapis.com/ajax/libs/jquery/3.4.1/jquery.min.js"></script>
<script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.0/js/bootstrap.min.js"></script>

</head>
<body class="body_backgorund">

<div align="center">
<h1>Paint</h1>

    <canvas id="myCanvas" width="800" height="600"></canvas>
        <br><br >

<!--Additional activity -->

    </div>
<script src="main.js"></script>
</body>
</html>
```

Css file link

Bootstrap links

Body tag with body_background class

Canvas

Main.js file link

Output -

```html
<canvas id="myCanvas" width="800" height="600">
</canvas>
<br>
```

- **Code for mousedown event**

```javascript
canvas.addEventListener("mousedown", my_mousedown);

function my_mousedown(e)
{
    //Addictonal Activity start
    color = document.getElementById("color").value;
    width_of_line = document.getElementById("width_of_line").value;
    //Addictonal Activity ends

    mouseEvent = "mouseDown";
}
```

- **Code for mouseleave event**

```
canvas.addEventListener("mouseleave", my_mouseleave);
function my_mouseleave(e)
{
    mouseEvent = "mouseleave";
}
```

- **Code for mouseup event**

```
canvas.addEventListener("mouseup", my_mouseup);
function my_mouseup(e)
{
    mouseEvent = "mouseUP";
}
```

- **Code for mousemove event**

```
canvas.addEventListener("mousemove", my_mousemove);
function my_mousemove(e)
{
    current_position_of_mouse_x = e.clientX - canvas.offsetLeft;
    current_position_of_mouse_y = e.clientY - canvas.offsetTop;

    if (mouseEvent == "mouseDown") {
    ctx.beginPath();
    ctx.strokeStyle = color;
    ctx.lineWidth = width_of_line;

    console.log("Last position of x and y coordinates = ");
    console.log("x = " + last_position_of_x + "y = " + last_position_of_y);
    ctx.moveTo(last_position_of_x, last_position_of_y);

    console.log("Current position of x and y coordinates = ");
    console.log("x  = " + current_position_of_mouse_x + "y = " + current_position_of_mouse_y);
    ctx.lineTo(current_position_of_mouse_x, current_position_of_mouse_y);
    ctx.stroke();
    }

    last_position_of_x = current_position_of_mouse_x;
    last_position_of_y = current_position_of_mouse_y;
}
```

Output of -

```
console.log("Last position of x and y coordinates = ");
console.log("x = " + last_position_of_x + "y = " + last_position_of_y);
```

```
Last position of x and y coordinates =          main.js:31
x = 220y = 275                                  main.js:32
```

Output of -

```
console.log("Current position of x and y coordinates = ");
console.log("x  = " + current_position_of_mouse_x + "y = " + current_position_of_mouse_y);
```

```
Current position of x and y coordinates =       main.js:35
x  = 352y = 325                                 main.js:36
```