CGT 353 Lecture 4

Canvas

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About Canvas

- Canvas consists of a drawable region defined in HTML code with *height* and *width* attributes.
- JavaScript code may access the area through a full set of drawing functions similar to those of other common 2D APIs, thus allowing for dynamically generated graphics.
- Some uses of canvas include building graphs, animations, games, and image composition

Canvas element

<canvas id="canvas1" width="550" height="350">

The text in between the canvas elements is displayed if your browser does not support HTML5 Canvas.

</canvas>

Access Canvas

```
var myCanvas = document.getElementById("canvas1");

var context = myCanvas.getContext("2d");

context.fillStyle = "#ff0000";

// fillRect( x, y, width, height )
context.fillRect(20, 20, 60, 60);
```

Draw lines

```
var canvas = document.getElementById("canvas1");
var context = canvas.getContext("2d");
context.moveTo(20,20);
context.lineTo(170,60);
context.lineTo(20,70);
context.stroke();
```

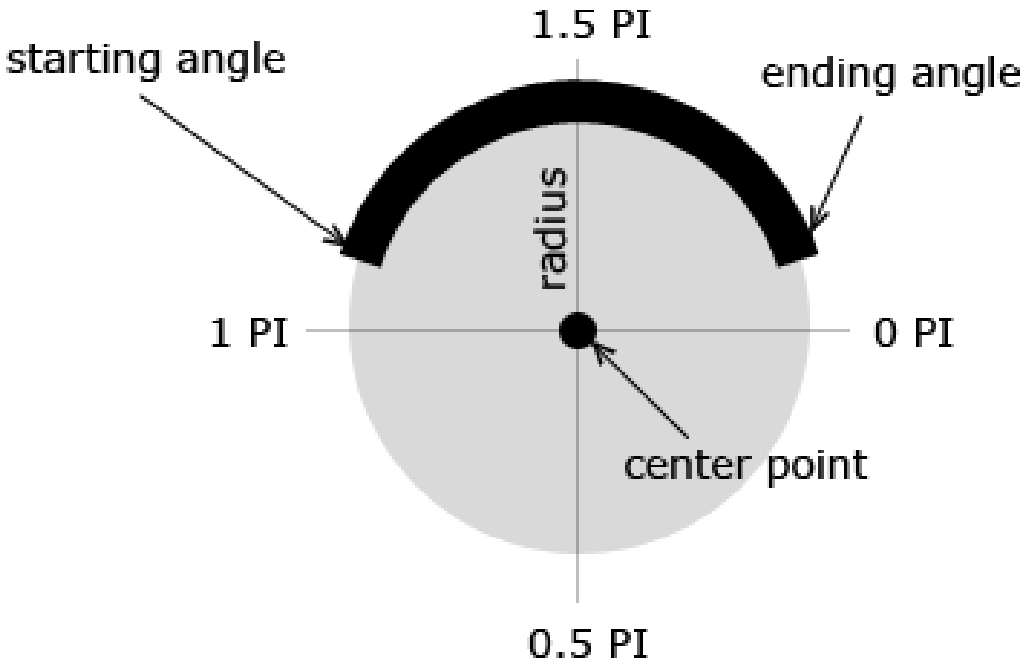
Draw Circle

```
var canvas = document.getElementById("canvas1");
var context = canvas.getContext("2d");
context.fillStyle="#FF0000";
context.beginPath();
// context.arc(centerX, centerY, radius, startingAngle, endingAngle, antiClockwise);
context.arc(90, 35, 17, 0, Math.PI*2, true);
context.closePath();
context.fill();
```

Draw Arc

```
var canvas = document.getElementById("canvas1");
var context = canvas.getContext("2d");
var centerX = canvas.width / 2;
var centerY = canvas.height / 2;
var radius = 75;
var startingAngle = 1.1 * Math.PI;
var endingAngle = 1.9 * Math.PI;
var counterclockwise = false;
context.arc(centerX, centerY, radius, startingAngle, endingAngle, counterclockwise);
context.lineWidth = 15;
context.strokeStyle = "black";
context.stroke();
```

Draw Arc



Draw Linear Gradient

```
var canvas = document.getElementById("canvas1");
var context = canvas.getContext("2d");
var gradient = context.createLinearGradient(0,0,200,60);
gradient.addColorStop(0,"#00ff00");
gradient.addColorStop(1,"#0000ff");
context.fillStyle = gradient;
context.fillRect(0,0,200,60);
```

Draw Radial Gradient

```
var canvas = document.getElementById("canvas1");
var context = canvas.getContext("2d");

// create radial gradient
var gradient = context.createRadialGradient(128, 40, 10, 128, 40, 200);
gradient.addColorStop(0, "#8ED6ee"); // light blue
gradient.addColorStop(1, "#004CB2"); // dark blue
context.fillStyle = gradient;
context.fillRect(0,0,200,200);

//add stroke
context.lineWidth = 4;
context.strokeStyle = "#0000ff";
context.stroke();
```

Draw Bezier Curve

```
var canvas = document.getElementById("canvas1");
var context = canvas.getContext("2d");
var controlX1 = 120;
var controlY1 = 15;
var controlX2 = 400;
var controlY2 = 15;
var endX = 400;
var endY = 190;
context.moveTo(200, 140);
context.bezierCurveTo(controlX1, controlY1, controlX2, controlY2, endX, endY);
context.lineWidth = 7;
context.strokeStyle = “#000000";
context.stroke();
```

Draw Image

```
var canvas = document.getElementById("canvas1");
var context = canvas.getContext("2d");

// Create a new image.
var img = new Image();
img.src = 'ImageShopImages/car1.jpg';

context.drawImage(this, 20, 20);
```

Image Crop

drawImage(imageObj, sourceX, sourceY, sourceWidth, sourceHeight, destX, destY, destWidth, destHeight);

context.drawImage(10, 10, 150, 150, 20, 20, 110, 110);