

HTML5网页设计初窥（5）

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Canvas对象你的画布

内容

- 绘制图形概说
- 绘制点和线
- 阴影和填充
- 渐变色
- 路径
- 几何图形

第一例

— 绘制第一个图形

```
<canvas width="1200" height="800">  
alternative content for browsers  
without canvas support  
</canvas>
```

— 填充内容

```
<script>  
var canvas = document.querySelector("canvas");  
var context = canvas.getContext('2d');  
context.fillStyle = 'red';  
context.fillRect(0,0,800,600);  
context.fillStyle = 'rgba(255,255,0,0.5)';  
context.fillRect(400,200,800,600);  
</script>
```


Rectangles

- 绘制矩形对象
 - `context.fillRect(x, y, w, h)`
 - `context.strokeRect(x, y, w, h)`
 - `context.clearRect(x, y, w, h)`

Colors

– 指定颜色（红色）

指定方法	颜色值
Hexadecimal	#FF0000
Hexadecimal (short)	#F00
RGB	rgb(255,0,0)
RGB (percent)	rgb(100%,0%,0%)
RGBA	rgba(255,0,0,1.0)
RGBA (percent)	rgba(100%,0%,0%,1.0)
HSL	hsl(0,100%,50%)
HSLA	hsla(0,100%,50%,1.0)
SVG (named color)	red

– <http://www.w3.org/TR/css3-color>

shadow

```
context.shadowOffsetX = 2.0;  
context.shadowOffsetY = 2.0;  
context.shadowColor = "rgba(50%,50%,50%,0.75)";  
context.shadowBlur = 2.0;
```

Gradients

- 渐变色
- 线性渐变
- 中心区域渐变

线性渐变

— 起始位置截至位置

```
var linGrad = context.createLinearGradient(  
    0,450,1000,450  
);
```

— 渐变中节点

```
linGrad.addColorStop(0.0, 'red');  
linGrad.addColorStop(0.5, 'yellow');  
linGrad.addColorStop(0.7, 'orange');  
linGrad.addColorStop(1.0, 'purple');
```

— 应用到图形上

```
context.fillStyle = linGrad;  
context.fillRect(0,450,1000,450);
```

中心区域渐变

- 定义渐变区域
- 定义节点
- 定义填充对象

```
var radGrad =  
context.createRadialGradient(  
260,320,40,200,400,200  
);  
radGrad.addColorStop(0.0,'yellow');  
radGrad.addColorStop(0.9,'orange');  
radGrad.addColorStop(1.0,'rgba(0,0  
,0,0)');  
context.fillStyle = radGrad;  
context.fillRect(0,200,400,400);
```

Paths

- 像手绘的过程

```
context.beginPath();  
context.moveTo(300,700);  
context.lineTo(600,100);  
context.lineTo(900,700);  
context.moveTo(350,400);  
context.lineTo(850,400);  
context.stroke();
```

- 绘制过程

- 开始绘制beginPath()
- 定义所有节点
- 用stroke实现绘制

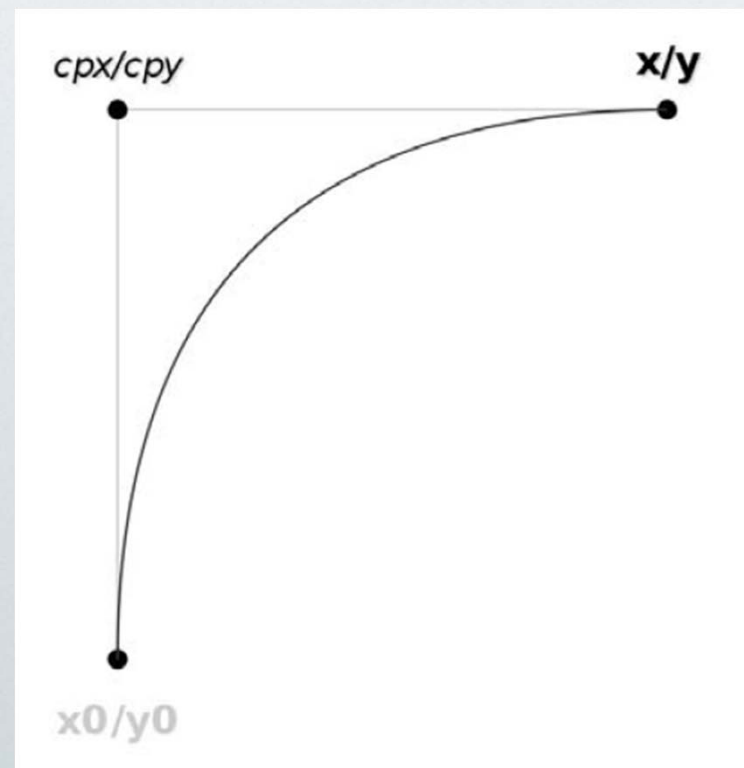
lines

- 绘制直线 `context.lineTo(x, y)`

贝塞尔曲线

- 两种曲线
 - 抛物线

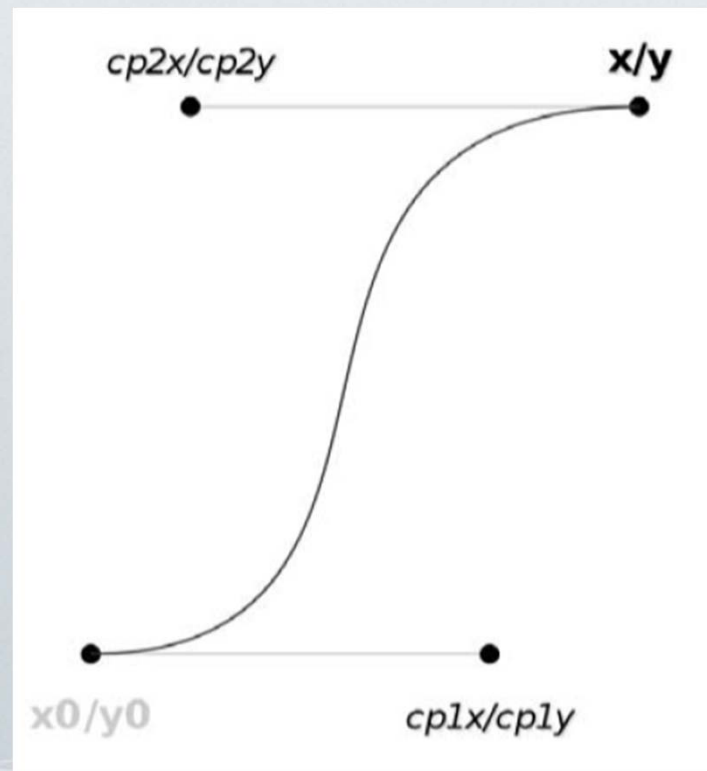
`context.quadraticCurveTo(cpx, cpy, x, y)`



贝塞尔曲线

– 贝塞尔曲线

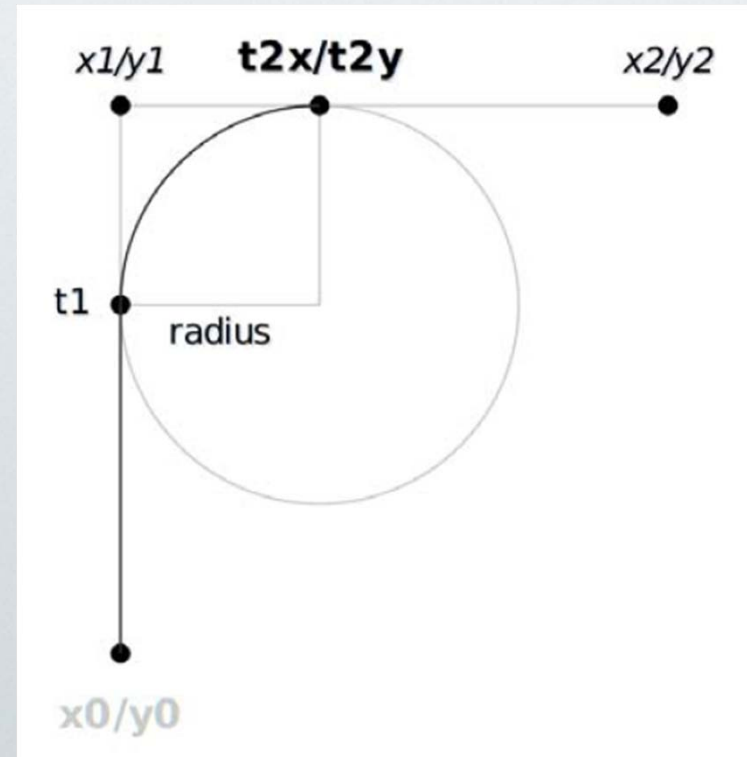
`context.bezierCurveTo(cp1x, cp1y, cp2x, cp2y, x, y)`



Arcs

— 定义自定义曲线

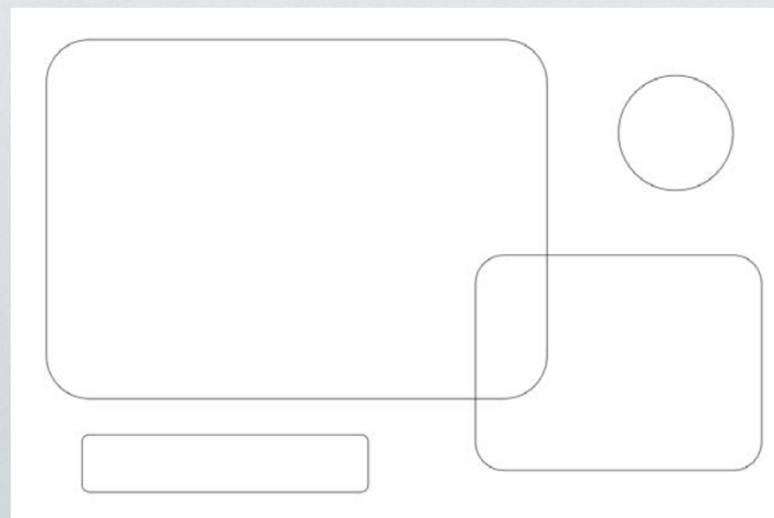
`context.arcTo(x1, y1, x2, y2, radius)`



圆角图形

— 弧的灵活应用

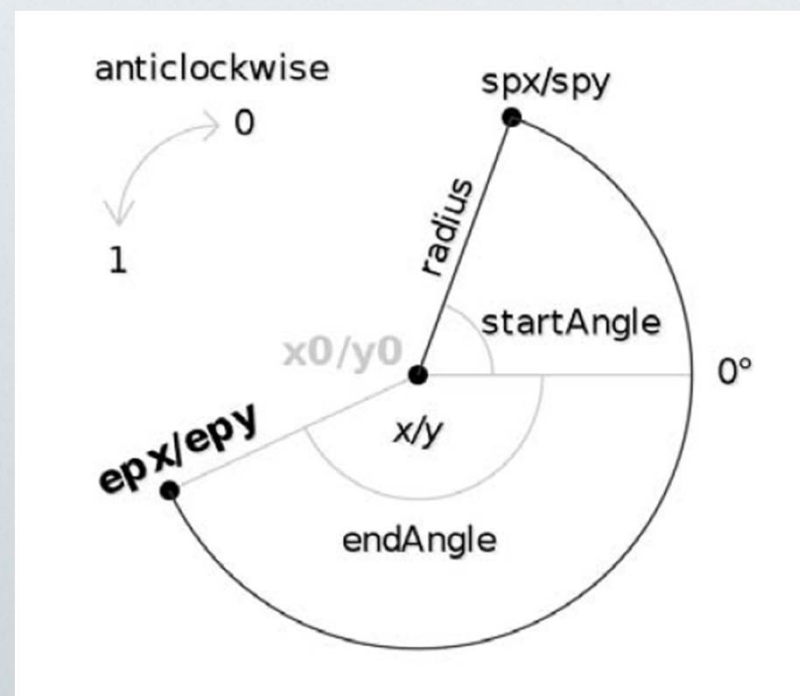
```
var roundedRect = function(x,y,w,h,r) {  
    context.beginPath();  
    context.moveTo(x,y+r);  
    context.arcTo(x,y,x+w,y,r);  
    context.arcTo(x+w,y,x+w,y+h,r);  
    context.arcTo(x+w,y+h,x,y+h,r);  
    context.arcTo(x,y+h,x,y,r);  
    context.closePath();  
    context.stroke();  
};  
roundedRect(100,100,700,500,60);  
roundedRect(900,150,160,160,80);  
roundedRect(700,400,400,300,40);  
roundedRect(150,650,400,80,10);
```



弧的第二种形势

— 以弧度坐标标定义弧（区分于平面坐标）

`context.arc(x, y, radius, startAngle, endAngle, anticlockwise)`



弧度坐标与角度坐标的换算

— 弧度坐标与角度换算

```
var deg2rad = function(deg) {  
    return deg*(Math.PI/180.0);  
};
```

— 绘制一个圆

```
var circle = function(cx,cy,r) {  
    context.moveTo(cx+r,cy);  
    context.arc(cx,cy,r,0,Math.PI*2.0,  
0);  
};
```

— 绘制一个扇形

```
var sector = function(cx,cy,r,startAngle,endAngle, anticlockwise  
) {  
    context.moveTo(cx,cy);  
    context.arc(  
cx,cy,r,startAngle*(Math.PI/180.0),endAngle*(Math.PI/180.0),anticlock  
wise);  
    context.closePath();};
```

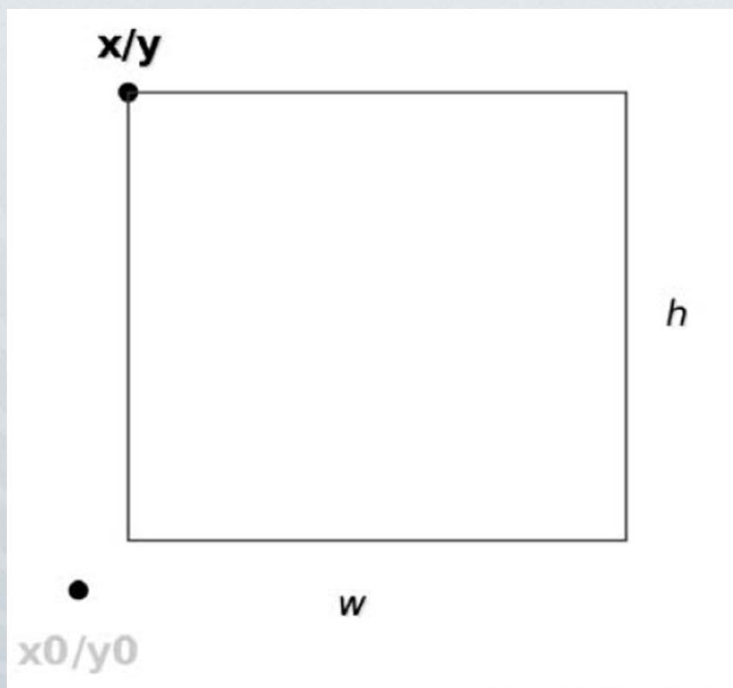
Demo

- circle_sector

Rect

– 矩形对象

`context.rect(x, y, w, h)`



Outlines, Fills, and Clipping Masks

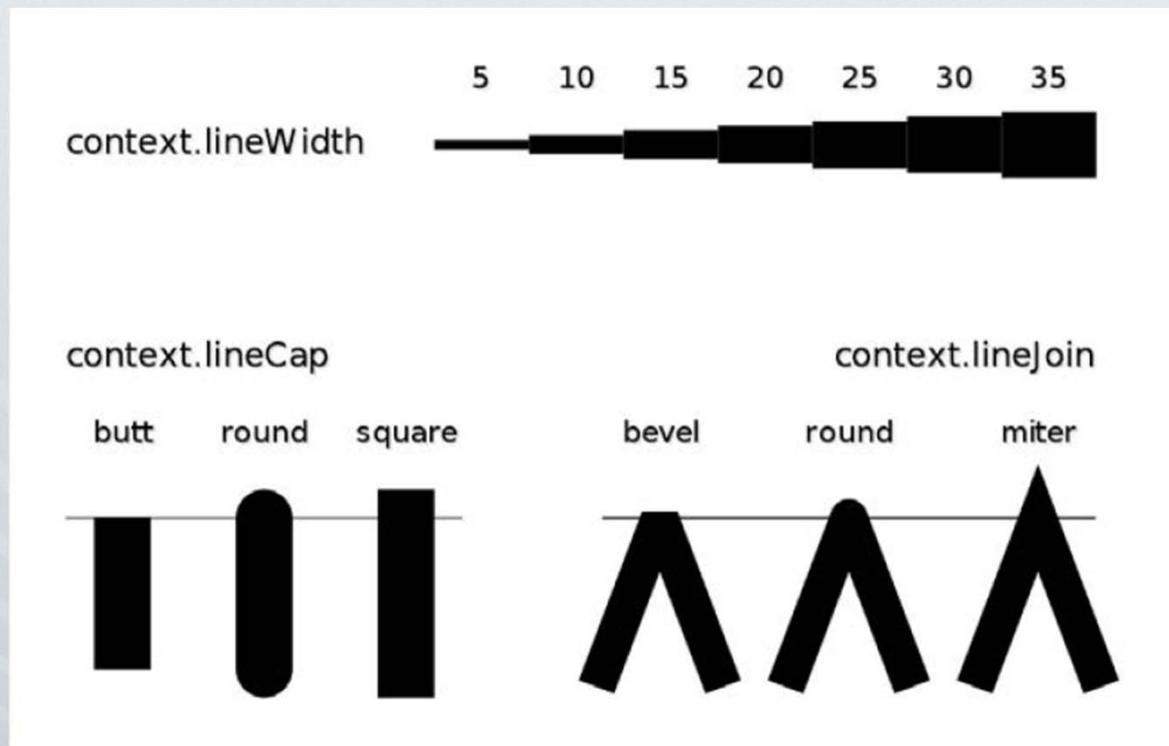
- 样式由strokeStyle决定

```
context.lineWidth = [ Pixel ]  
context.lineCap = [ *butt, round, square ]  
context.lineJoin = [ bevel, round, *miter ]
```

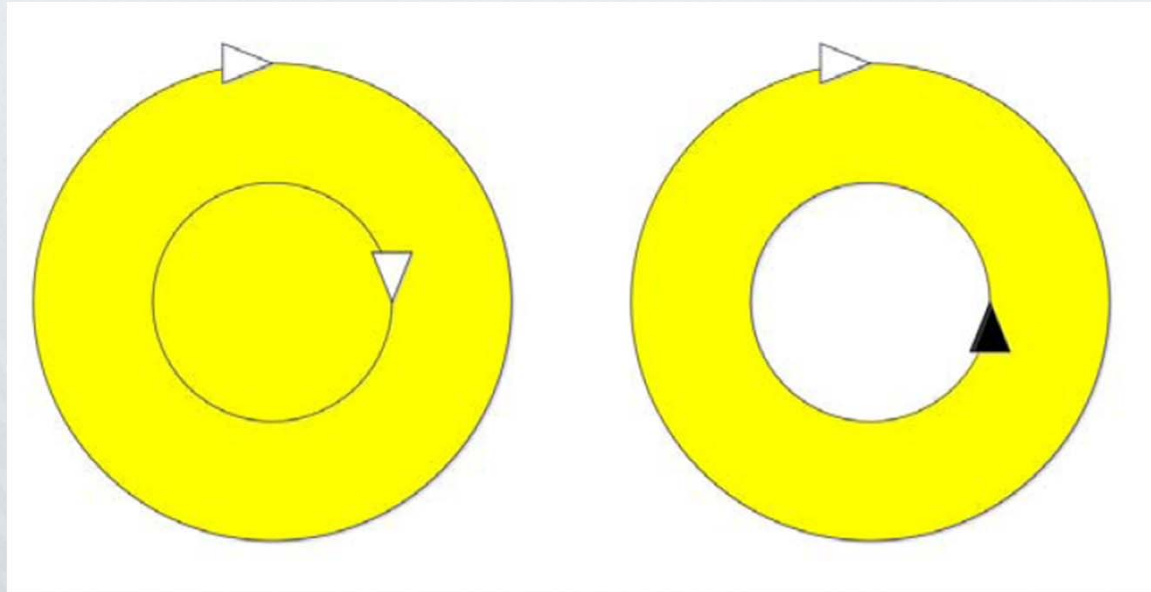
- lineWidth以像素为单位定义宽度
- linecap定义边界样式
- linejoin定义连接

填充边界

- Demo [line_styles.html.htm](#)



non-zero



总结

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