Beginning

Core Graphics

Part 3: Contexts 1

Core Graphics Hands-On Challenges

Challenge: Draw an Icon

In this challenge you'll draw the Pet category icon. You'll do this in a playground just as we did in the demo.

At the end of the challenge you'll end up with this path:

Create a new iOS playground. Ctrl click **Playgrounds** folder and choose **New File**. Choose **iOS \ Source \ Playground**. Save the file as **IconPet**.

The playground will be similar to IconFun except for the actual drawing paths.

First set up the variables needed for drawing – replace the existing playground code with:

```
import UIKit

let size = CGSize(width: 400, height: 400)
let rect = CGRect(origin: .zero, size: size)

let backgroundColor = UIColor.redColor()
let drawingColor = UIColor.blackColor()

let lineWidth:CGFloat = 5.0
```

Set up the context:

```
UIGraphicsBeginImageContextWithOptions(size, false, 0.0)
```

This creates a drawing context of 400 by 400 points with transparency at a scale determined by the current device.

End the context and extract the image. These three lines must stay at the end of the playground until you've completed drawing the paths.

```
let image = UIGraphicsGetImageFromCurrentImageContext()
UIGraphicsEndImageContext()
image
```

Show the image in the playground by clicking the **+** next to `image`.

Between beginning and ending the context, before extracting the image, get a reference to the current context:

```
let context = UIGraphicsGetCurrentContext()
```

Remember all the drawing commands must be done before you end the context.

Create a path for the outline of the icon. This is a rounded rectangle.

```
let edge = UIBezierPath(roundedRect: rect.insetBy(dx: lineWidth*2,
dy: lineWidth*2), cornerRadius: 50)
edge.lineWidth = lineWidth
```

Save the state of the context and add a clipping path:

```
CGContextSaveGState(context)
edge.addClip()
```

Fill the context with the background color:

```
backgroundColor.setFill()
UIRectFill(rect)
```

The image in the playground should now look like this:

The edge path clips the red background fill so that the image has rounded corners.

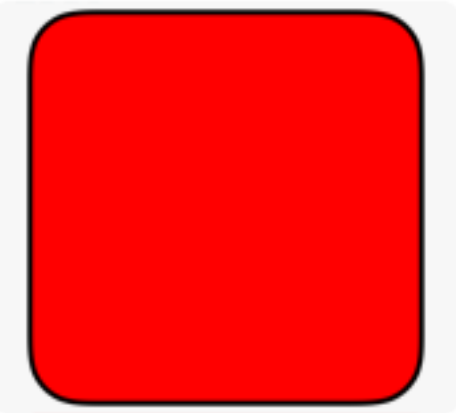
Restore the context to the state before the clip was added:

```
CGContextRestoreGState(context)
```

Stroke the outline with the edge path:

```
drawingColor.setStroke()
edge.stroke()
```

The image now has a black outline:



Add the first part of the paw - this will be a circle:

```
let paw1 = UIBezierPath(ovalInRect: CGRect(x: 130, y: 174, width:
140, height: 154))
paw1.lineWidth = lineWidth
paw1.stroke()
```

and then add the three other smaller circles:

```
let paw2 = UIBezierPath(ovalInRect: CGRect(x: 71, y: 104, width:
71, height: 89))
paw2.lineWidth = lineWidth
paw2.stroke()

let paw3 = UIBezierPath(ovalInRect: CGRect(x: 161, y: 66, width:
71, height: 89))
paw3.lineWidth = lineWidth
paw3.stroke()

let paw4 = UIBezierPath(ovalInRect: CGRect(x: 254, y: 104, width:
71, height: 89))
paw4.lineWidth = lineWidth
paw4.stroke()
```

Now the image has the paw drawn:

Group all the paw paths into one path:

```
let path = UIBezierPath()
path.appendPath(paw1)
path.appendPath(paw2)
path.appendPath(paw3)
path.appendPath(paw4)
```

At the very end of the playground create a second drawing context so that you can see what the path looks like:

```
UIGraphicsBeginImageContextWithOptions(size, false, 0)

// .. drawing goes here

let image2 = UIGraphicsGetImageFromCurrentImageContext()
UIGraphicsEndImageContext()
image2
```

Inside the new context where it says // .. drawing goes here, stroke the path:

```
path.stroke()
```

Click the **+** next to `image2` to see the result.

You've now created a reusable path. Later on in the series, you'll use this path in the app code for your expense category icons.