

Programming in Java

Assignment – 2



Name: Shree Rangaraju S

Roll Number: 2016129

Department: Electronics and Instrumentation Engineering

Date: 15/05/2023

Problem statement:

The goal of this program is to create a simple paint application in the form of an applet. The user should be able to draw on the applet by clicking and dragging the mouse, and also have the ability to change the size and color of the drawing tool. Additionally, the user should be able to erase the drawing by selecting the erase mode.

Description:

This program is an implementation of a basic paint application using Java's AWT library. The program runs as an applet and allows the user to draw on the applet by clicking and dragging the mouse. The user can select the size of the drawing tool, increase or decrease its size, and choose to erase their drawing by selecting the erase mode. The user can also clear the applet and start over.

Concepts used:

1. **AWT (Abstract Window Toolkit):** The AWT library is used to create graphical user interfaces in Java. It provides a set of classes for creating windows, panels, buttons, and other graphical components.
2. **Applet:** An applet is a small program that runs within a web browser. It is executed on the client-side, meaning that it runs on the user's computer, rather than the server.
3. **MouseMotionListener:** This is an interface that provides methods to respond to mouse movement events. In this program, it is used to detect when the user is dragging the mouse to draw on the applet.
4. **ActionListener:** This is an interface that provides methods to respond to events generated by user actions, such as clicking a button. In this program, it is used to respond to button clicks, such as clearing the applet or changing the size of the drawing tool.
5. **Checkbox:** A checkbox is a graphical component that can be either checked or unchecked. In this program, it is used to allow the user to select the erase mode.
6. **Graphics:** The Graphics class provides methods for drawing on a component, such as an applet. In this program, it is used to draw the user's drawings on the applet.

Program Code:

```
import java.awt.*;

import java.awt.event.*;

import java.applet.*;

/*
 * <Applet code=PaintApplication width=1024 height=768>
 * </Applet>
 */

public class PaintApplication extends Applet implements MouseMotionListener, ActionListener {

    private Button clearButton;

    private Button increaseButton;

    private Button decreaseButton;

    private Checkbox eraseCheckbox;

    private Color currentColor;

    private int pointerSize;

    private boolean eraseMode;

    public void init() {

        addMouseMotionListener(this);

        setBackground(Color.white);

        clearButton = new Button("Clear");

        clearButton.addActionListener(this);

        add(clearButton);

        increaseButton = new Button("Increase Size");

        increaseButton.addActionListener(this);

        add(increaseButton);

        decreaseButton = new Button("Decrease Size");

        decreaseButton.addActionListener(this);
```

```

        add(decreaseButton);

        eraseCheckbox = new Checkbox("Erase", false);
        eraseCheckbox.addItemListener(new ItemListener() {
            public void itemStateChanged(ItemEvent e) {
                eraseMode = eraseCheckbox.getState();
            }
        });
        add(eraseCheckbox);

        currentColor = Color.black;
        pointerSize = 10;
        eraseMode = false;
    }

    public void actionPerformed(ActionEvent e) {
        if (e.getSource() == clearButton) {
            clearScreen();
        } else if (e.getSource() == increaseButton) {
            increaseSize();
        } else if (e.getSource() == decreaseButton) {
            decreaseSize();
        }
    }

    public void mouseDragged(MouseEvent me) {
        Graphics g = getGraphics();
        if (eraseMode) {
            g.setColor(getBackground());
        } else {
            g.setColor(currentColor);
        }
        g.fillOval(me.getX(), me.getY(), pointerSize, pointerSize);
    }

```

```
public void mouseMoved(MouseEvent me) {  
    }  
  
private void clearScreen() {  
    Graphics g = getGraphics();  
    g.setColor(getBackground());  
    g.fillRect(0, 0, getWidth(), getHeight());  
}  
  
private void increaseSize() {  
    if (pointerSize < 50) {  
        pointerSize += 5;  
    }  
}  
  
private void decreaseSize() {  
    if (pointerSize > 5) {  
        pointerSize -= 5;  
    }  
}  
}
```

Screenshots:



