UIBezierPath介绍

前言

`UIBezierPath`是`UIKit`中的一个关于图形绘制的类，是通过`Quartz 2D`也就是`CG (Core Graphics) CGPathRef`的封装得到的，从高级特性支持来看不及`CG`。

`UIBezierPath`类可以绘制矩形、圆形、直线、曲线以及它们的组合图形。

UIBezierPath对象

对象创建方法

```
// 创建基本路径
+ (instancetype)bezierPath;
// 创建矩形路径
+ (instancetype)bezierPathWithRect:(CGRect)rect;
// 创建椭圆路径
+ (instancetype)bezierPathWithOvalInRect:(CGRect)rect;
// 创建圆角矩形
+ (instancetype)bezierPathWithRoundedRect:(CGRect)rect cornerRadius:(CGFloat)corne
rRadius; // rounds all corners with the same horizontal and vertical radius
// 创建指定位置圆角的矩形路径
+ (instancetype)bezierPathWithRoundedRect:(CGRect)rect byRoundingCorners:(UIRectCo
rner)corners cornerRadii:(CGSize)cornerRadii;
// 创建弧线路径
+ (instancetype)bezierPathWithArcCenter:(CGPoint)center radius:(CGFloat)radius sta
rtAngle:(CGFloat)startAngle endAngle:(CGFloat)endAngle clockwise:(BOOL)clockwise;
// 通过CGPath创建
+ (instancetype)bezierPathWithCGPath:(CGPathRef)CGPath;
```

相关属性和方法

- **属性**

```
// 与之对应的CGPath
@property(nonatomic) CGPathRef CGPath;
- (CGPathRef)CGPath NS_RETURNS_INNER_POINTER CF_RETURNS_NOT_RETAINED;
```

```
// 是否为空
@property(readonly,getter=isEmpty) BOOL empty;
// 整个路径相对于原点的位置及宽高
@property(nonatomic,readonly) CGRect bounds;
// 当前画笔位置
@property(nonatomic,readonly) CGPoint currentPoint;
```

```
// 线宽
@property(nonatomic) CGFloat lineWidth;

// 终点类型
@property(nonatomic) CGLineCap lineCapStyle;
typedef CF_ENUM(int32_t, CGLineCap) {
    kCGLineCapButt,
    kCGLineCapRound,
    kCGLineCapSquare
};

// 交叉点的类型
@property(nonatomic) CGLineJoin lineJoinStyle;
typedef CF_ENUM(int32_t, CGLineJoin) {
    kCGLineJoinMiter,
    kCGLineJoinRound,
    kCGLineJoinBevel
};

// 两条线交汇处内角和外角之间的最大距离,需要交叉点类型为kCGLineJoinMiter是生效，最大限制为10
@property(nonatomic) CGFloat miterLimit;
// 个人理解为绘线的精细程度，默认为0.6，数值越大，需要处理的时间越长
@property(nonatomic) CGFloat flatness;
// 决定使用even-odd或者non-zero规则
@property(nonatomic) BOOL usesEvenOddFillRule;
```

- **方法**

// 反方向绘制path

```
- (UIBezierPath *)bezierPathByReversingPath;
```

// 设置画笔起始点

```
- (void)moveToPoint:(CGPoint)point;
```

// 从当前点到指定点绘制直线

```
- (void)addLineToPoint:(CGPoint)point;
```

// 添加弧线

```
- (void)addArcWithCenter:(CGPoint)center radius:(CGFloat)radius startAngle:(CGFloa
t)startAngle endAngle:(CGFloat)endAngle clockwise:(BOOL)clockwise NS_AVAILABLE_IOS
(4_0);
```

// 添加贝塞尔曲线

```
- (void)addQuadCurveToPoint:(CGPoint)endPoint controlPoint:(CGPoint)controlPoint;
// endPoint终点 controlPoint控制点
- (void)addCurveToPoint:(CGPoint)endPoint controlPoint1:(CGPoint)controlPoint1 con
trolPoint2:(CGPoint)controlPoint2;
// endPoint终点 controlPoint1、controlPoint2控制点
```

// 移除所有的点，删除所有的subPath

```
- (void)removeAllPoints;
```

// 将bezierPath添加到当前path

```
- (void)appendPath:(UIBezierPath *)bezierPath;
```

// 填充

```
- (void)fill;
```

// 路径绘制

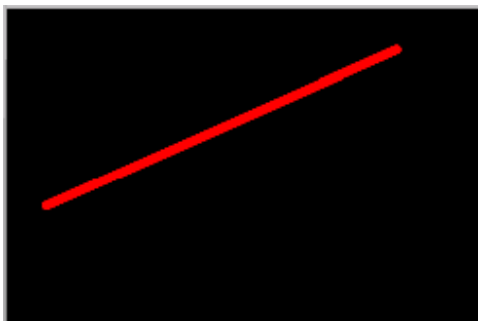
```
- (void)stroke;
```

// 在这以后的图形绘制超出当前路径范围则不可见

```
- (void)addClip;
```

直线

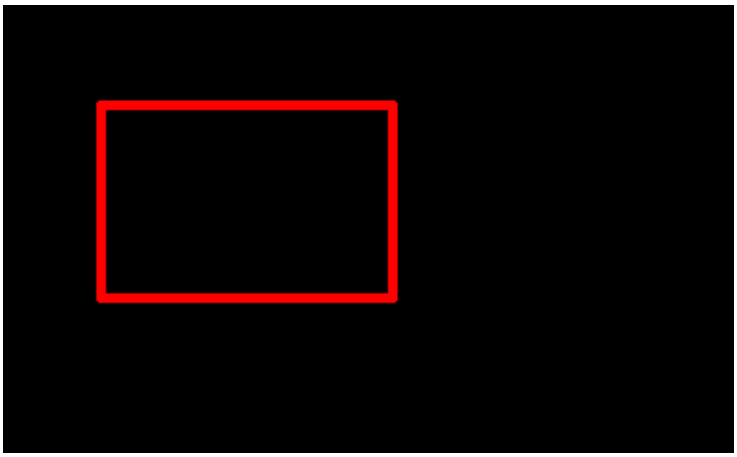
```
- (void)drawRect:(CGRect)rect{

    [[UIColor redColor] set];

    UIBezierPath* path = [UIBezierPath bezierPath];

    path.lineWidth     = 5.f;
    path.lineCapStyle  = kCGLineCapRound;
    path.lineJoinStyle = kCGLineCapRound;

    // 起点
    [path moveToPoint:CGPointMake(20, 100)];

    // 绘制线条
    [path addLineToPoint:CGPointMake(200, 20)];

    [path stroke];
}
```



矩形

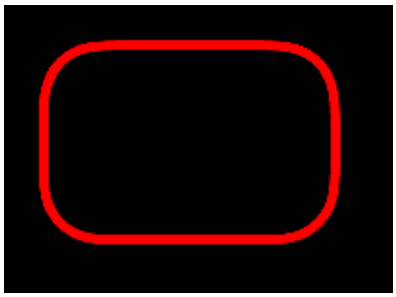
- **直角矩形**

```
- (void)drawRect:(CGRect)rect{

    [[UIColor redColor] set];
    // 创建矩形路径对象
    UIBezierPath * path = [UIBezierPath bezierPathWithRect:CGRectMake(50, 50, 150,
100)];

    path.lineWidth     = 5.f;
    path.lineCapStyle  = kCGLineCapRound;
    path.lineJoinStyle = kCGLineCapRound;

    [path stroke];
}
```



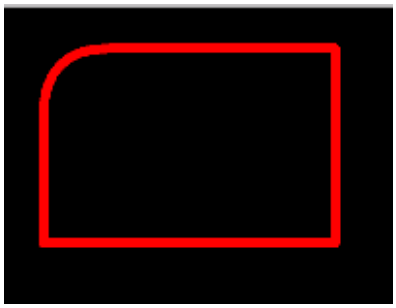
- **圆角矩形**

```
- (void)drawRect:(CGRect)rect{

    [[UIColor redColor] set];
    // 创建圆角矩形路径对象
    UIBezierPath* path = [UIBezierPath bezierPathWithRoundedRect:CGRectMake(20, 20
, 150, 100) cornerRadius:30]; // 圆角半径为30

    path.lineWidth     = 5.f;
    path.lineCapStyle  = kCGLineCapRound;
    path.lineJoinStyle = kCGLineCapRound;

    [path stroke];
}
```



- **指定位置圆角矩形**

```
- (void)drawRect:(CGRect)rect{

    [[UIColor redColor] set];

    UIBezierPath* path = [UIBezierPath bezierPathWithRoundedRect:CGRectMake(20, 20
, 150, 100) byRoundingCorners:UIRectCornerTopLeft cornerRadii:CGSizeMake(30, 30)];

    path.lineWidth     = 5.f;
    path.lineCapStyle  = kCGLineCapRound;
    path.lineJoinStyle = kCGLineCapRound;

    [path stroke];
}
```



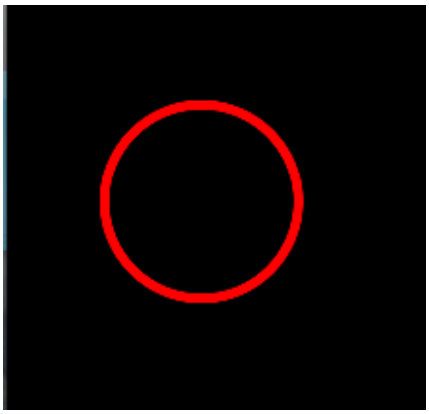
corners：圆角位置 **cornerRadii**：圆角大小

```
typedef NS_OPTIONS(NSUInteger, UIRectCorner) {
    UIRectCornerTopLeft     = 1 << 0,
    UIRectCornerTopRight    = 1 << 1,
    UIRectCornerBottomLeft  = 1 << 2,
    UIRectCornerBottomRight = 1 << 3,
    UIRectCornerAllCorners  = ~0UL
};
```

圆形和椭圆形

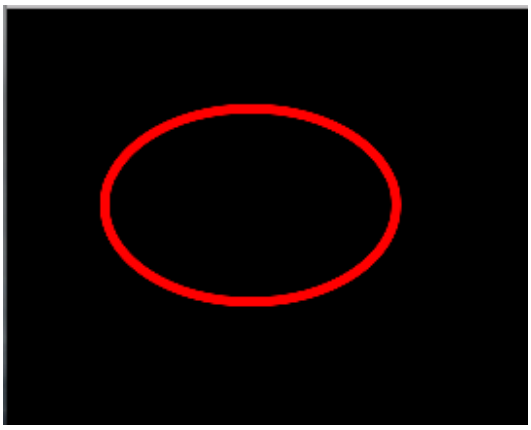
- **圆形**

```
- (void)drawRect:(CGRect)rect{

    [[UIColor redColor] set];
    // 创建圆形路径对象
    UIBezierPath * path = [UIBezierPath bezierPathWithOvalInRect:CGRectMake(50, 50
, 100, 100)];

    path.lineWidth     = 5.f;
    path.lineCapStyle  = kCGLineCapRound;
    path.lineJoinStyle = kCGLineCapRound;

    [path stroke];
}
```



- **椭圆形**

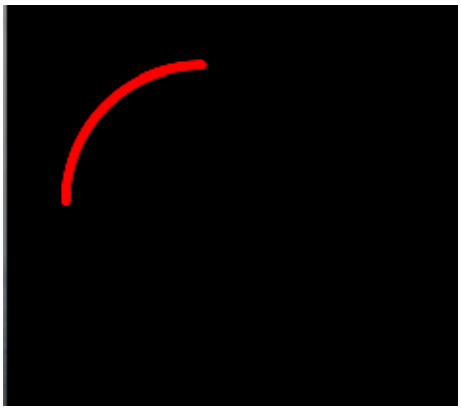
```
- (void)drawRect:(CGRect)rect{

    [[UIColor redColor] set];
    // 创建椭圆形路径对象
    UIBezierPath * path = [UIBezierPath bezierPathWithOvalInRect:CGRectMake(50, 50
, 100, 100)];

    path.lineWidth     = 5.f;
    path.lineCapStyle  = kCGLineCapRound;
    path.lineJoinStyle = kCGLineCapRound;

    [path stroke];
}
```



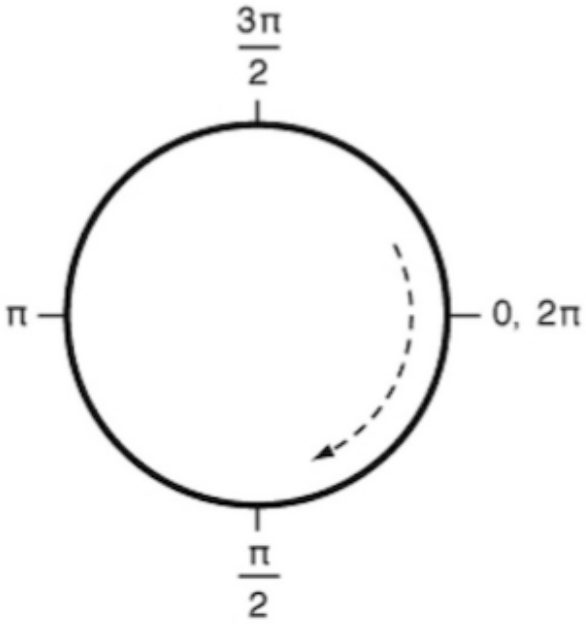
曲线

- **弧线**

```
- (void)drawRect:(CGRect)rect{

    [[UIColor redColor] set];
    // 创建弧线路径对象
    UIBezierPath* path = [UIBezierPath bezierPathWithArcCenter:CGPointMake(100, 10
0)
                                                        radius:70
                                                    startAngle:3.1415926
                                                      endAngle:3.1415926 *3/2
                                                     clockwise:YES];

    path.lineWidth     = 5.f;
    path.lineCapStyle  = kCGLineCapRound;
    path.lineJoinStyle = kCGLineCapRound;

    [path stroke];
}
```

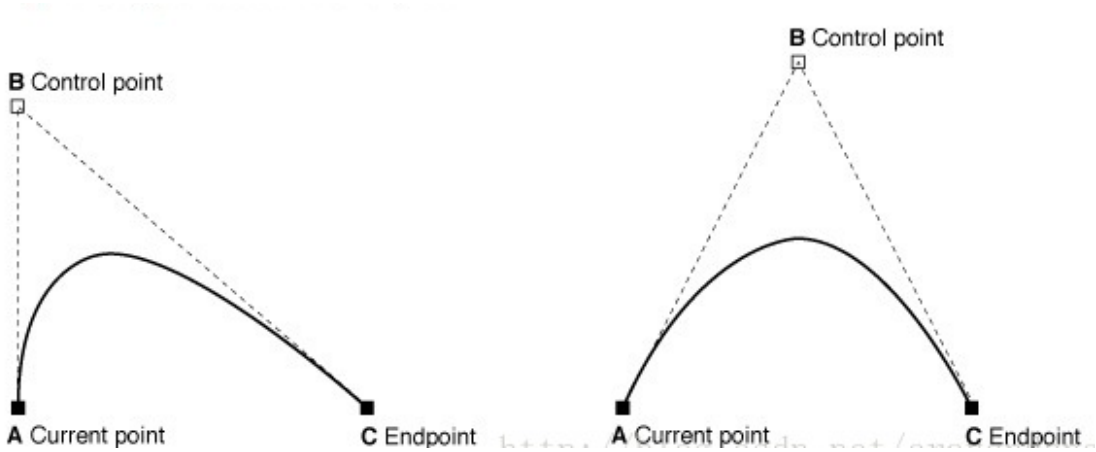


center：弧线圆心坐标
radius：弧线半径
startAngle：弧线起始角度
endAngle：弧线结束角度
clockwise：是否顺时针绘制

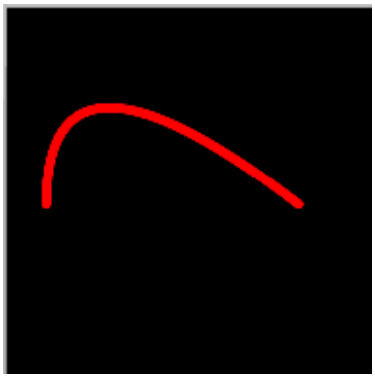


默认坐标系统中的角度值

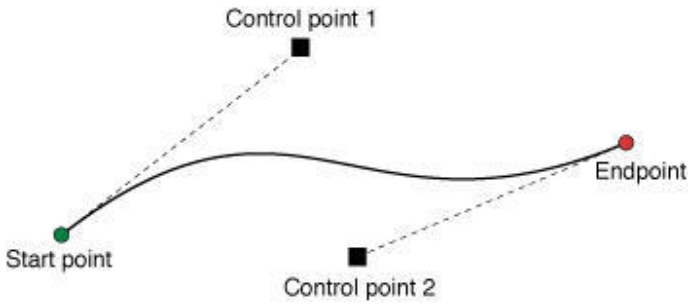
- **贝塞尔曲线1**



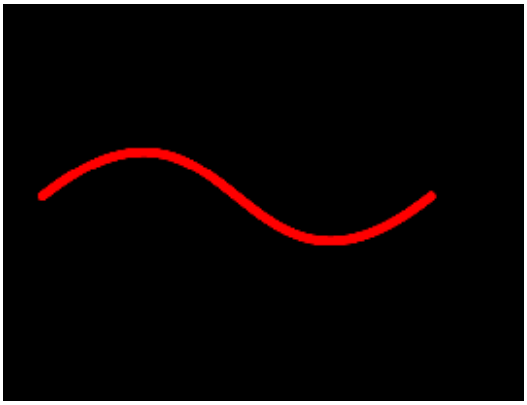
```
- (void)drawRect:(CGRect)rect{

    [[UIColor redColor] set];

    UIBezierPath* path = [UIBezierPath bezierPath];

    path.lineWidth     = 5.f;
    path.lineCapStyle  = kCGLineCapRound;
    path.lineJoinStyle = kCGLineCapRound;

    [path moveToPoint:CGPointMake(20, 100)];
    // 给定终点和控制点绘制贝塞尔曲线
    [path addQuadCurveToPoint:CGPointMake(150, 100) controlPoint:CGPointMake(20, 0
)];

    [path stroke];
}
```



- **贝塞尔曲线2**

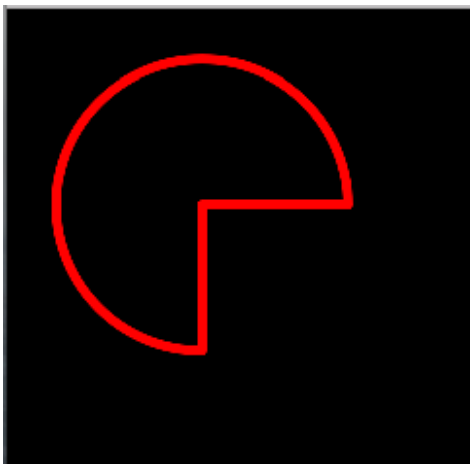


```
- (void)drawRect:(CGRect)rect{

    [[UIColor redColor] set];

    UIBezierPath* path = [UIBezierPath bezierPath];

    path.lineWidth     = 5.f;
    path.lineCapStyle  = kCGLineCapRound;
    path.lineJoinStyle = kCGLineCapRound;

    [path moveToPoint:CGPointMake(20, 100)];
    // 给定终点和两个控制点绘制贝塞尔曲线
    [path addCurveToPoint:CGPointMake(220, 100) controlPoint1:CGPointMake(120, 20)
controlPoint2:CGPointMake(120, 180)];

    [path stroke];
}
```



扇形

```
- (void)drawRect:(CGRect)rect{
    [[UIColor redColor] set]; // 画笔颜色设置

    UIBezierPath * path = [UIBezierPath bezierPath]; // 创建路径

    [path moveToPoint:CGPointMake(100, 100)]; // 设置起始点

    [path addArcWithCenter:CGPointMake(100, 100) radius:75 startAngle:0 endAngle:3
.14159/2 clockwise:NO]; // 绘制一个圆弧

    path.lineWidth     = 5.0;
    path.lineCapStyle  = kCGLineCapRound; //线条拐角
    path.lineJoinStyle = kCGLineCapRound; //终点处理

    [path closePath]; // 封闭未形成闭环的路径

    [path stroke]; // 绘制
}
```



多边形

```objc
- (void)drawRect:(CGRect)rect{

    [[UIColor redColor] set];

    UIBezierPath* path = [UIBezierPath bezierPath];

    path.lineWidth     = 5.f;
    path.lineCapStyle  = kCGLineCapRound;
    path.lineJoinStyle = kCGLineCapRound;

    // 起点
    [path moveToPoint:CGPointMake(100, 50)];

    // 添加直线
    [path addLineToPoint:CGPointMake(150, 50)];
    [path addLineToPoint:CGPointMake(200, 100)];
    [path addLineToPoint:CGPointMake(200, 150)];
    [path addLineToPoint:CGPointMake(150, 200)];
    [path addLineToPoint:CGPointMake(100, 200)];
    [path addLineToPoint:CGPointMake(50, 150)];
    [path addLineToPoint:CGPointMake(50, 100)];
    [path closePath];

    //根据坐标点连线
    [path stroke];
    [path fill];
}
```