Swift CAReplicatorLayer Sample Code

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In this post we will check the CAReplicatorLayer behavior. **CAReplicatorLayer** is essentially a layer that creates a specified number of copies of its sublayers, each copy potentially having geometric, temporal, and color transformations applied to it.

We can use a CAReplicatorLayer object to build complex layouts based on a single source layer that is replicated with transformation rules that can affect the position, rotation color, and time.

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Let's begin with creating the root layer and then we will add CAReplicatorLayer to it.

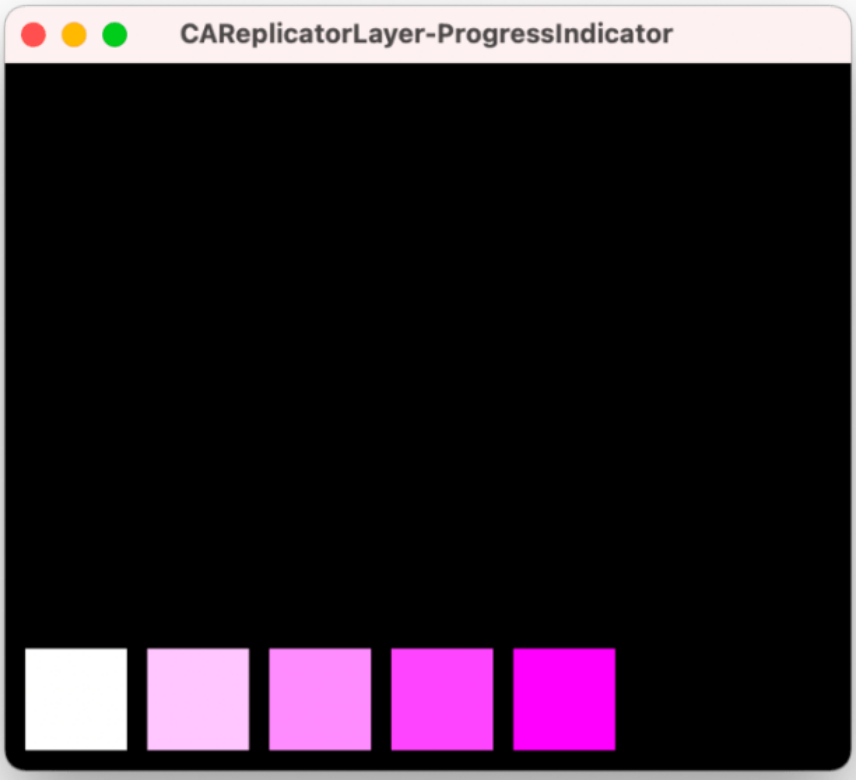
```
let rootLayer = CALayer()

func applicationDidFinishLaunching(_ aNotification: Notification) {
    if let frame = self.window.contentView?.frame{
    self.rootLayer.frame = frame
    self.rootLayer.backgroundColor = NSColor.black.cgColor
    self.window.contentView?.layer = self.rootLayer
    self.window.contentView?.wantsLayer = true
    }
    self.replicatorLayerSampleOne()
//  self.replicatorLayerSampleTwo()
//  self.replicatorLayerSampleThree()
}
```

CAReplicatorLayer X Transformation and Single Color Offset

Lets create the first sample code

This creates a square of size 50 * 50 and replicates that 5 times and each instance has a color offset (in the example we are offsetting the green color).
Each of the instance is added to the replicator layer at a horizontal distance of 10

```
func replicatorLayerSampleOne(){
   let replicatorLayer = CAReplicatorLayer()
   let coloredSquare = CALayer()
   coloredSquare.backgroundColor = NSColor.white.cgColor
   coloredSquare.frame = CGRect(x: 10, y: 10, width: 50, height: 50)

   let instanceCount = 5
   replicatorLayer.instanceCount = instanceCount
   replicatorLayer.instanceTransform = CATransform3DMakeTranslation(60, 0, 0)

   replicatorLayer.instanceGreenOffset = -0.2
   replicatorLayer.addSublayer(coloredSquare)
   rootLayer.addSublayer(replicatorLayer)

}
```

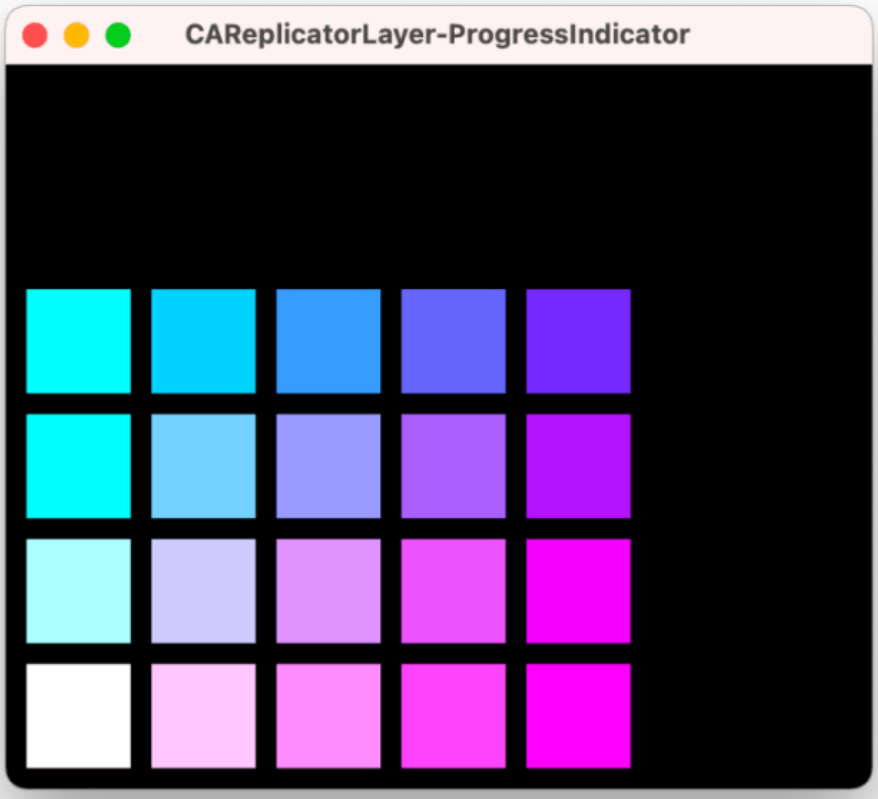


CAReplicatorLayer Sample with X transformation and color offset

CAReplicatorLayer X, Y Transformation and Two Color Offset

Next we will do **Nesting replicator Layers in X and Y Axis**

```
func replicatorLayerSampleTwo(){
    let replicatorLayer = CAReplicatorLayer()
    let rowLayer = CAReplicatorLayer()

    replicatorLayer.instanceCount = 4
    rowLayer.instanceCount = 5

    let coloredSquare = CALayer()
    coloredSquare.backgroundColor = NSColor.white.cgColor
    coloredSquare.frame = CGRect(x: 10, y: 10, width: 50, height: 50)

    rowLayer.instanceTransform = CATransform3DMakeTranslation(60, 0, 0)
    rowLayer.addSublayer(coloredSquare)
    rowLayer.instanceGreenOffset = -0.2

    replicatorLayer.instanceTransform = CATransform3DMakeTranslation(0, 60, 0)
    replicatorLayer.instanceRedOffset = -0.2
    replicatorLayer.addSublayer(rowLayer)

    rootLayer.addSublayer(replicatorLayer)

}
```

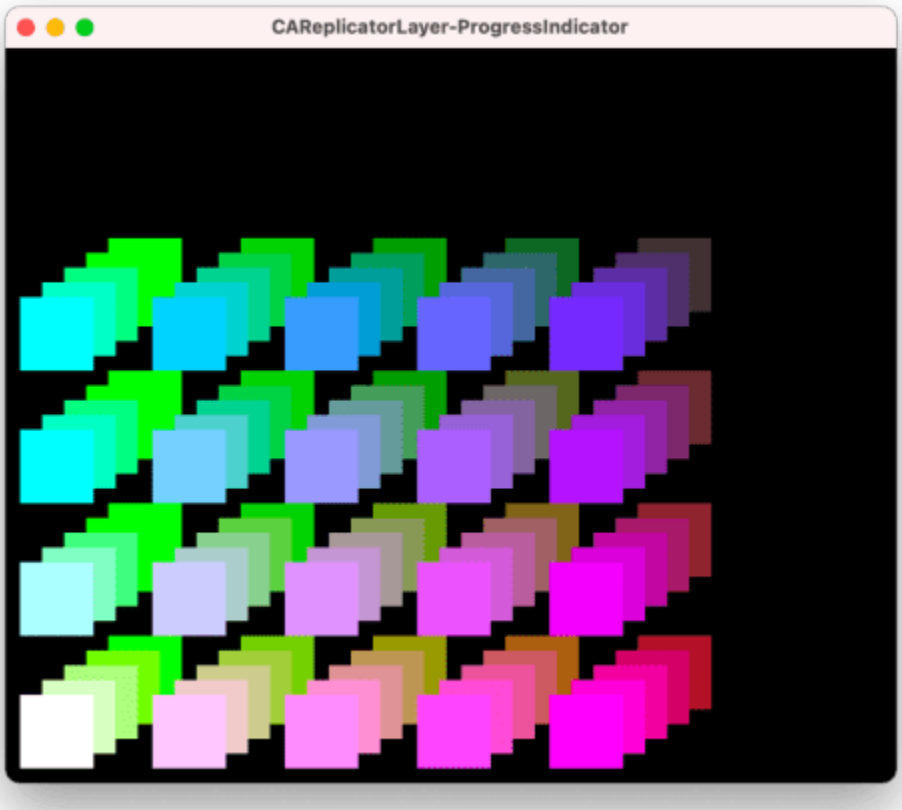


CAReplicatorLayer Sample with X and Y transformation and color offset

CAReplicatorLayer X, Y and Z Transformation and Multi Color Offset

Nesting replicator Layers in X, Y and Z axis

```
func replicatorLayerSampleThree(){
    let replicatorLayer = CAReplicatorLayer()
    let rowLayer = CAReplicatorLayer()
    let zLayer = CAReplicatorLayer()

    replicatorLayer.instanceCount = 4
    rowLayer.instanceCount = 5
    zLayer.instanceCount = 5

    let coloredSquare = CALayer()
    coloredSquare.backgroundColor = NSColor.white.cgColor
    coloredSquare.frame = CGRect(x: 10, y: 10, width: 50, height: 50)

    zLayer.instanceTransform = CATransform3DMakeTranslation(15, 10, -30)
    zLayer.instanceBlueOffset = -0.2
    zLayer.instanceRedOffset = -0.1

    zLayer.addSublayer(coloredSquare)

    rowLayer.instanceTransform = CATransform3DMakeTranslation(90, 0, 0)
    rowLayer.addSublayer(zLayer)
    rowLayer.instanceGreenOffset = -0.2

    replicatorLayer.instanceTransform = CATransform3DMakeTranslation(0, 90, 0)
    replicatorLayer.instanceRedOffset = -0.2
    replicatorLayer.addSublayer(rowLayer)

    rootLayer.addSublayer(replicatorLayer)

}
```



CAReplicatorLayer Sample with X, Y and Z transformation and multi color offset

Now that we know how the CAReplicatorLayer works time to apply it to create some progress indicators in the next post Progress Indicator using CAReplicatorLayer