Aula 17 - Usando Graphics

Docupedia Export

Author:Silio Leonardo (SO/OPM-TS21-BR)
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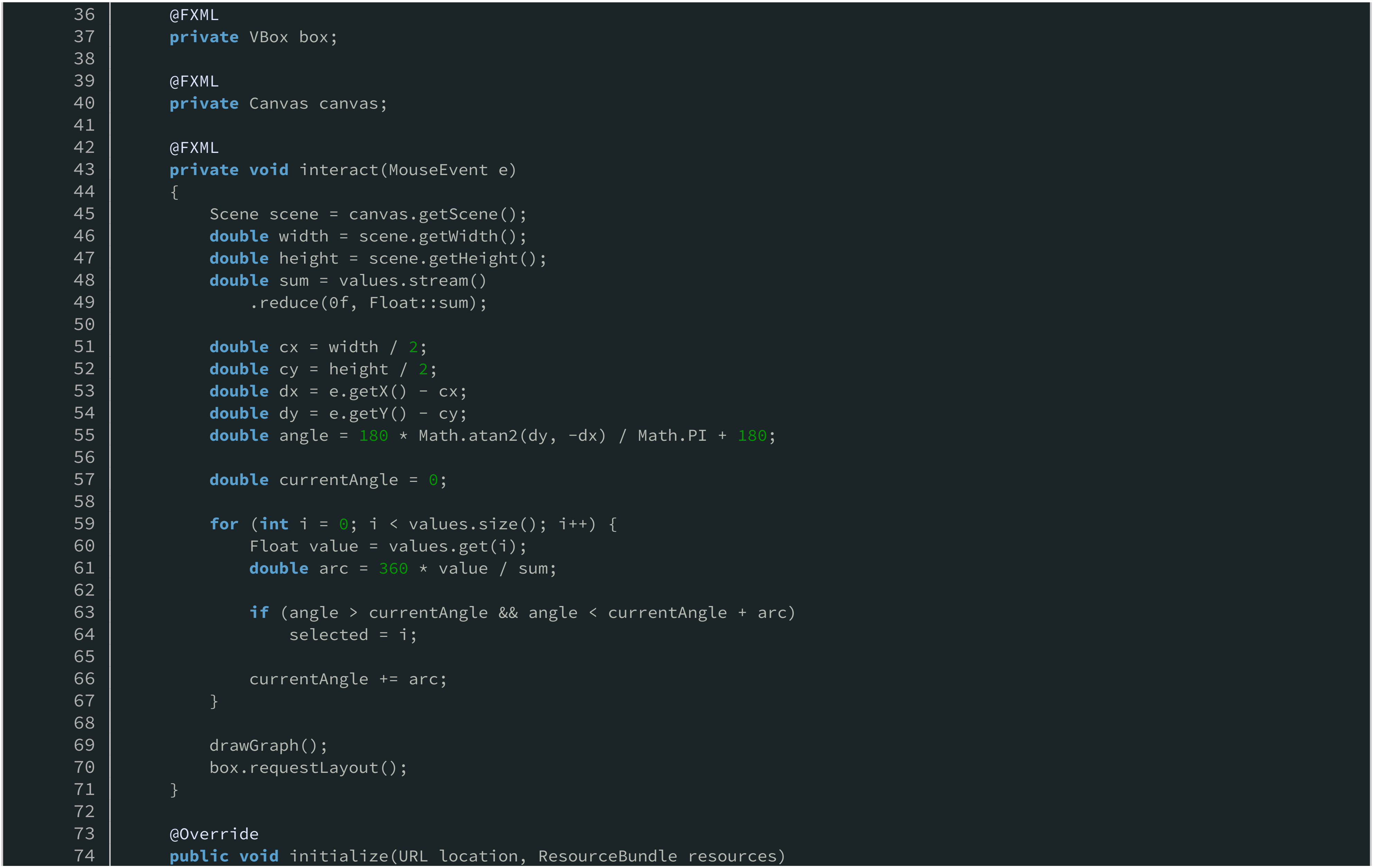
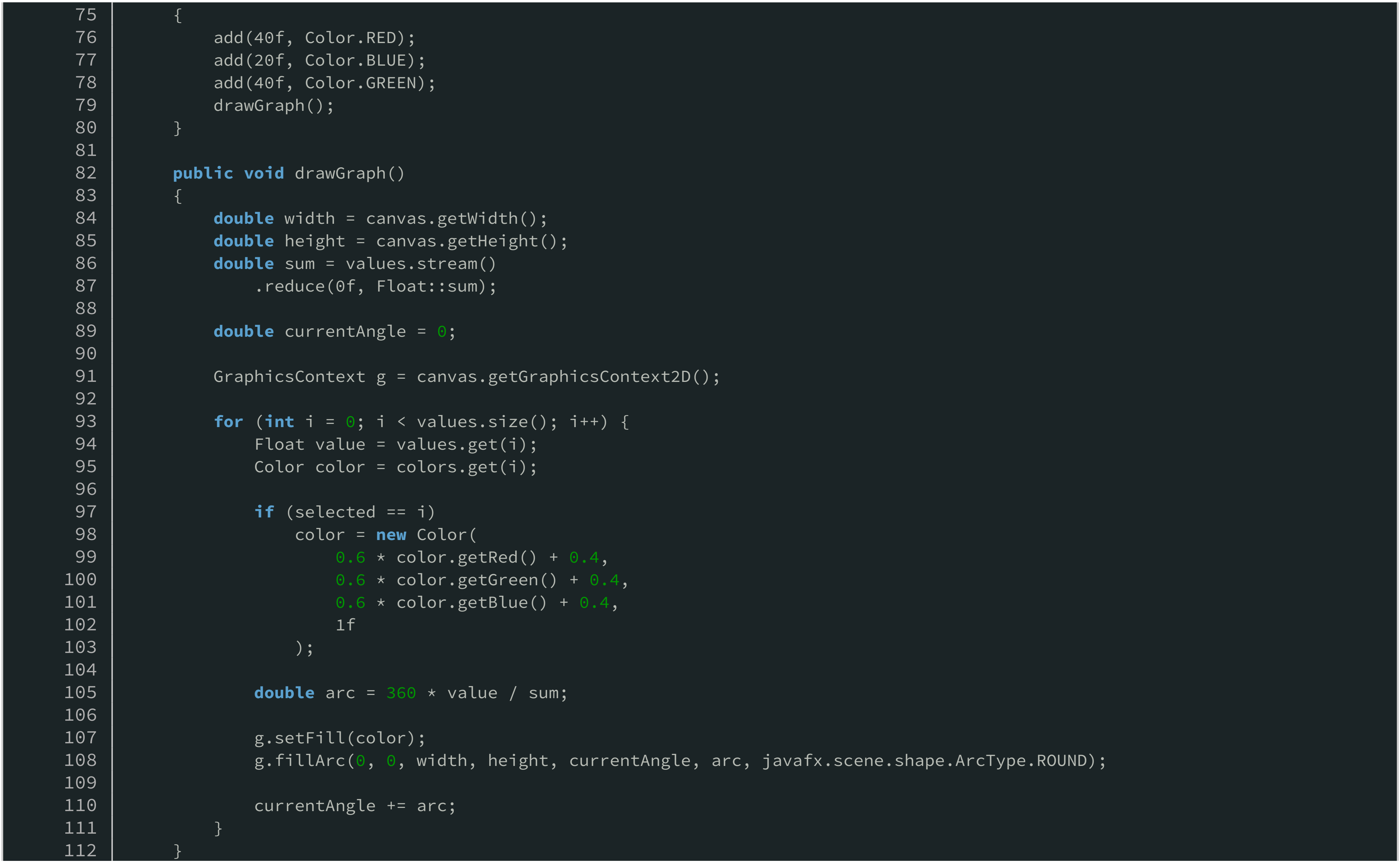
1 Graphics e Interações no JavaFX

Vamos criar um canvas e associar o mouse move ao interact para criar um gráfico bonito e dinâmico:

```java
import java.net.URL;
import java.util.ArrayList;
import java.util.ResourceBundle;

import javafx.scene.Scene;
import javafx.scene.canvas.Canvas;
import javafx.scene.canvas.GraphicsContext;
import javafx.scene.input.MouseEvent;
import javafx.scene.layout.VBox;
import javafx.scene.paint.Color;
import javafx.scene.Parent;
import javafx.fxml.FXML;
import javafx.fxml.FXMLLoader;
import javafx.fxml.Initializable;

public class MainSceneController implements Initializable {

    private ArrayList<Float> values = new ArrayList<>();
    private ArrayList<Color> colors = new ArrayList<>();
    private int selected = -1;

    public void add(Float value, Color color) {
        this.values.add(value);
        this.colors.add(color);
    }

    public static Scene CreateScene() throws Exception
    {
        URL sceneUrl = LoginSceneController.class
            .getResource("main-scene.fxml");
        Parent root = FXMLLoader.load(sceneUrl);
        Scene scene = new Scene(root);
        return scene;
    }

```

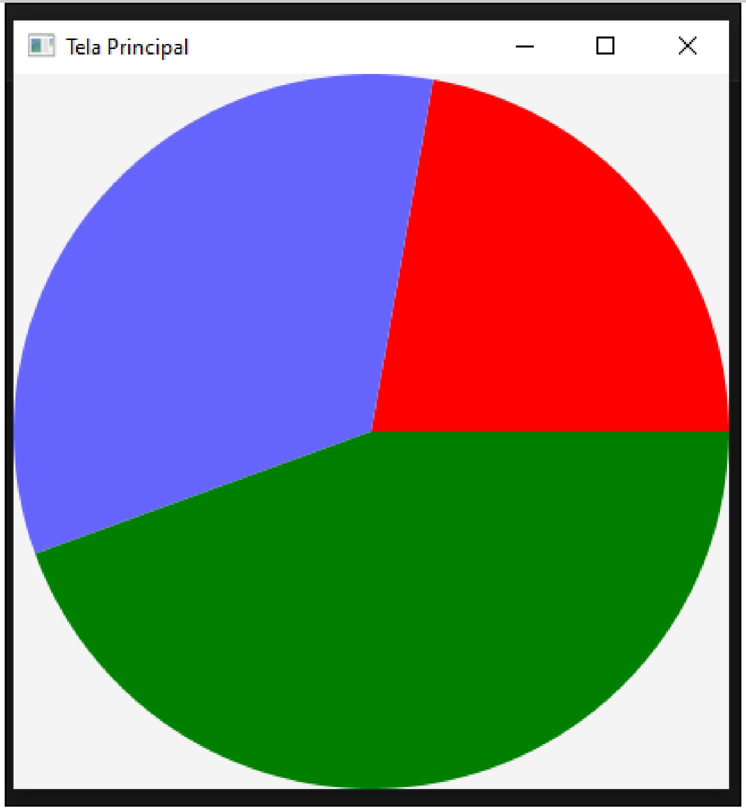


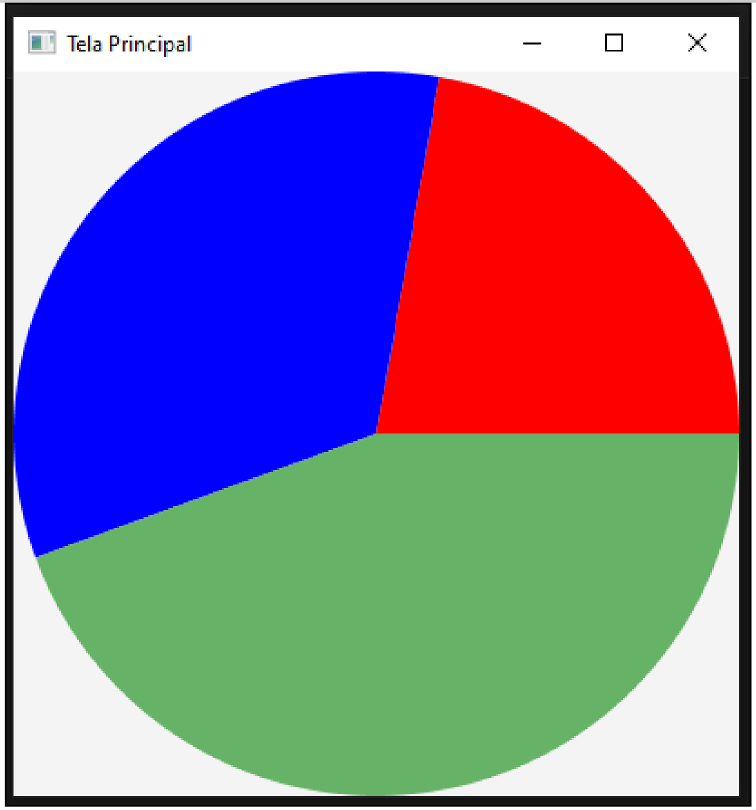
```java
    @FXML
    private VBox box;

    @FXML
    private Canvas canvas;

    @FXML
    private void interact(MouseEvent e)
    {
        Scene scene = canvas.getScene();
        double width = scene.getWidth();
        double height = scene.getHeight();
        double sum = values.stream()
            .reduce(0f, Float::sum);

        double cx = width / 2;
        double cy = height / 2;
        double dx = e.getX() - cx;
        double dy = e.getY() - cy;
        double angle = 180 * Math.atan2(dy, -dx) / Math.PI + 180;

        double currentAngle = 0;

        for (int i = 0; i < values.size(); i++) {
            Float value = values.get(i);
            double arc = 360 * value / sum;

            if (angle > currentAngle && angle < currentAngle + arc)
                selected = i;

            currentAngle += arc;
        }

        drawGraph();
        box.requestLayout();
    }

    @Override
    public void initialize(URL location, ResourceBundle resources)
```



```java
    {
        add(40f, Color.RED);
        add(20f, Color.BLUE);
        add(40f, Color.GREEN);
        drawGraph();
    }

    public void drawGraph()
    {
        double width = canvas.getWidth();
        double height = canvas.getHeight();
        double sum = values.stream()
            .reduce(0f, Float::sum);

        double currentAngle = 0;

        GraphicsContext g = canvas.getGraphicsContext2D();

        for (int i = 0; i < values.size(); i++) {
            Float value = values.get(i);
            Color color = colors.get(i);

            if (selected == i)
                color = new Color(
                    0.6 * color.getRed() + 0.4,
                    0.6 * color.getGreen() + 0.4,
                    0.6 * color.getBlue() + 0.4,
                    1f
                );

            double arc = 360 * value / sum;

            g.setFill(color);
            g.fillArc(0, 0, width, height, currentAngle, arc, javafx.scene.shape.ArcType.ROUND);

            currentAngle += arc;
        }
    }
```

```
}
```


Tela Principal


Tela Principal