Swift CALayer and CAGradientLayer

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In this post we will provide an introduction to CALayer and Swift Sample code to create CALayer and modify its properties.
Layers are backing store for views and also can be used without a view to display content.
We can modify the visual attributes of a layer such as background color, border width, border color, shadow, opacity etc
In addition to the visual content, layers also maintain its position, size and transforms.
Animations can be initiated by modifying the properties of a layer

There are different types of layers such as

- CALayer
- CAGradientLayer
- CATextLayer
- CAShapeLayer
- CAReplicatorLayer
- CATiledLayer etc

In this article we will focus on creating a simple CALayer and setting it as the layer of the view and change the property of the layers on click of buttons

In this sample code we start by adding a custom view (NSView) to our window and create an outlet named placeholderView

Before we start lets extend the CGFloat and NSColor class by adding a random function to generate random float values and random NSColor

```
extension CGFloat{
    static func random() -> CGFloat{
        return CGFloat(arc4random()) / CGFloat(UInt32.max)
    }
}


extension NSColor{
    static func random()->NSColor{
        return NSColor(calibratedRed: .random(), green: .random(), blue: .random(),
alpha: 1.0)
    }
}
```

CALayer

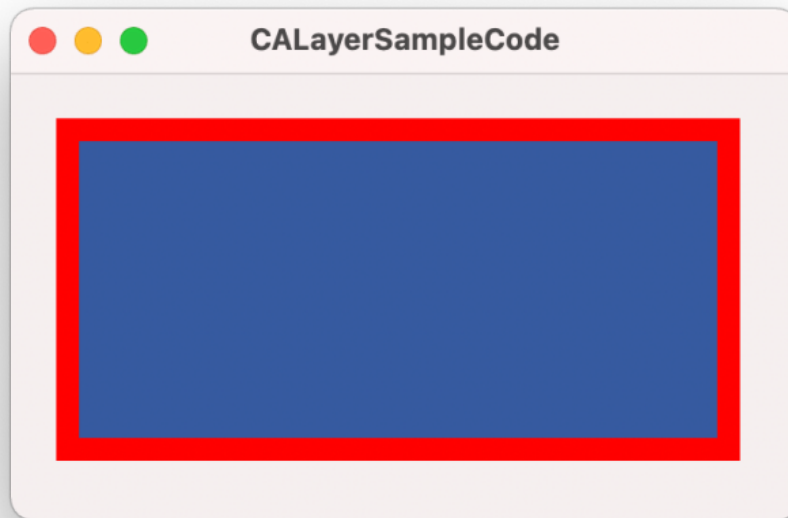## Lets start with initializing a CALayer

```
func initializeCALayer(){
    let layer = CALayer()
    layer.frame = self.placeholderView.frame
    layer.backgroundColor = NSColor.black.cgColor
    layer.borderWidth = 10.0
    layer.borderColor = NSColor.red.cgColor
    self.placeholderView.layer = layer
    self.placeholderView.wantsLayer = true
}
```


A Simple CALayer

Now lets change the background color of the CALayer

```
func changeBackgroundColor(){
      self.placeholderView.layer?.backgroundColor = NSColor.random().cgColor
    }
```

CALayer with changed background color

Changing the Layer Border Width

```
func changeBorderWidth(){
        self.placeholderView.layer?.borderWidth = 20.0
    }
```
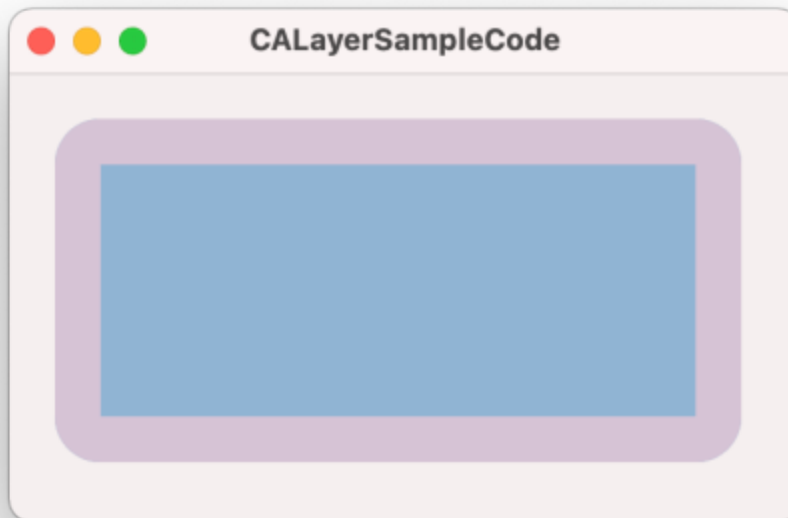
Changing The Border Color

```
func changeBorderColor(){
        self.placeholderView.layer?.borderColor = NSColor.random().cgColor
    }
```

Changing the layer corner Radius

```
func changeCornerRadius(cornerRadius:CGFloat){
        self.placeholderView.layer?.cornerRadius = cornerRadius
}
```

Changing the Layer Opacity

```
func changeViewOpacity(opacity: Float){
        self.placeholderView.layer?.opacity = opacity
}
```
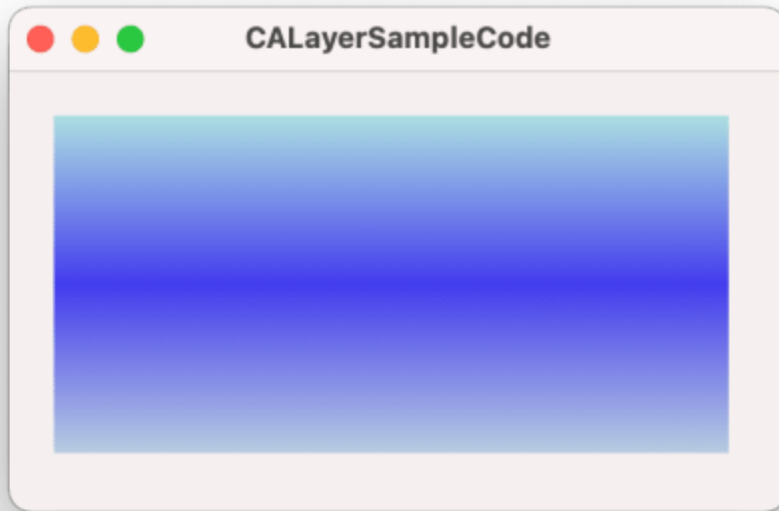
CALayer with 0.5 Opacity and 20 Corner Radius

CAGradientLayer

```swift
func addGradientLayer(){
        let gradientLayer = CAGradientLayer()
        let colorRef1 = NSColor.random().cgColor
        let colorRef2 = NSColor.random().cgColor
        let colorRef3 = NSColor.random().cgColor
        let colors = [colorRef1, colorRef2,colorRef3]
        gradientLayer.colors = colors
        gradientLayer.frame = self.placeholderView.frame
        self.placeholderView.layer = gradientLayer
        self.placeholderView.wantsLayer = true
    }
```

CAGradientLayer with 3 colors