CUSTOM CONTROLS IN iOS

Hands-On Challenges

Custom Controls in iOS

Catie & Jessy Catterwaul

Notice of Rights

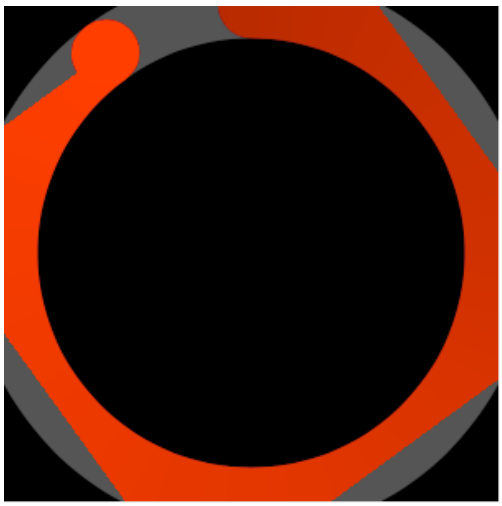
Notice of Liability

Trademarks

Challenge #5: Drawing with Layers

By Catie & Jessy Catterwaul

Despite now being able to change `RingLayer.value` willy-nilly, and have the ring visibly update accordingly, setting the `ringBackgroundColor` and `ringColor` properties has no effect, and while the `ringWidth` property certainly yields the ability to do…*something*…



…it's not what you might expect from *setting the ring's width*!

```
// Nope, still gray and red.
ringLayer.ringBackgroundColor = Color.pink
ringLayer.ringColor = Color.green

// Ring by Picasso™
ringLayer.ringWidth = 1
```

As you did in the demo, with `value`, you'll be able to use `didSet` observers on the problematic properties, to achieve the desired results. Working out precisely what needs to change, when each property changes, can lead to much more efficient code than simply redrawing the entire custom control when any of its properties change.

ringWidth

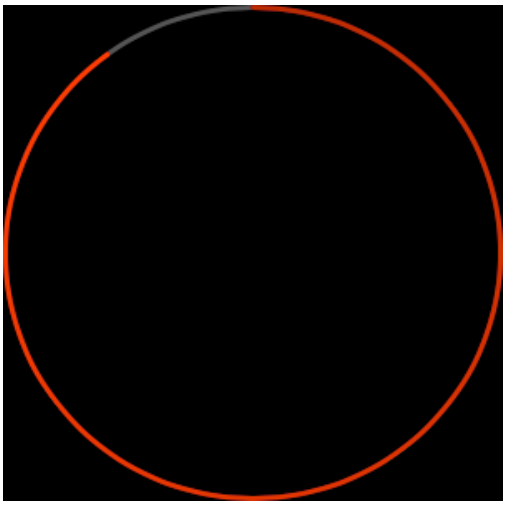
Three CALayers need to have their `lineWidth` properties match `ringWidth`. Set each of them, and then call `preparePaths`.

```
public var ringWidth: CGFloat = 40.0 {
  didSet {
    for layer in [
      backgroundLayer,
      foregroundMask,
      ringTipLayer
    ] {
      layer.lineWidth = ringWidth
    }

    preparePaths()
  }
}
```

Now you can change `ringLayer.ringWidth` as many times as you'd like!

`ringLayer.ringWidth = 3`



`ringLayer.ringWidth = 100`

ringColor

The two layers that are affected by `ringColor` are `gradientLayer` and `ringTipLayer`. Set the custom `color` property, for `gradientLayer`, and the `CAShapeLayer` property `strokeColor`, for `ringTipLayer`.

```
public var ringColor = UIColor.red.cgColor {
  didSet {
    gradientLayer.color = ringColor
    ringTipLayer.strokeColor = ringColor
  }
}
```

```
ringLayer.ringColor = Color.blue
```

ringBackgroundColor

Only `backgroundLayer.strokeColor` needs to change, when `ringBackgroundColor` changes.

```
public var ringBackgroundColor = UIColor.darkGray.cgColor {
  didSet {
    backgroundLayer.strokeColor = ringBackgroundColor
  }
}
```

```
ringLayer.value = 0.1
ringLayer.ringBackgroundColor = UIColor.white.cgColor
ringLayer.ringColor = UIColor.red.cgColor
```

CATransform3D Key Paths

As mentioned in the demo, it might not be obvious to you how this extension…

```
public extension CALayer {
  static let rotationKeyPath = "transform.rotation"
```

…could be used to rotate the two CALayers.

```
for layer: CALayer in [gradientLayer, ringTipLayer] {
  layer.setValue(
    getAngle(value: value),
    forKeyPath: CALayer.rotationKeyPath
  )
}
```

CALayer's has a `transform` property, but it's a `CATransform3D`, which doesn't have a `rotation` property that you can use in Swift. Access via key path is our only option. Read the section **Key Path Support for Structures** in Apple's Key-Value Coding Extensions guide, for more information.

Unfortunately, using a `String` directly in the extension is our best option. Swift 3's `#keyPath` syntax is unavailable for this API.