OOM APPLET ASSIGNMENT – 1

Name: Aditya Aggarwal   **Roll Number: IIT2019210**

Q1) Write a program to display an animation of a bouncing ball using a Java applet.

Code:

```java
package first;

import java.applet.*;
import java.awt.*;

public class BouncingBall extends Applet implements Runnable
{
    // Defining x,y coordinates and radius of the circle
    int x = 160, y = 50, r=20;
    int dx = 11, dy = 7;

    // create thread
    Thread t;
    boolean stopFlag;

    public void start()
    {
        t = new Thread(this);
        stopFlag=false;
        t.start();
    }

    public void paint(Graphics g)
    {
        g.setColor(Color.red);
        g.fillOval(x-r, y-r, r*2, r*2);
    }

    public void run()
    {
        while(true)
        {
            if(stopFlag)
                break;
            // Bounce if we've hit an edge
            if ((x - r + dx < 0) || (x + r + dx > bounds().width)) dx = -
dx;
            if ((y - r + dy < 0) || (y + r + dy > bounds().height)) dy = -
dy;
            // Move the circle
            x += dx;   y += dy;

            try
            {
                Thread.sleep(100);
            }
            catch(Exception e)
            {
                System.out.println(e);
```
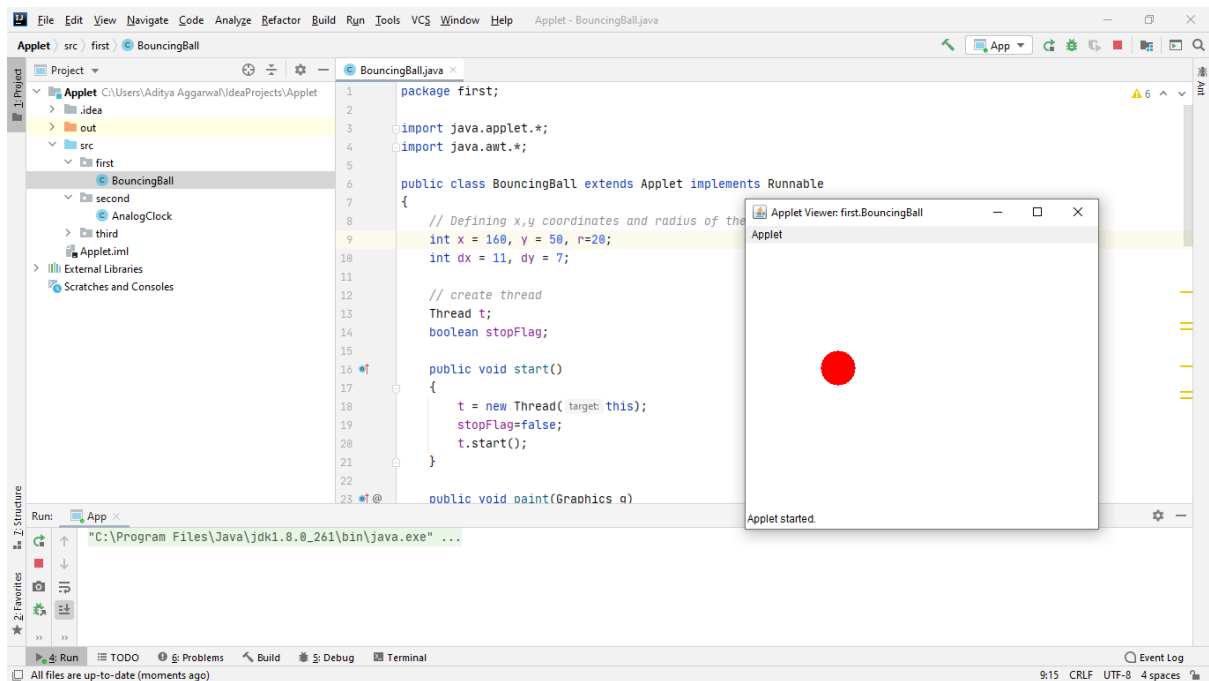
```java
            };
            repaint();
        }
    }

    public void stop()
    {
        stopFlag=true;
        t=null;
    }
}
```

Sample Output:

Q2) **Write a program to display an analog clock using Applet. Also display the time in digital format below the analog clock in 12 hour format.**

Code:

```java
package second;

import java.applet.Applet;
import java.awt.*;
import java.util.*;

public class AnalogClock extends Applet {

    @Override
    public void init()
    {
        this.setSize(new Dimension(800, 400));
```

```java
        setBackground(new Color(50, 50, 50));
        new Thread() {
            @Override
            public void run()
            {
                while (true) {
                    repaint();
                    delayAnimation();
                }
            }
        }.start();
    }

    private void delayAnimation()
    {
        try {

            Thread.sleep(1000);
        }
        catch (InterruptedException e) {
            e.printStackTrace();
        }
    }

    @Override
    public void paint(Graphics g)
    {
        Calendar time = Calendar.getInstance();

        int hour = time.get(Calendar.HOUR_OF_DAY);
        int minute = time.get(Calendar.MINUTE);
        int second = time.get(Calendar.SECOND);

        if (hour > 12) {
            hour -= 12;
        }

        g.setColor(Color.white);
        g.fillOval(300, 100, 200, 200);

        g.setColor(Color.black);
        g.drawString("12", 390, 120);
        g.drawString("9", 310, 200);
        g.drawString("6", 400, 290);
        g.drawString("3", 480, 200);

        double angle;
        int x, y;

        angle = Math.toRadians((15 - second) * 6);

        x = (int)(Math.cos(angle) * 100);
        y = (int)(Math.sin(angle) * 100);

        g.setColor(Color.red);
        g.drawLine(400, 200, 400 + x, 200 - y);

        angle = Math.toRadians((15 - minute) * 6);

        x = (int)(Math.cos(angle) * 80);
        y = (int)(Math.sin(angle) * 80);
```

```java
        g.setColor(Color.blue);
        g.drawLine(400, 200, 400 + x, 200 - y);

        angle = Math.toRadians((15 - (hour * 5)) * 6);

        x = (int)(Math.cos(angle) * 50);
        y = (int)(Math.sin(angle) * 50);

        g.setColor(Color.black);
        g.drawLine(400, 200, 400 + x, 200 - y);
    }
}
```
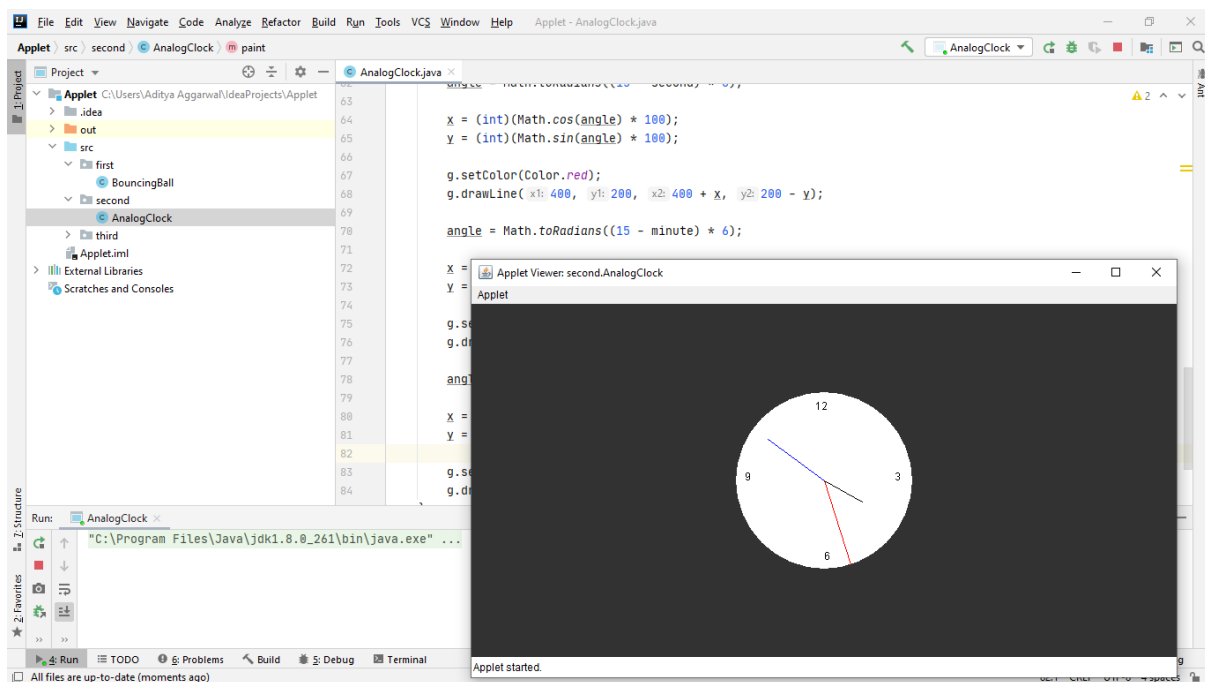
Sample Output:

- -

Q3) Write a program to let the HTML Author Supply Data to display a webpage similar to below, using HTML and Applet. Write the applet code to provide appropriate colors for the LIGHT and DARK values provided to the BACKGROUND.

Codes:

Java Applet code:

```java
package third;

import java.applet.Applet;
import java.awt.*;
```

```java
/*<applet code="LinkHTML" width=300 height=300 ></applet>*/
public class LinkHTML extends Applet {
    String str;
    public void init() {
        Color background = Color.GRAY;
        Color foreground = Color.DARK_GRAY;
        String backgroundType = getParameter("BACKGROUND");
        if (backgroundType != null) {
            if (backgroundType.equalsIgnoreCase("LIGHT")) {
                background = Color.WHITE;
                foreground = Color.BLACK;
            } else if (backgroundType.equalsIgnoreCase("DARK")) {
                background = Color.BLACK;
                foreground = Color.WHITE;
            }
        }
        str="Hello, World Wide Web.";
        setBackground(background);
        setForeground(foreground);
    }

    public void paint(Graphics g)
    {
        g.setFont(new Font("TimesRoman", Font.PLAIN, 30));
        g.drawString(str, 4, 30);
    }
}
```

HTML File Code:

```html
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Customizable Hello WWW Apple</title>
</head>
<body>
    <h1>Customizable Hello WWW Applet</h1>

    <applet code="third/LinkHTML.class" height=50 width=400>
        <param name="BACKGROUND" value="LIGHT">
    </applet>

    <br><br>

    <applet code="third/LinkHTML.class" height=50 width=400>
        <param name="BACKGROUND" value="DARK">
    </applet>

    <br><br>

    <applet code="third/LinkHTML.class" height=50 width=400>

    </applet>

</body>
</html>
```

Sample Output of Applet Webpage:

Sample Output from Applet Viewer: