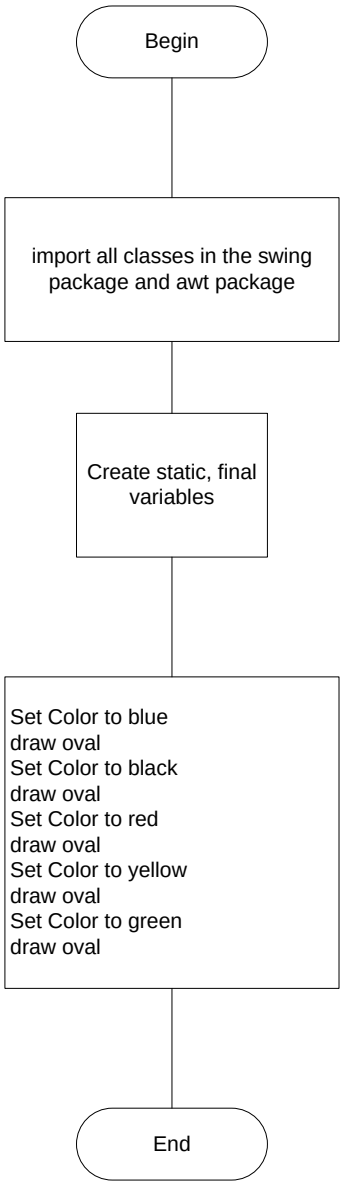
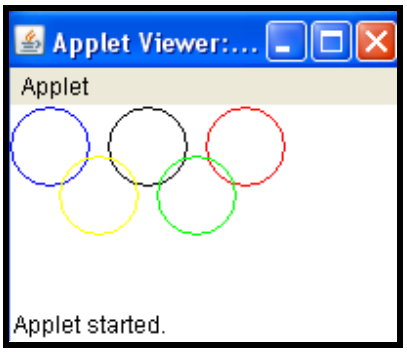
CIT 149: Java I
Chapter 3 Lab 4

In this lab we will create an applet, and afterwards convert it to a GUI application. I will give you erroneous code in both programs, which you will be required to debug, fixing my errors. The flowchart for this program is:



When correctly written and run, the applet will display as:



The entire program is:

```
import javax.swing.*;
import java.awt.*;

public class Rings extends JApplet
{

   public static void main(String[] args)
   {
   }

   public static final int RING_DIAMETER = 40;
   public static final int RING_X_OFFSET = 25;
   public static final int RING_Y_OFFSET = 25;

   public void paint(Graphics canvas)

      canvas.setColor(Color.BLUE);
      canvas.drawOval(0, 0, RING_DIAMETER, RING_DIAMETER);

      canvas.setColor(Color.BLACK);
      canvas.drawOval(2*RING_X_OFFSET, 0, RING_DIAMETER, RING_DIAMETER);

      canvas.setColor(Color.RED);
      canvas.drawOval(4*RING_X_OFFSET, 0, RING_DIAMETER, RING_DIAMETER);

      canvas.setColor(Color.YELLOW);
      canvas.drawOval(RING_X_OFFSET, RING_Y_OFFSET, RING_DIAMETER,
RING_DIAMETER);

      canvas.setColor(Color.GREEN);
      canvas.drawOval(3*RING_X_OFFSET, RING_Y_OFFSET, RING_DIAMETER,
RING_DIAMETER);

   }
}
```

1. Fix the errors to the program until it correctly compiles.

2. Write an html document to display the applet.

Converting to a GUI Application

1. With your previous program still open, resave it as RingsFrame.java.
2. Scroll down to the class header. Change the class name to RingsFrame and instead of extending JApplet have the program extend JFrame.
3. Immediately before the main method header we want to create our constructor method, which JFrame have. Type:

```
public RingsFrame()
{
        setBackground(Color.cyan);
```

   - We will cover the setBackground() method in a later chapter, but it is a simple method to learn. The method's argument will set the background of our frame to cyan. This is one of several different color names that can be used. Other names you can use are:

     BLACK
     BLUE
     DARK_GRAY
     GRAY
     GREEN
     LIGHT_GRAY
     MAGENTA
     ORANGE
     PINK
     RED
     WHITE
     YELLOW

4. Within the main method, immediately after the opening brace type the code that will set the frame size, visibility, and title. It will also create a RingsFrame object. Type:

```
RingsFrame frame = new RingsFrame();
frame.setSize(200,200);
frame.setVisible(true);
frame.setTitle("Rings Frame, Chapter 3 Lab 4");
```

5. In order for the rings to display properly on the frame we will need to adjust our x and y coordinates in the paint method. The entire code within the method is:

```
canvas.setColor(Color.BLUE);
canvas.drawOval(20, 50, RING_DIAMETER, RING_DIAMETER);
canvas.setColor(Color.BLACK);
canvas.drawOval(2*RING_X_OFFSET +20, 50, RING_DIAMETER, RING_DIAMETER);
canvas.setColor(Color.RED);
```

```
    canvas.drawOval(4*RING_X_OFFSET+20, 50, RING_DIAMETER, RING_DIAMETER);

    canvas.setColor(Color.YELLOW);
    canvas.drawOval(RING_X_OFFSET+20, RING_Y_OFFSET+50, RING_DIAMETER,
RING_DIAMETER);
    canvas.setColor(Color.GREEN);
    canvas.drawOval(3*RING_X_OFFSET+20, RING_Y_OFFSET+50, RING_DIAMETER,
RING_DIAMETER);
```

- One thing to notice here is that the code wraps to the next line. This is only due to the margins here. Do not hit the enter key when typing the individual lines of code. This key should not be pressed until after you have typed the semicolon at the end of the line of code.

6. Compile the program, fixing the errors that I left in the code.
7. Compress the following files into a single zip or rar files and submit to the appropriate drop box:

   Rings.java
   Rings.class
   Rings.html
   RingsFrame.java
   RingsFrame.class