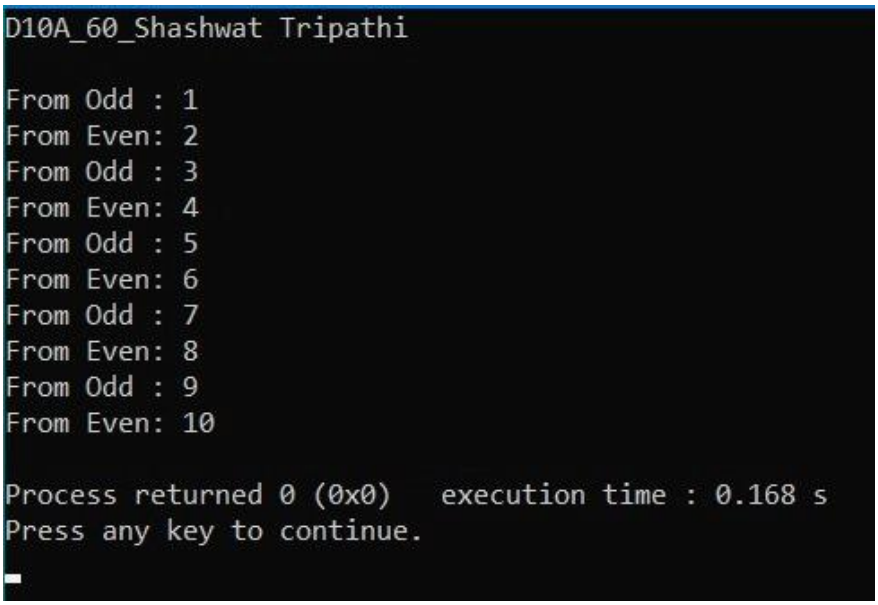
Program 4.2:

Code:

```
package com.shashwat;

import java.lang.Thread;
class myThread1 extends Thread{
    public void run(){
        for(int i=0; i<=10; i+=2){
            System.out.println("From Even: "+i);
             try {
                Thread.sleep(10);
                }

                catch(Exception e)
                {
                    System.out.println(e);
                }
        }
    }

}
class myThread2 extends Thread {
    public void run(){
        for(int i=1; i<=10; i+=2){
            System.out.println("From Odd : "+i);
             try {
                Thread.sleep(20);
                }
                catch(Exception e)
                {
                    System.out.println(e);
                }
        }
    }

}
class exp8 {
    public static void main(String[] args) {
        System.out.println("D10A_60_Shashwat Tripathi\n");
        myThread1 t1 = new myThread1();
        myThread2 t2 = new myThread2();
        t1.start();
        t2.start();
    }
}
```

Output:



Program 4.3:

Code:

```
package com.shashwat;
import java.util.*;

class Bank {
    int total = 10000;
    void withdrawn(String name, int withdrawal)
    {
        if (total >= withdrawal) {
            System.out.println(name + " withdrawn "
                    + withdrawal);
            total = total - withdrawal;
            System.out.println("Balance after withdrawal: "
                    + total);
            try {
                Thread.sleep(1000);
            }
            catch (InterruptedException e) {
                e.printStackTrace();
            }
        }
        else {
            System.out.println(name
                    + " you can not withdraw "
                    + withdrawal);
            System.out.println("your balance is: " + total);
            try {
                Thread.sleep(1000);
            }
            catch (InterruptedException e) {
                e.printStackTrace();
            }
        }
    }
    void deposit(String name, int deposit)
    {
        System.out.println(name + " deposited " + deposit);
        total = total + deposit;
        System.out.println("Balance after deposit: "
                + total);
        try {
            Thread.sleep(2000);
        }
        catch (InterruptedException e) {
            e.printStackTrace();
        }
    }
}
class bankInfo {
    public static void main(String[] args)
    {
        System.out.println("D10A_60_Shashwat Tripathi\n");
        Bank obj = new Bank();
        obj.withdrawn("John", 200);
        obj.withdrawn("Joe", 360);
    }
}
```

Output:

```
"C:\Program Files\Java\jdk-15.0.2\bin\java.exe"
D10A_60_Shashwat Tripathi

John withdrawn 200
Balance after withdrawal: 9800
Joe withdrawn 360
Balance after withdrawal: 9440

Process finished with exit code 0
```

Program 5.1:

Code:

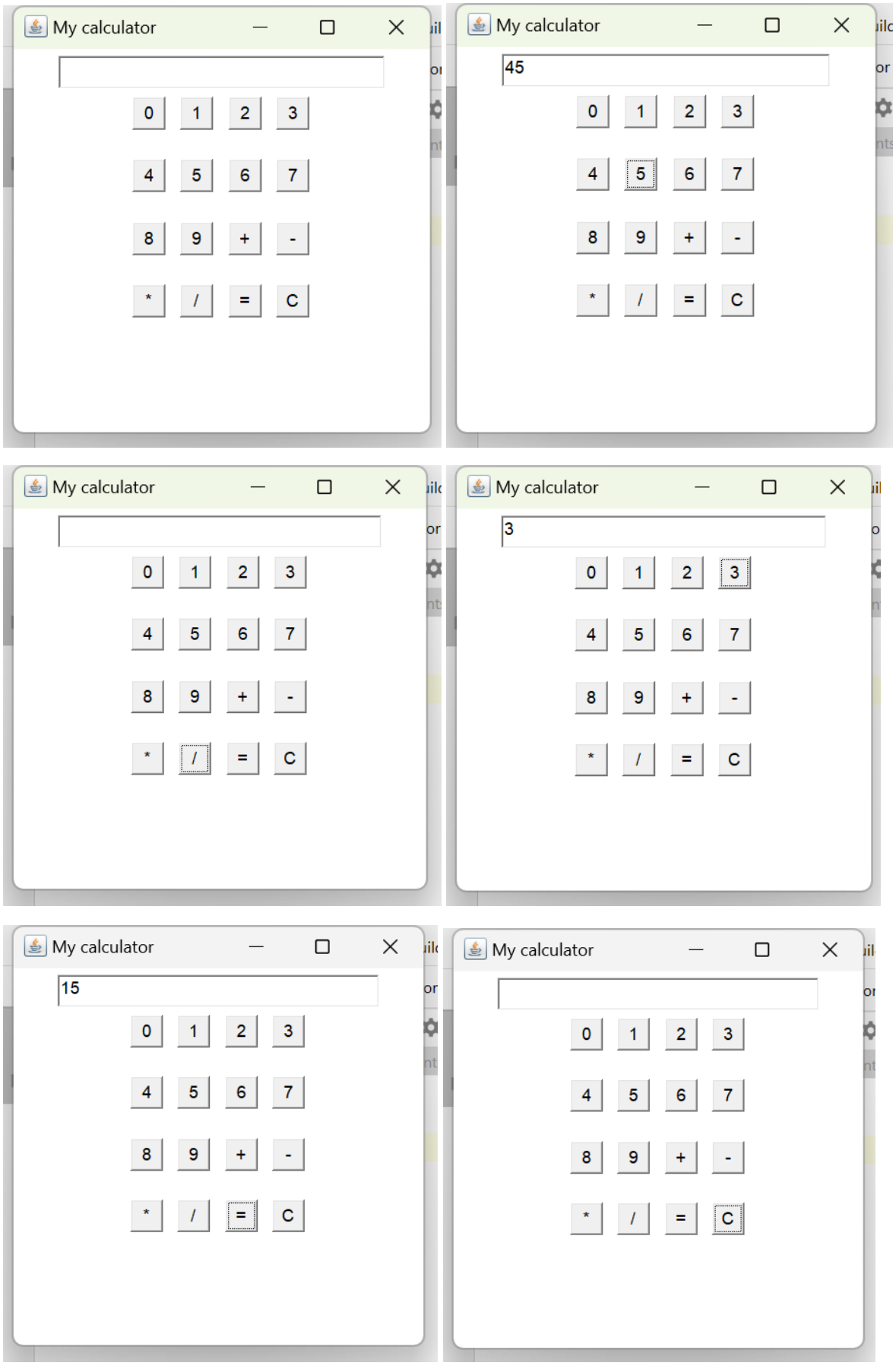
```
package com.shashwat;

import javax.swing.*;
import java.awt.*;
import java.awt.event.*;
public class calculator implements ActionListener
{
    int c,n;
    String s1,s2,s3,s4,s5;
    Frame f;
    Button b1,b2,b3,b4,b5,b6,b7,b8,b9,b10,b11,b12,b13,b14,b15,b16,b17;
    Panel p;
    TextField tf;
    GridLayout g;
    calculator()
    {
        f = new Frame("My calculator");
        f.setLayout(new FlowLayout());
        p = new Panel();

        //Assigning buttons
        b1 = new Button("0");
        b1.addActionListener(this);
        b2 = new Button("1");
        b2.addActionListener(this);
        b3 = new Button("2");
        b3.addActionListener(this);
        b4 = new Button("3");
        b4.addActionListener(this);
        b5 = new Button("4");
        b5.addActionListener(this);
        b6 = new Button("5");
        b6.addActionListener(this);
        b7 = new Button("6");
        b7.addActionListener(this);
        b8 = new Button("7");
        b8.addActionListener(this);
        b9 = new Button("8");
        b9.addActionListener(this);
        b10 = new Button("9");
        b10.addActionListener(this);
        b11 = new Button("+");
        b11.addActionListener(this);
        b12 = new Button("-");
        b12.addActionListener(this);
        b13 = new Button("*");
        b13.addActionListener(this);
        b14 = new Button("/");
        b14.addActionListener(this);
        b15 = new Button("=");
        b15.addActionListener(this);
        b16 = new Button("C");
        b16.addActionListener(this);
        //Text field to display
        tf = new TextField(20);
        f.add(tf);
        //Setting the layout
        g = new GridLayout(4,4,10,20);
        p.setLayout(g);
        //Adding buttons to it

p.add(b1);p.add(b2);p.add(b3);p.add(b4);p.add(b5);p.add(b6);p.add(b7);p.add(b8);p.add(b9)
;
        p.add(b10);p.add(b11);p.add(b12);p.add(b13);p.add(b14);p.add(b15);p.add(b16);
        f.add(p); f.setSize(300,300);  f.setVisible(true);
    }
    public void actionPerformed(ActionEvent e)
```

```
{
    //Performing calculations
    if(e.getSource()==b1)
    {
        s3 = tf.getText();
        s4 = "0";
        s5 = s3+s4;
        tf.setText(s5);
    }
    if(e.getSource()==b2)
    {
        s3 = tf.getText();
        s4 = "1";
        s5 = s3+s4;
        tf.setText(s5);
    }
    if(e.getSource()==b3)
    {
        s3 = tf.getText();
        s4 = "2";
        s5 = s3+s4;
        tf.setText(s5);
    }
    if(e.getSource()==b4)
    {
        s3 = tf.getText();
        s4 = "3";
        s5 = s3+s4;
        tf.setText(s5);
    }
    if(e.getSource()==b5)
    {
        s3 = tf.getText();
        s4 = "4";
        s5 = s3+s4;
        tf.setText(s5);
    }
    if(e.getSource()==b6)
    {
        s3 = tf.getText();
        s4 = "5";
        s5 = s3+s4;
        tf.setText(s5);
    }
    if(e.getSource()==b7)
    {
        s3 = tf.getText();
        s4 = "6";
        s5 = s3+s4;
        tf.setText(s5);
    }
    if(e.getSource()==b8)
    {
        s3 = tf.getText();
        s4 = "7";
        s5 = s3+s4;
        tf.setText(s5);
    }
    if(e.getSource()==b9)
    {
        s3 = tf.getText();
        s4 = "8";
        s5 = s3+s4;
        tf.setText(s5);
    }
    if(e.getSource()==b10)
    {
        s3 = tf.getText();
        s4 = "9";
        s5 = s3+s4;
        tf.setText(s5);
```

```
    }
    if(e.getSource()==b11)
    {
        s1 = tf.getText();
        tf.setText("");
        c=1;
    }
    if(e.getSource()==b12)
    {
        s1 = tf.getText();
        tf.setText("");
        c=2;
    }
    if(e.getSource()==b13)
    {
        s1 = tf.getText();
        tf.setText("");
        c=3;
    }
    if(e.getSource()==b14)
    {
        s1 = tf.getText();
        tf.setText("");
        c=4;
    }
    if(e.getSource()==b15)
    {
        s2 = tf.getText();
        if(c==1)
        {
            n = Integer.parseInt(s1)+Integer.parseInt(s2);
            tf.setText(String.valueOf(n));
        }
        else
        if(c==2)
        {
            n = Integer.parseInt(s1)-Integer.parseInt(s2);
            tf.setText(String.valueOf(n));
        }
        else
        if(c==3)
        {
            n = Integer.parseInt(s1)*Integer.parseInt(s2);
            tf.setText(String.valueOf(n));
        }
        if(c==4)
        {
            try
            {
                int p=Integer.parseInt(s2);
                if(p!=0)
                {
                    n = Integer.parseInt(s1)/Integer.parseInt(s2);
                    tf.setText(String.valueOf(n));
                }
                else
                    tf.setText("infinite");
            }
            catch(Exception i){}
        }
        if(c==5)
        {
            n = Integer.parseInt(s1)%Integer.parseInt(s2);
            tf.setText(String.valueOf(n));
        }
    }
    if(e.getSource()==b16)
    {
        tf.setText("");
    }
}
```

```
    public static void main(String[] abc)
    {
        calculator v = new calculator();
    }
}
```

Output:



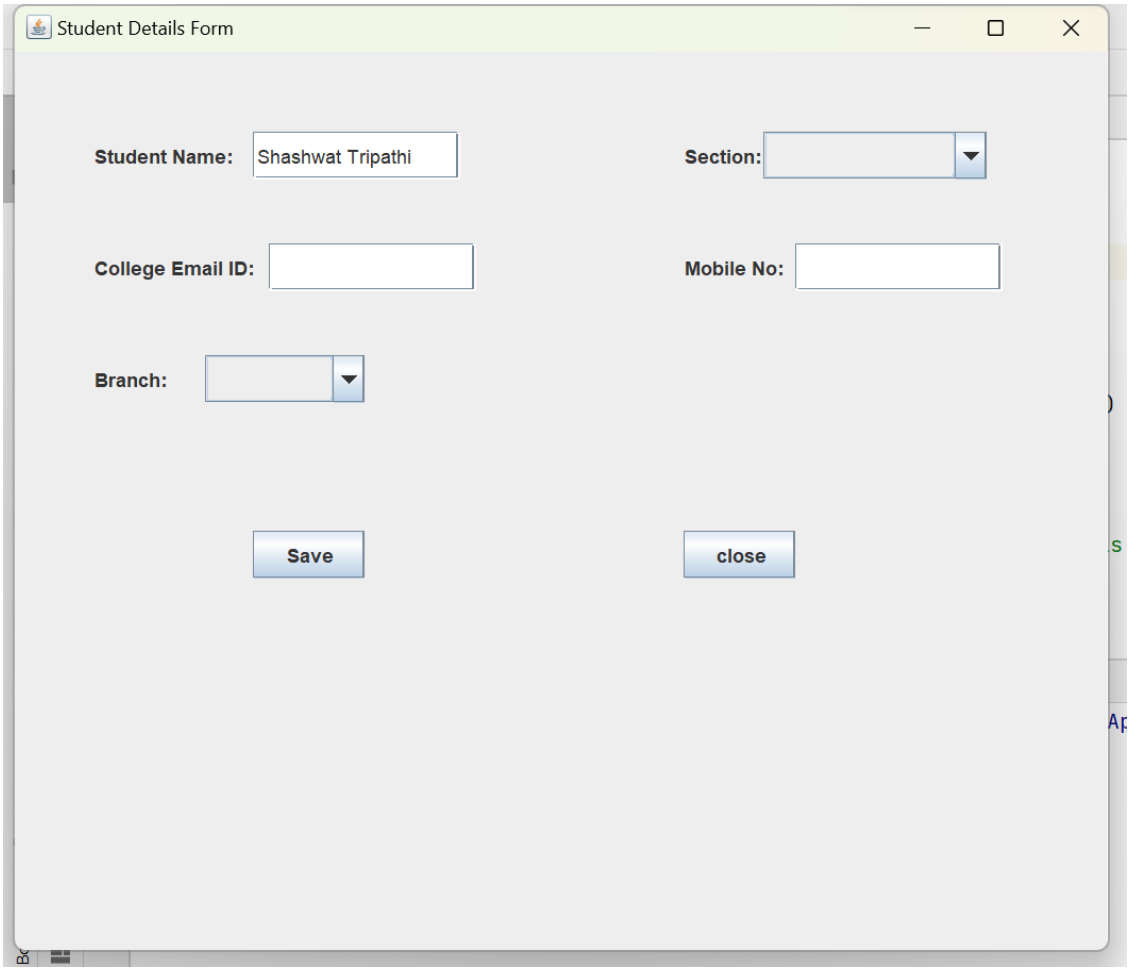
Program 5.2:

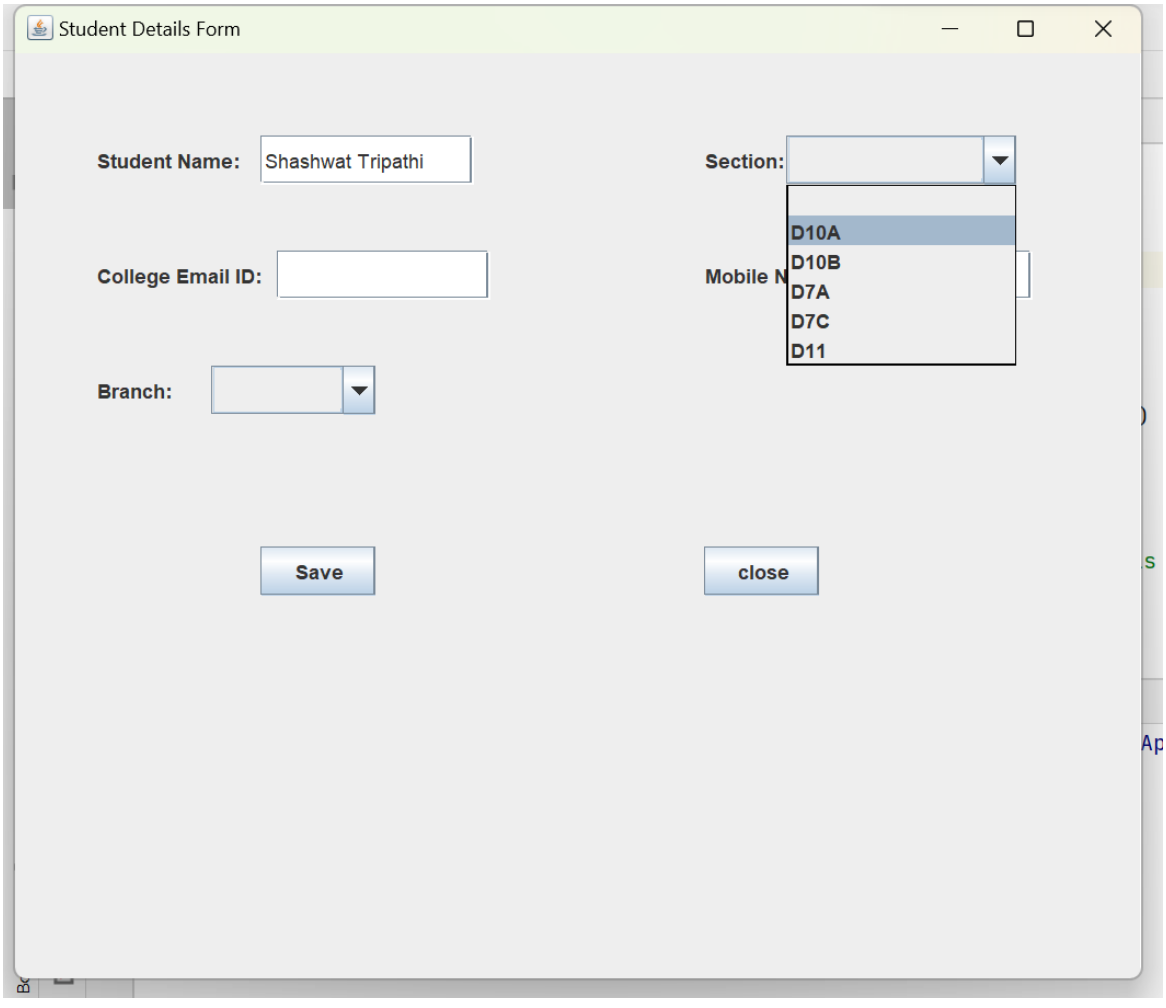
Code:

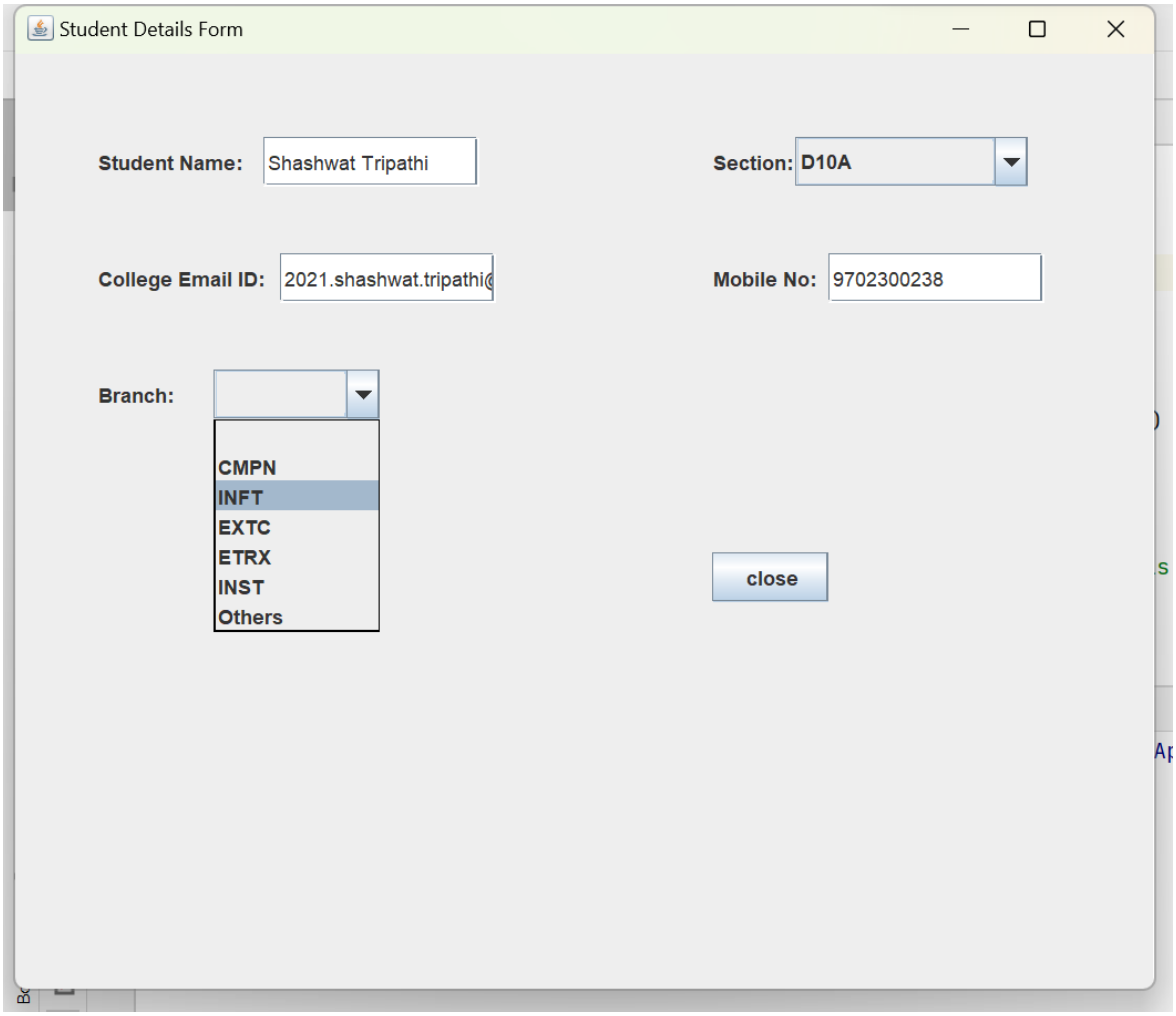
```
package com.shashwat;
import javax.swing.*;
import java.awt.event.*;
import java.io.*;

public class student {

    public static void StudentInfo()
    {
        JFrame f
                = new JFrame(
                "Student Details Form");

        JLabel l1, l2, l3, l4, l5;
        JTextField t1, t2, t3;

        JComboBox j1, j2;
        JButton b1, b2;

        l1 = new JLabel("Student Name:");
        l1.setBounds(50, 50, 100, 30);
        l2 = new JLabel("College Email ID:");
        l2.setBounds(50, 120, 120, 30);
        l3 = new JLabel("Branch:");
        l3.setBounds(50, 190, 50, 30);
        l4 = new JLabel("Section:");
        l4.setBounds(420, 50, 70, 30);
        l5 = new JLabel("Mobile No:");
        l5.setBounds(420, 120, 70, 30);

        t1 = new JTextField();
        t1.setBounds(150, 50, 130, 30);
        t2 = new JTextField();
        t2.setBounds(160, 120, 130, 30);
        t3 = new JTextField();
        t3.setBounds(490, 120, 130, 30);

        String s1[]
                = { " ", "CMPN", "INFT", "EXTC",
                "ETRX", "INST", "Others" };
        String s2[]
                = { " ", "D10A", "D10B",
                "D7A", "D7C",
                "D11" };

        j1 = new JComboBox(s1);
        j1.setBounds(120, 190, 100, 30);
        j2 = new JComboBox(s2);
        j2.setBounds(470, 50, 140, 30);

        b1 = new JButton("Save");
        b1.setBounds(150, 300, 70, 30);
        b2 = new JButton("close");
        b2.setBounds(420, 300, 70, 30);

        b1.addActionListener(new ActionListener() {
            public void actionPerformed(ActionEvent e)
            {
                String s1 = t1.getText();
                String s2 = t2.getText();
                String s3 = j1.getSelectedItem() + "";
                String s4 = j2.getSelectedItem() + "";
                String s5 = t3.getText();
                if (e.getSource() == b1) {
                    try {
                        FileWriter w
                                = new FileWriter(
```

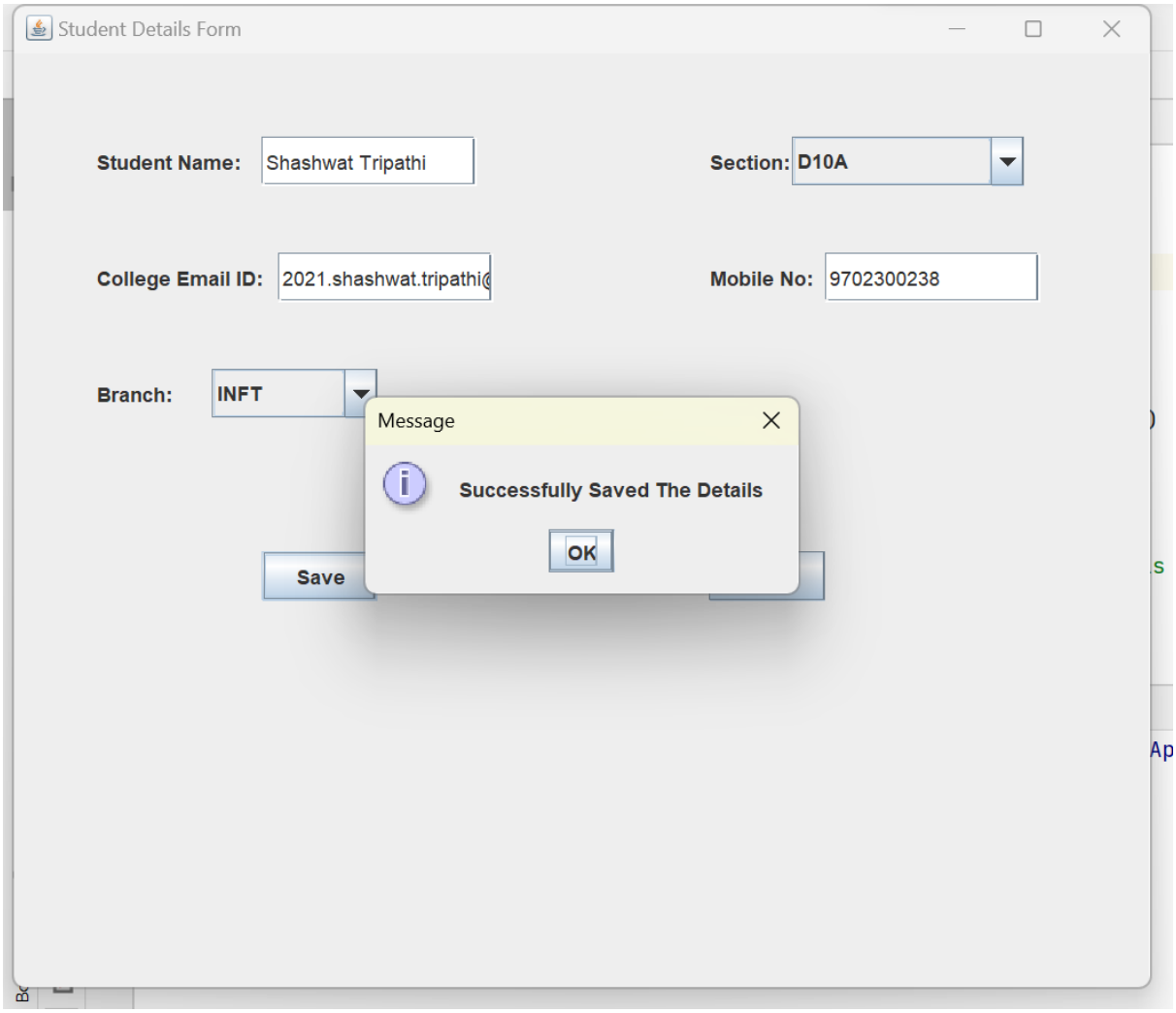
```
                                "GFG.txt", true);

                        w.write(s1 + "\n");
                        w.write(s2 + "\n");
                        w.write(s3 + "\n");
                        w.write(s4 + "\n");
                        w.write(s5 + "\n");
                        w.close();
                    }
                    catch (Exception ae) {
                        System.out.println(ae);
                    }
                }

                JOptionPane
                        .showMessageDialog(
                                f,
                                "Successfully Saved"
                                        + " The Details");
            }
        });

        b2.addActionListener(new ActionListener() {
            public void actionPerformed(ActionEvent e)
            {
                f.dispose();
            }
        });

        f.addWindowListener(new WindowAdapter() {
            public void windowClosing(WindowEvent e)
            {
                System.exit(0);
            }
        });

        f.add(l1);
        f.add(t1);
        f.add(l2);
        f.add(t2);
        f.add(l3);
        f.add(j1);
        f.add(l4);
        f.add(j2);
        f.add(l5);
        f.add(t3);
        f.add(b1);
        f.add(b2);
        f.setLayout(null);
        f.setSize(700, 600);
        f.setVisible(true);
    }

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

Output:


Student Details Form
Student Name:
Shashwat Tripathi
Section:
College Email ID:
Mobile No:
Branch:
Save
close


Student Details Form
Student Name:
Shashwat Tripathi
Section:
D10A
D10B
D7A
D7C
D11
College Email ID:
Branch:
Save
close


Student Details Form
Student Name:
Shashwat Tripathi
Section:
D10A
College Email ID:
2021.shashwat.tripathi@
Mobile No:
9702300238
Branch:
CMPN
INFT
EXTC
ETRX
INST
Others
close

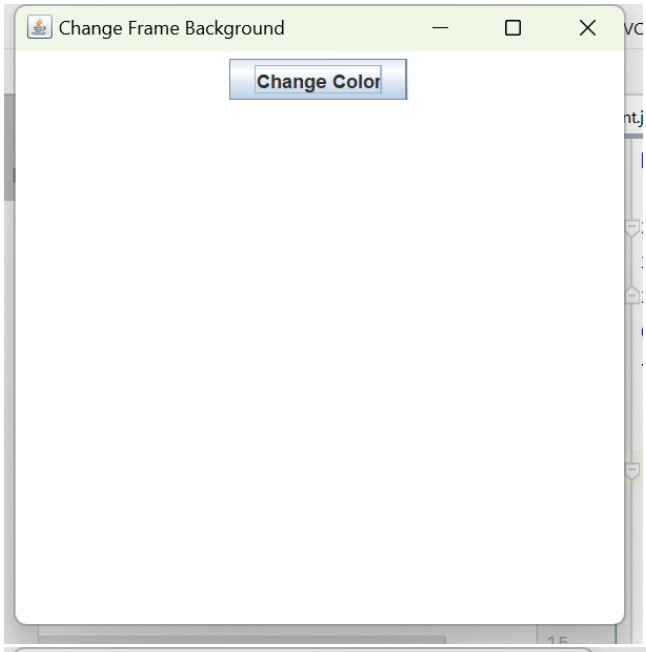

Student Details Form
Student Name:
Shashwat Tripathi
Section:
D10A
College Email ID:
2021.shashwat.tripathi@
Mobile No:
9702300238
Branch:
INFT
Message
Successfully Saved The Details
OK
Save

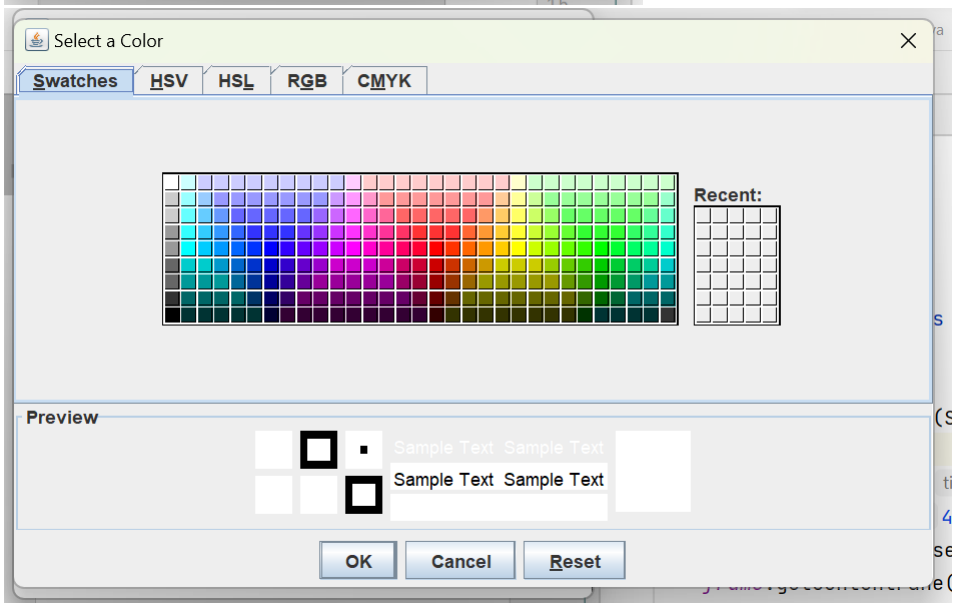
Program 5.3:

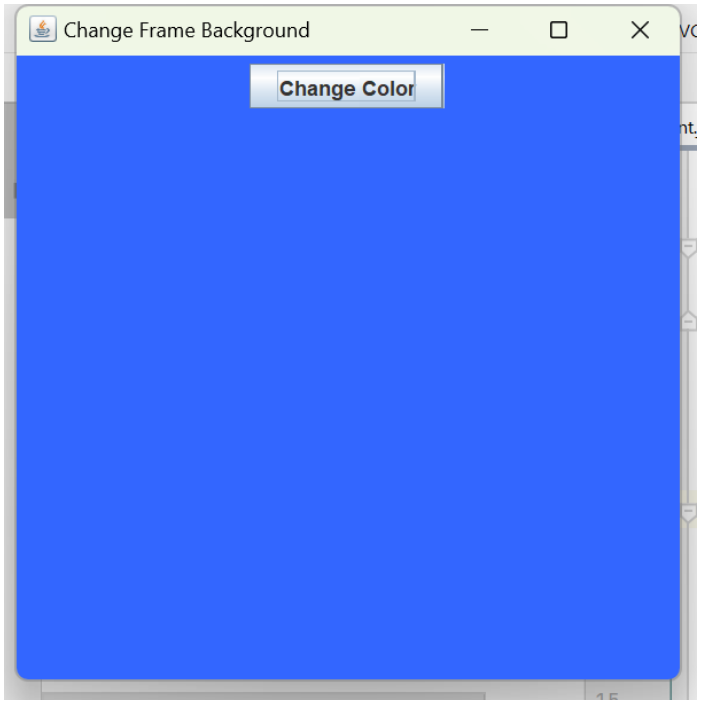
Code:

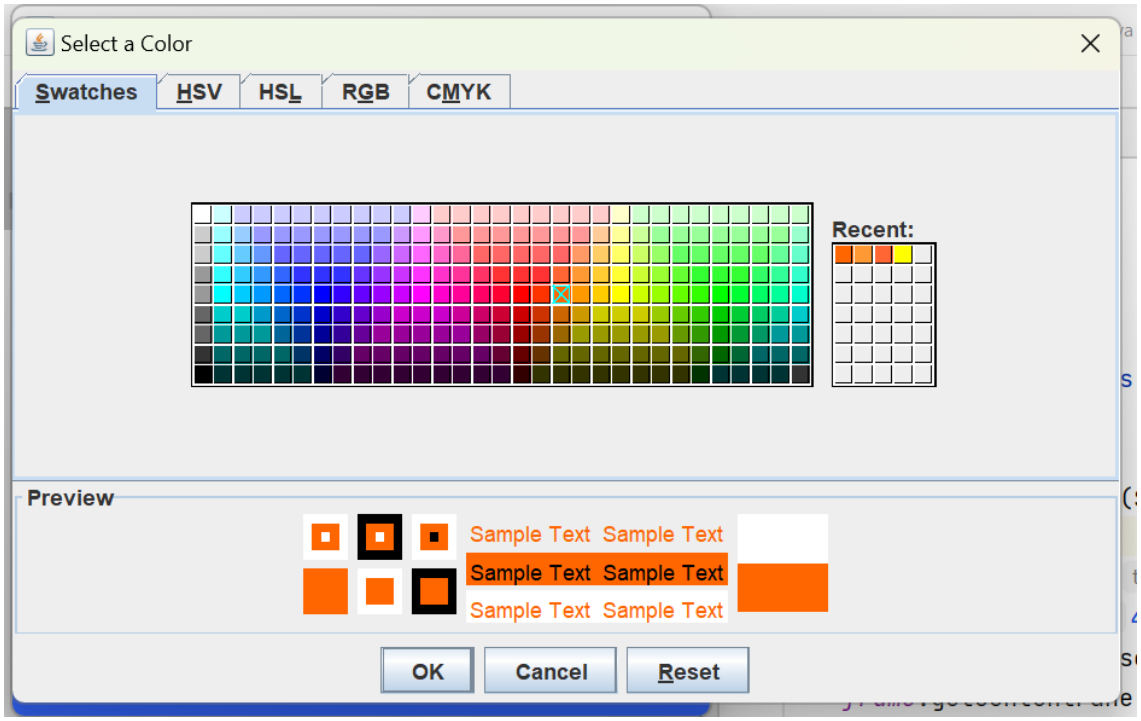
```
package com.shashwat;

import javax.swing.*;
import java.awt.*;
import java.awt.event.*;
class Frame_Color implements ActionListener
{
    static JFrame frame;
    public static void main(String args[])
    {
        frame = new JFrame("Change Frame Background");
        frame.setSize(400,400);
        frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        frame.getContentPane().setBackground(Color.white);
        frame.setLayout(new FlowLayout());
        Frame_Color obj = new Frame_Color();
        JButton button = new JButton("Change Color");
        button.addActionListener(obj);
        frame.add(button);
        frame.setVisible(true);
    }

    public void actionPerformed(ActionEvent e)
    {
        JColorChooser color_box= new JColorChooser();
        Color color=color_box.showDialog(frame,"Select a Color",Color.white);
        frame.getContentPane().setBackground(color);
    }
}
```

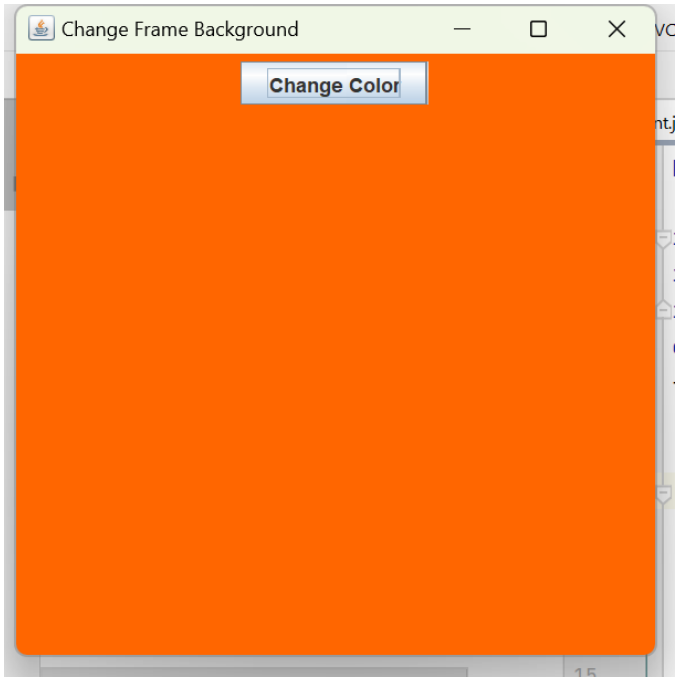
Output:

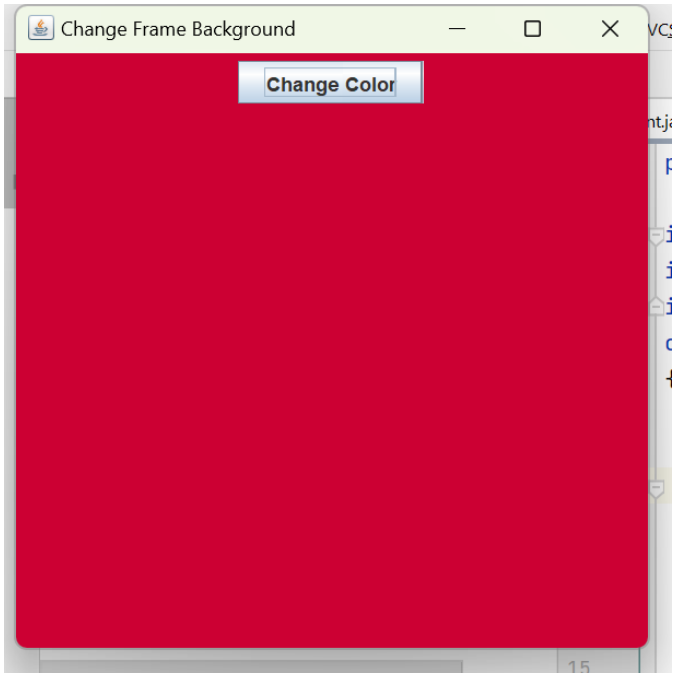

Change Frame Background
Change Color

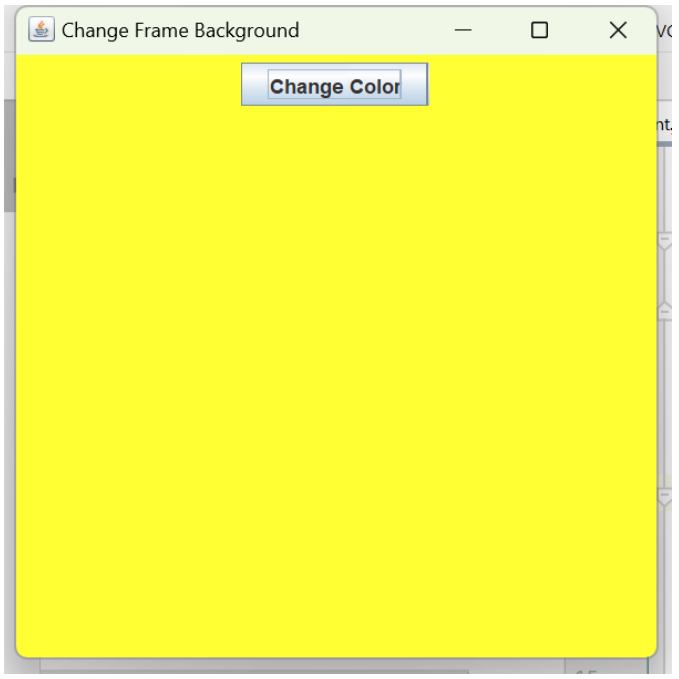

Select a Color
Swatches
HSV
HSL
RGB
CMYK
Recent:
Preview
Sample Text Sample Text
Sample Text Sample Text
OK
Cancel
Reset

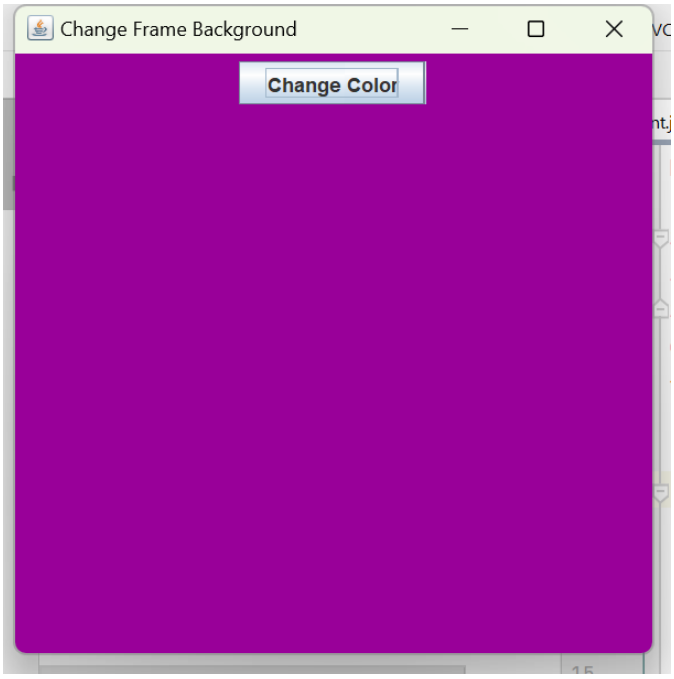

Change Frame Background
Change Color


Select a Color
Swatches
HSV
HSL
RGB
CMYK
Recent:
Preview
Sample Text Sample Text
Sample Text Sample Text
Sample Text Sample Text
OK
Cancel
Reset


Change Frame Background
Change Color


Change Frame Background
Change Color


Change Frame Background
Change Color


Change Frame Background
Change Color