Drawing with the Canvas

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hardcore developer training

Agenda

- **Drawing Rectangles and Ellipses**
- **Drawing Lines and Paths**
- **Drawing Text**
- **Drawing Images**
- **Drawing Video**

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Rectangle and Ellipse Functions

addColorStop

arc

arcTo

beginPath

bezierCurveTo

clearRect

clip

closePath

createImageData

createLinearGradient

createPattern

createRadialGradient

drawImage

fill

fillRect

fillText

getImageData

isPointInPath

lineTo

measureText

moveTo

putImageData

quadraticCurveTo

rect

restore

rotate

save

scale

setTransform

stroke

strokeRect

strokeText

toDataURL

transform

translate

Rectangle Functions

Functions:

```
clearRect(x, y, w, h)

fillRect(x, y, w, h)

rect(x, y, w, h)

strokeRect(x, y, w, h)
```

Properties:

```
fillStyle, strokeStyle
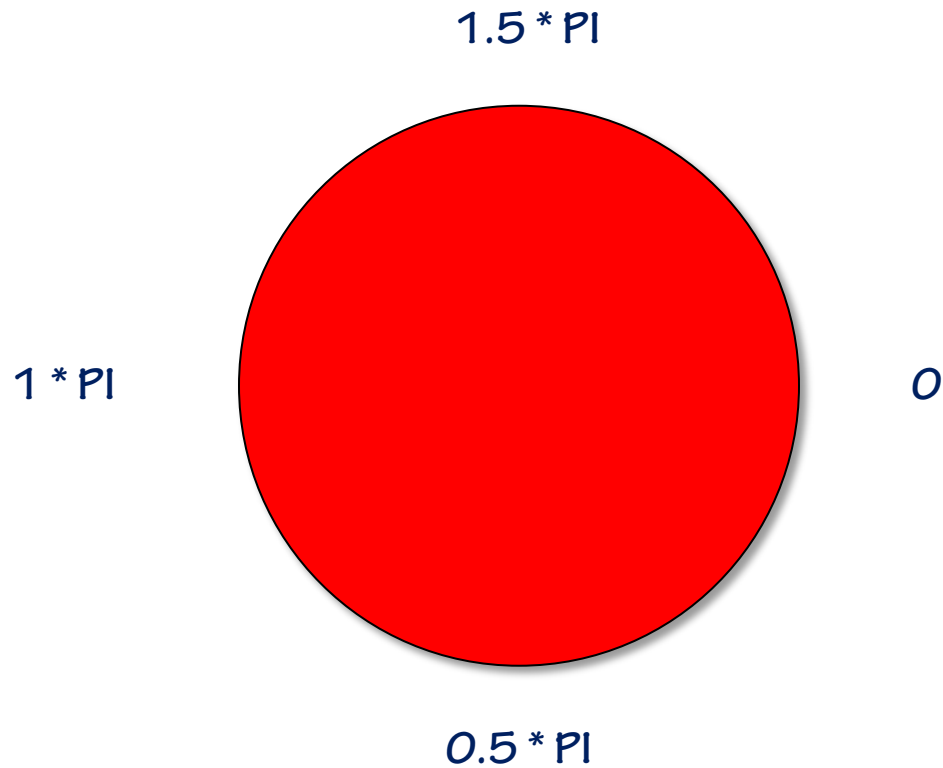```

# Arc/Ellipse Functions

**Functions:**

```
arc(x, y, radius, startAngle, endAngle,
    antiClockwise)
```

```
arcTo(x1, y1, x2, y2, radius)
```

Properties:

```
fillStyle, strokeStyle
```

Understanding Start/End arc() Angles

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Line and Path Functions

addColorStop

arc

arcTo

beginPath

bezierCurveTo

clearRect

clip

closePath

createImageData

createLinearGradient

createPattern

createRadialGradient

drawImage

fill

fillRect

fillText

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translate

Line Functions and Properties
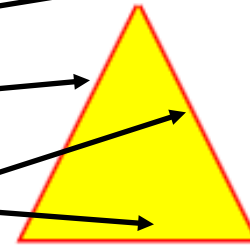
Functions:

```
beginPath()
closePath()
lineTo(x, y)
moveTo(x, y)
stroke()
```

Properties:

```
lineCap, lineJoin, lineWidth, miterLimit
```

Drawing Lines Example

```
window.onload = function() {
    var canvas = document.getElementById('canvas');
    var ctx = canvas.getContext('2d');
    ctx.strokeStyle = 'Red';
    ctx.lineWidth = 3;
    ctx.beginPath();
    ctx.moveTo(100, 400);
    ctx.lineTo(50, 500);
    ctx.lineTo(150, 500);
    ctx.lineTo(100, 400);
    ctx.stroke();
    ctx.fillStyle = 'Yellow';
    ctx.fill();
}
```
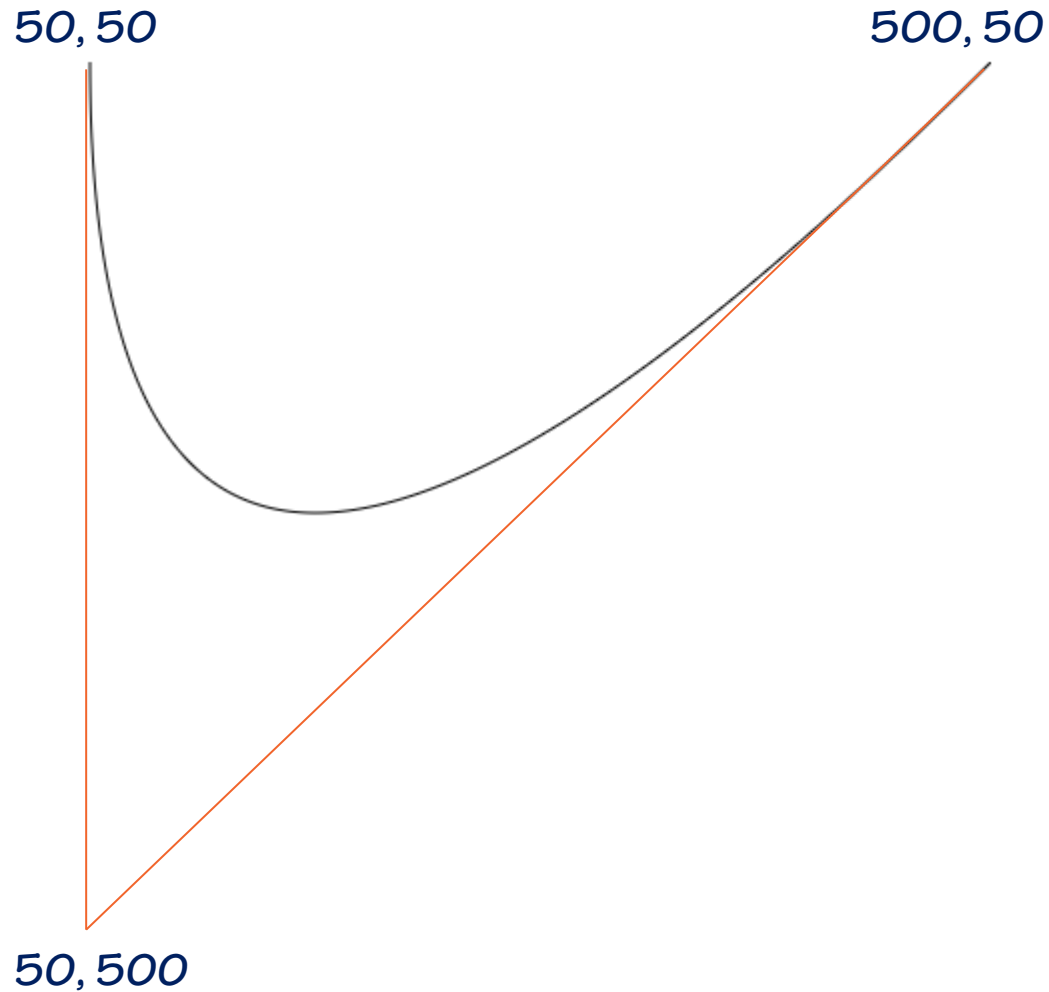
Path Functions and Properties

Functions:

```
beginPath()
bezierCurveTo(cp1x, cp1y, cp2x, cp2y, x, y)
closePath()
moveTo(x, y)
quadraticCurveTo(cpx, cpy, x, y);
stroke()
```
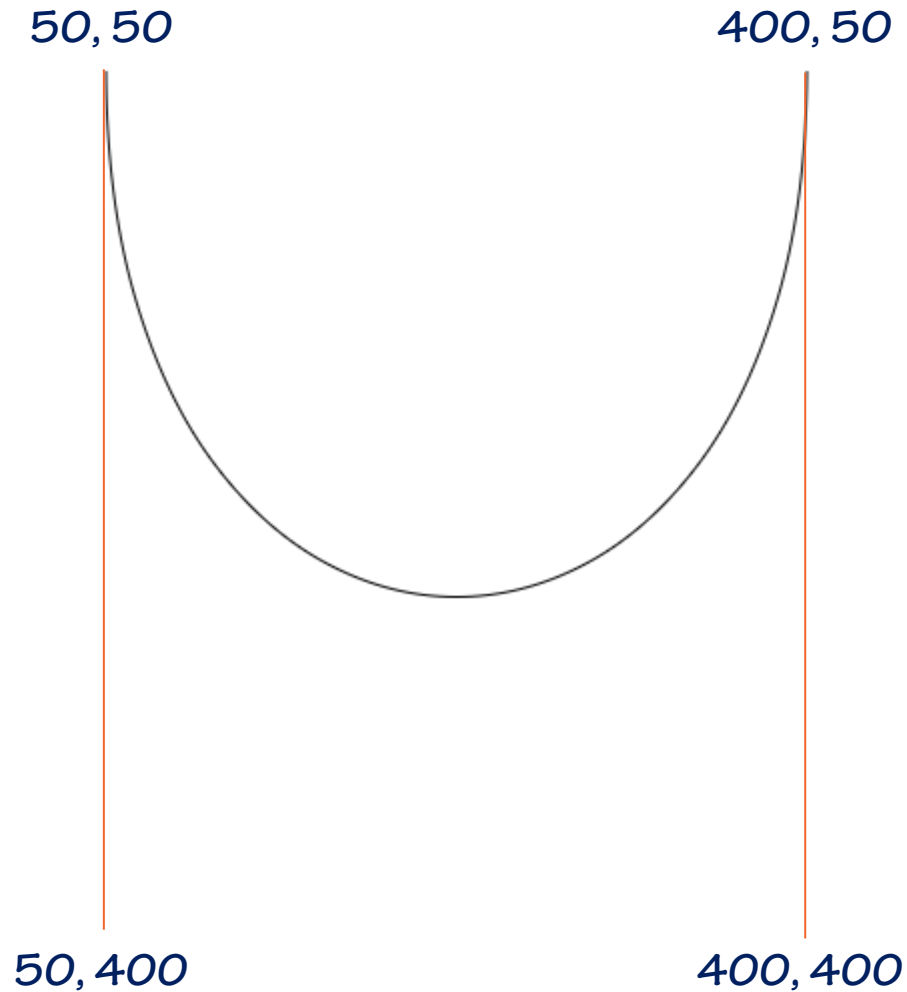
Properties:

```
lineCap, lineJoin, lineWidth, miterLimit
```

Understanding Quadratic Curves

50, 50

500, 50

50, 500

Understanding Bezier Curves

50, 50

400, 50

50, 400

400, 400

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Text Functions

addColorStop	drawImage	restore
arc	fill	rotate
arcTo	fillRect	save
beginPath	**fillText**	scale
bezierCurveTo	getImageData	setTransform
clearRect	isPointInPath	stroke
clip	lineTo	strokeRect
closePath	**measureText**	**strokeText**
createImageData	moveTo	toDataURL
createLinearGradient	putImageData	transform
createPattern	quadraticCurveTo	translate
createRadialGradient	rect	

Text Functions and Properties

Functions:

```
fillText(text, x, y, maxWidth)

measureText(text).width

strokeText(text, x, y, maxWidth)
```

Properties:

```
font, textAlign, textBaseline
```

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Image Functions

addColorStop

arc

arcTo

beginPath

bezierCurveTo

clearRect

clip

closePath

createImageData

createLinearGradient

createPattern

createRadialGradient

drawImage

fill

fillRect

fillText

getImageData

isPointInPath

lineTo

measureText

moveTo

putImageData

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rect

restore

rotate

save

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setTransform

stroke

strokeRect

strokeText

toDataURL

transform

translate

Image Functions and Properties

Functions:

```
createPattern(obj, pattern)

drawImage(img, destX, destY,
          destWidth, destHeight);

toDataURL()
```

createPattern Options

`createPattern(obj, pattern)`

Pattern parameter options:

- repeat-x

- repeat-y

- repeat

- no-repeat

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Video Functions

addColorStop	**drawImage**	restore
arc	fill	rotate
arcTo	fillRect	save
beginPath	fillText	scale
bezierCurveTo	getImageData	setTransform
clearRect	isPointInPath	stroke
clip	lineTo	strokeRect
closePath	measureText	strokeText
createImageData	moveTo	toDataURL
createLinearGradient	putImageData	transform
createPattern	quadraticCurveTo	translate
createRadialGradient	rect	

VideoFunctions

Functions:

```
drawImage(video, x, y, width, height);
```

Summary

- **The HTML5 canvas API can be used to draw a variety of items:**
  - Rectangles and Ellipses
  - Lines and Curves
  - Text
  - Images
  - Video

- **Properties can be used to control color, line width, font, and more**