JAVA PROGRAMMING LAB (ETCS – 357)

LAB-9

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EXPERIMENT 9.1

AIM : WAP that illustrates how to process mouse click, enter, exit, press and release events. The background color changes when the mouse is entered, clicked, pressed, released or exited.

Theory :

Class : A class is a group of objects which have common properties. It is a template or blueprint from which objects are created. It is a logical entity. It can't be physical. It represents the set of properties or methods that are common to all objects of one type. A class in java has its methods, variables.

Java MouseListener Interface : The Java MouseListener is notified whenever you change the state of mouse. It is notified against MouseEvent. The MouseListener interface is found in java.awt.event package. It has five methods.

Methods of MouseListener interface

The signature of 5 methods found in MouseListener interface are given below:

1. public abstract void mouseClicked(MouseEvent e);
2. public abstract void mouseEntered(MouseEvent e);
3. public abstract void mouseExited(MouseEvent e);
4. public abstract void mousePressed(MouseEvent e);
5. public abstract void mouseReleased(MouseEvent e);

Java Swing : It is a part of Java Foundation Classes (JFC) that is *used to create window-based applications*. It is built on the top of AWT (Abstract Windowing Toolkit) API and entirely written in java. Unlike AWT, Java Swing provides platform-independent and lightweight components. The javax.swing package provides classes for java swing API such as JButton, JTextField, JTextArea, JRadioButton, JCheckbox, JMenu, JColorChooser etc.

Java JFrame : The javax.swing.JFrame class is a type of container which inherits the java.awt.Frame class. JFrame works like the main window where components like labels, buttons, textfields are added to create a GUI . Unlike Frame, JFrame has the option to hide or close the window with the help of setDefaultCloseOperation(int) method.

Source Code :

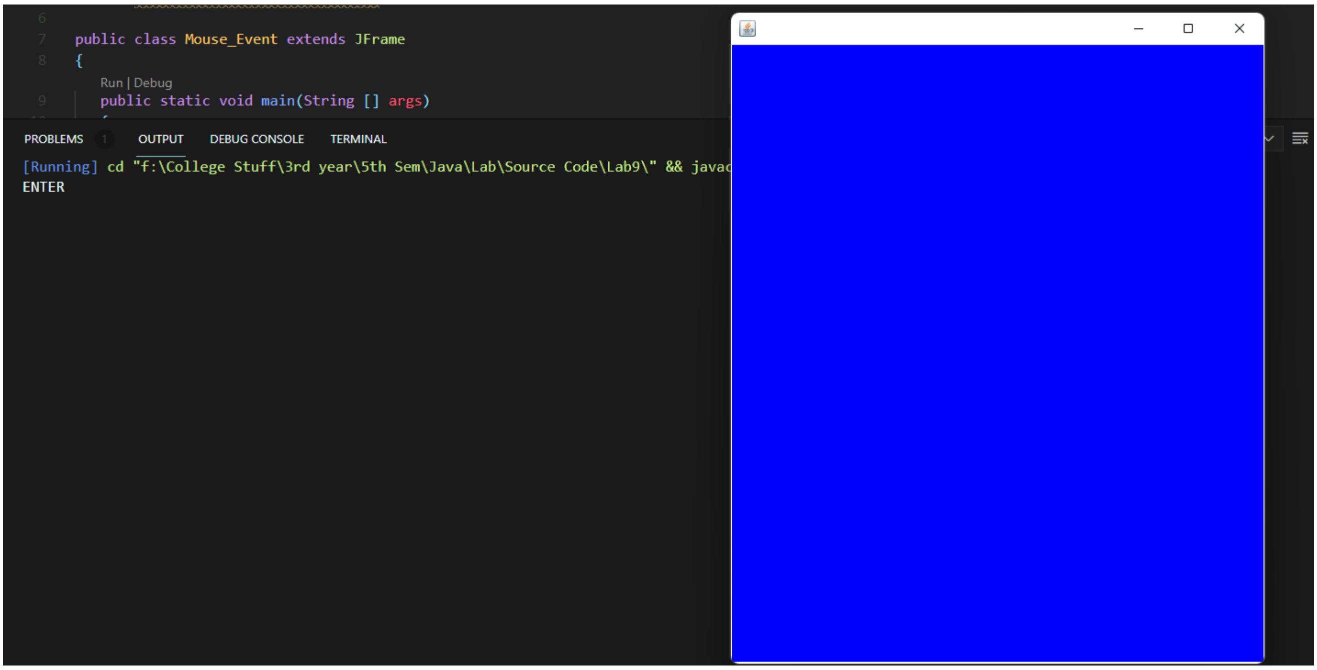
```
import java.awt.event.MouseListener;
import java.awt.event.MouseEvent;
import java.awt.Color;
import javax.swing.JFrame;
import java.awt.event.ActionListener;

public class Mouse_Event extends JFrame
{
   public static void main(String [] args)
   {
      JFrame frame=new JFrame();
      final int FRAME_WIDTH=500;
      final int FRAME_HEIGHT=600;
      frame.setSize(FRAME_WIDTH,FRAME_HEIGHT);
      frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
      frame.setVisible(true);

      class MouseEnterExitListener implements MouseListener
      {
         public void mouseEntered(MouseEvent event)
      {
         System.out.println("ENTER");
         frame.getContentPane().setBackground(Color.BLUE);
      }
      public void mouseExited(MouseEvent event)
         {
         System.out.println("EXIT");
         frame.getContentPane().setBackground(Color.RED);
         }
      public void mouseReleased(MouseEvent event) {
         System.out.println("RELEASED");
         frame.getContentPane().setBackground(Color.GREEN);
      }
      public void mouseClicked(MouseEvent event) {
         System.out.println("CLICKED");
         frame.getContentPane().setBackground(Color.BLACK);
      }
      public void mousePressed(MouseEvent event) {
         System.out.println("PRESSED");
         frame.getContentPane().setBackground(Color.YELLOW);
      }
      }
      MouseListener listener = new MouseEnterExitListener();
      frame.addMouseListener(listener);
   }
}
```

Output :

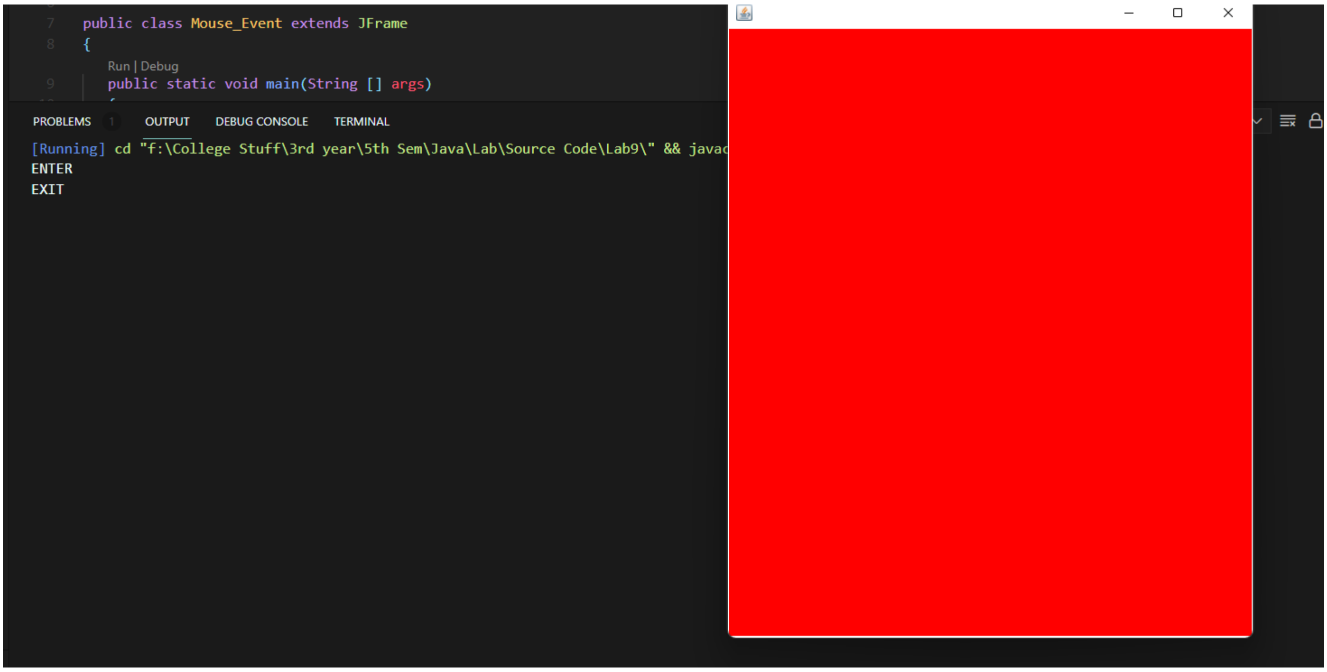
On Mouse Entering



```
public class Mouse_Event extends JFrame
{
    Run | Debug
    public static void main(String [] args)
```

```
[Running] cd "f:\College Stuff\3rd year\5th Sem\Java\Lab\Source Code\Lab9\" && javac
ENTER
```

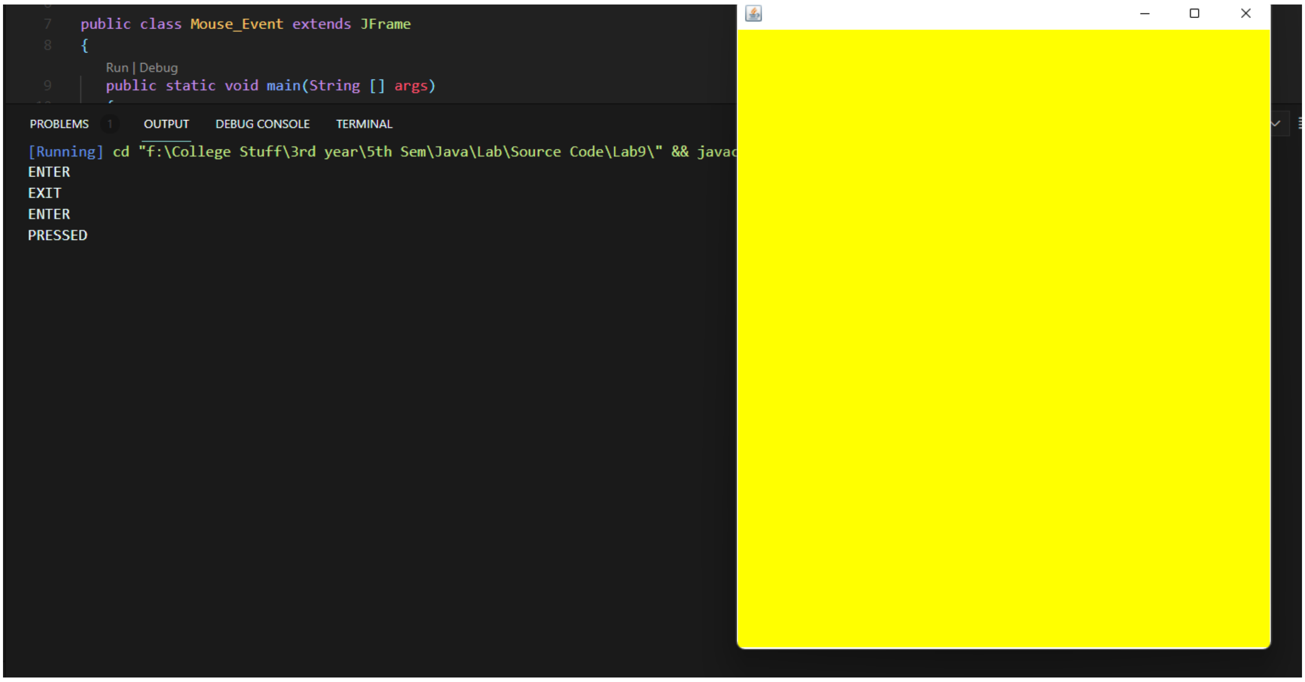
On Mouse Exiting



```
public class Mouse_Event extends JFrame
{
    Run | Debug
    public static void main(String [] args)
```

```
[Running] cd "f:\College Stuff\3rd year\5th Sem\Java\Lab\Source Code\Lab9\" && javac
ENTER
EXIT
```

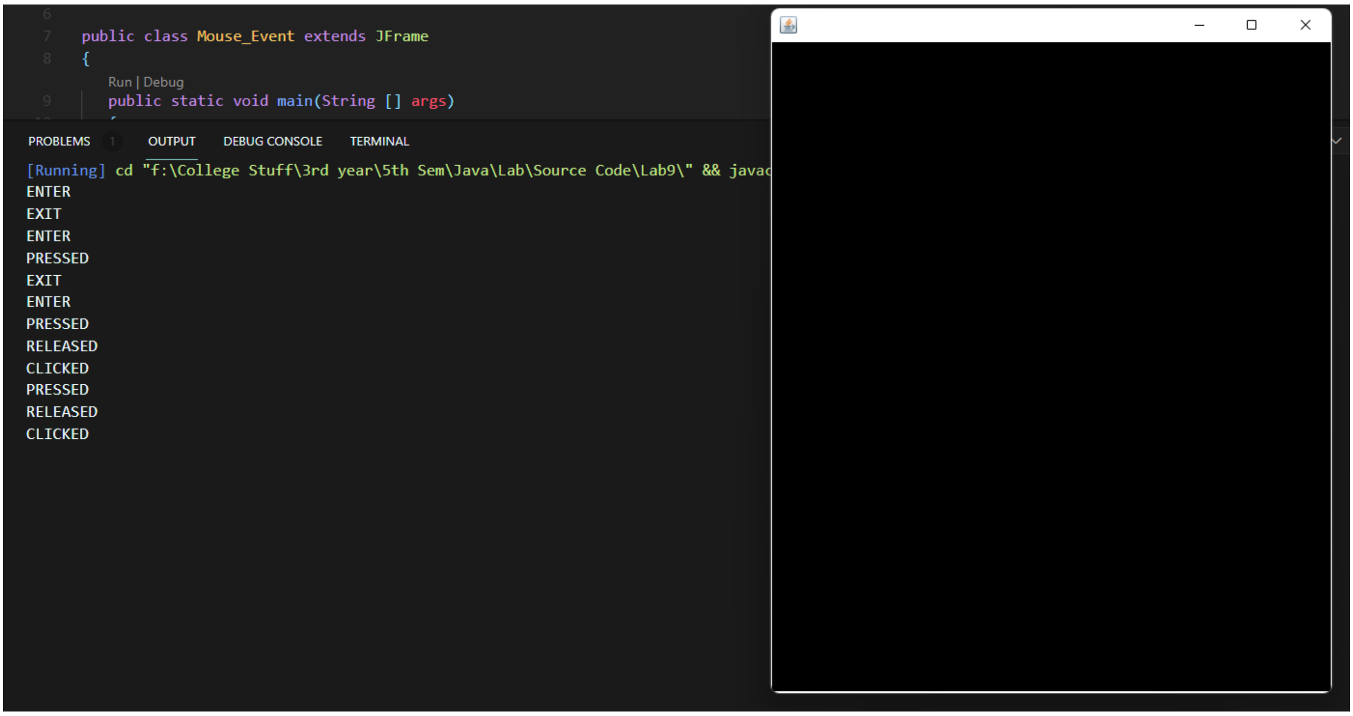
On Mouse Press



```
public class Mouse_Event extends JFrame
{
    public static void main(String [] args)
```

```
[Running] cd "f:\College Stuff\3rd year\5th Sem\Java\Lab\Source Code\Lab9\" && javac
ENTER
EXIT
ENTER
PRESSED
```

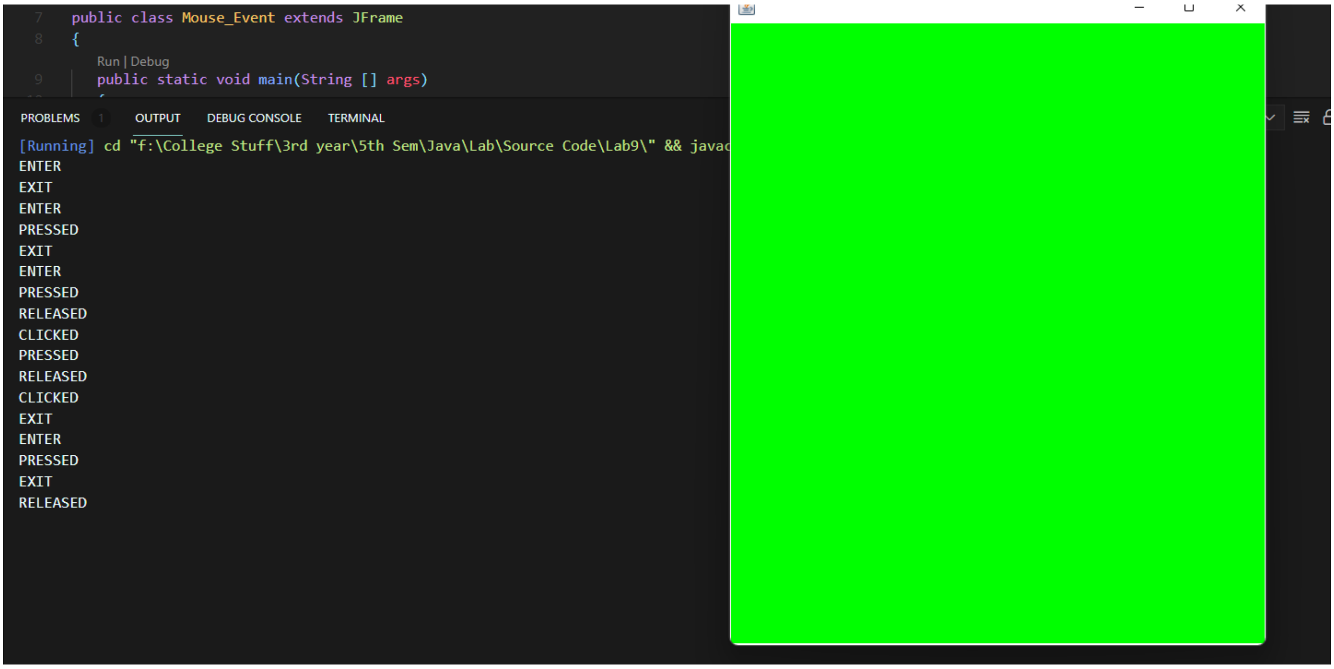
On Mouse Click



```
public class Mouse_Event extends JFrame
{
    public static void main(String [] args)
```

```
[Running] cd "f:\College Stuff\3rd year\5th Sem\Java\Lab\Source Code\Lab9\" && javac
ENTER
EXIT
ENTER
PRESSED
EXIT
ENTER
PRESSED
RELEASED
CLICKED
PRESSED
RELEASED
CLICKED
```

On Mouse Release



```
public class Mouse_Event extends JFrame
{
    public static void main(String [] args)
```

```
[Running] cd "f:\College Stuff\3rd year\5th Sem\Java\Lab\Source Code\Lab9\" && javac
ENTER
EXIT
ENTER
PRESSED
EXIT
ENTER
PRESSED
RELEASED
CLICKED
PRESSED
RELEASED
CLICKED
EXIT
ENTER
PRESSED
EXIT
RELEASED
```

EXPERIMENT 9.2

AIM : WAP that displays your name whenever the mouse is clicked

Theory :

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4. public abstract void mousePressed(MouseEvent e);
5. public abstract void mouseReleased(MouseEvent e);

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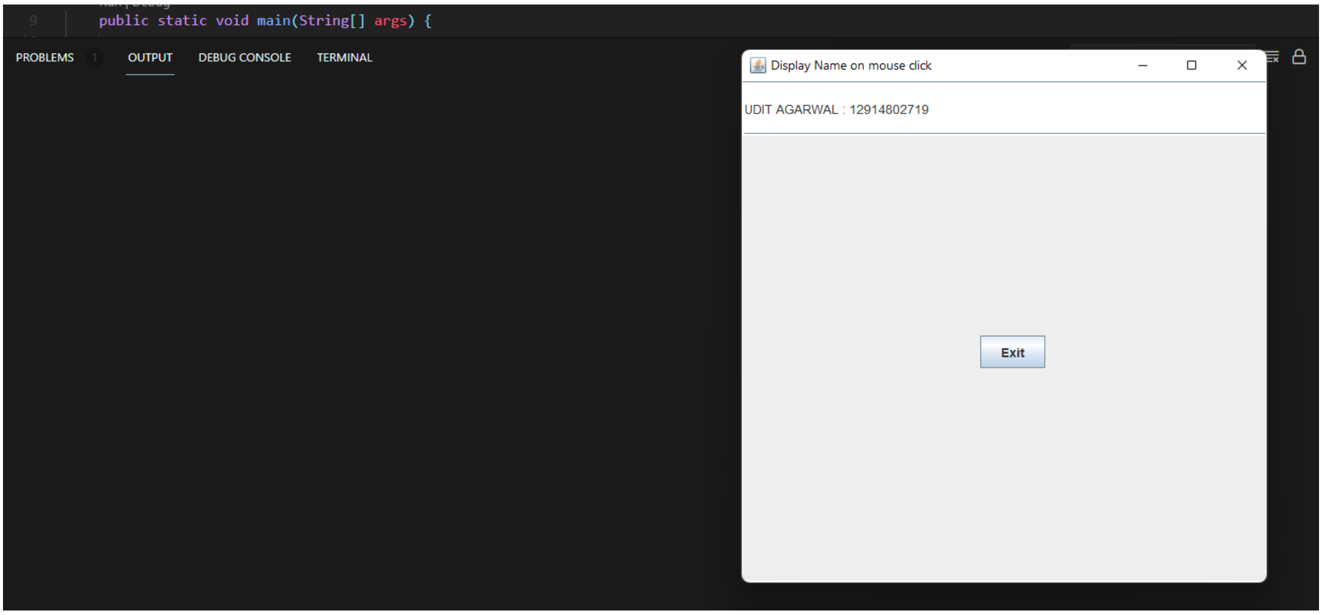
Java JFrame : The javax.swing.JFrame class is a type of container which inherits the java.awt.Frame class. JFrame works like the main window where components like labels, buttons, textfields are added to create a GUI . Unlike Frame, JFrame has the option to hide or close the window with the help of setDefaultCloseOperation(int) method.

Source Code :

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

public class Mouse_click implements MouseListener,
ActionListener {
    static JFrame frame;
    static JTextField text;

    public static void main(String[] args) {

        frame = new JFrame("Display Name on mouse click");
        frame.setBackground(Color.white);
        frame.setSize(500, 500);
        frame.setLayout(null);
        text = new JTextField();
        text.setBounds(0, 0, 500, 50);
        frame.add(text);
        JButton exit = new JButton("Exit");
        exit.setBounds(220, 235, 60, 30);
        frame.add(exit);
        Mouse_click obj = new Mouse_click();
        frame.addMouseListener(obj);
        exit.addActionListener(obj);
        frame.setVisible(true);
    }
    @Override
    public void actionPerformed(ActionEvent e) {
        frame.dispose();
    }

    @Override
    public void mouseEntered(MouseEvent e) {
        text.setText("");
    }
    @Override
    public void mouseExited(MouseEvent e) {
        text.setText("");
    }
    @Override
    public void mouseReleased(MouseEvent e) {
        text.setText("");
    }
    @Override
    public void mousePressed(MouseEvent e) {
        text.setText("");
    }
    @Override
    public void mouseClicked(MouseEvent e) {
        text.setText("");
        text.setText("UDIT AGARWAL : 12914802719");
    }
}
```

Output :

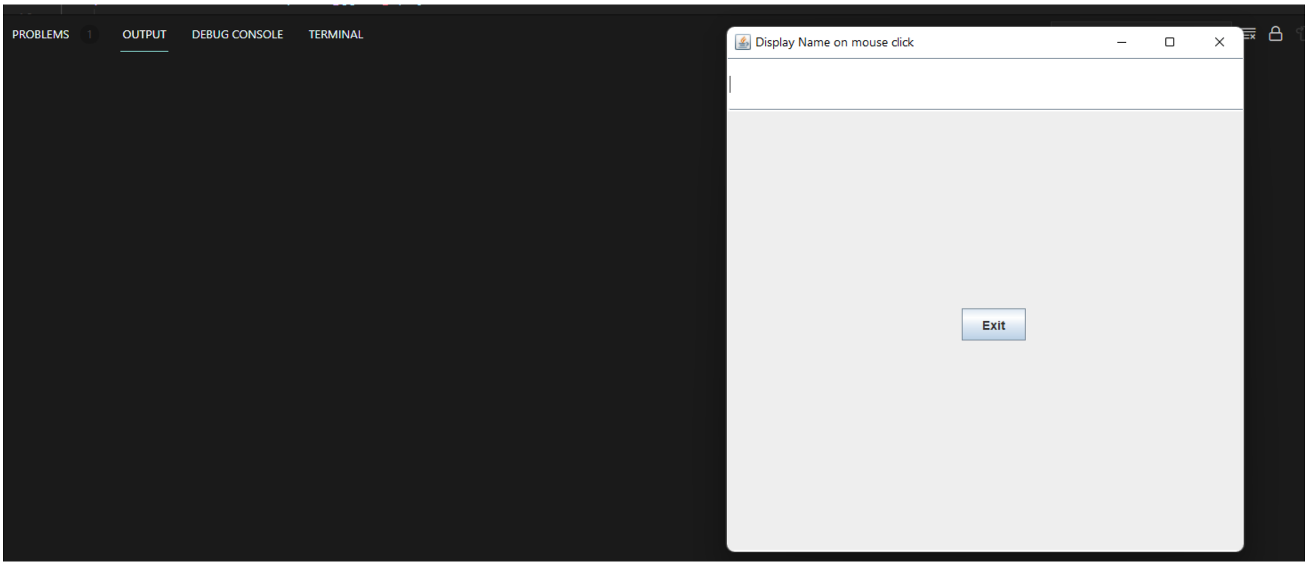
On Mouse Click :



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

```
UDIT AGARWAL : 12914802719
```

Without Mouse Click :



VIVA QUESTIONS :

Q1) Difference between Swing and Awt?

Ans AWT are heavy-weight componenets. Swings are light-weight components. Hence swing works faster than AWT.

Q2). What Are The Different Types Of Controls In Awt?

Ans. The AWT supports the following types of controls:
Labels, Pushbuttons, Checkboxes, Choice lists, Lists, Scroll bars, Text componentsThese controls are subclasses of component.

Q3) What Are The Benefits Of Swing Over Awt?

Ans.

- Swing components are light weight.
- We can have a pluggable look and feel feature which shows us how they appear in other platforms.
- We can add images to Swing components. We have toolbars and tooltips in Swing.