

Objectives:

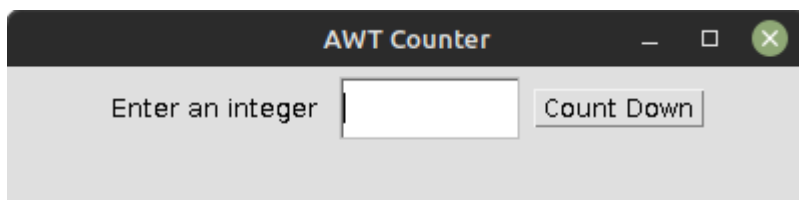
- To learn about AWT components
- To learn to handle different types of events
- To learn to build GUI using AWT components

Lab Activities:

1.

```
import java.awt.*;
import java.awt.event.*;
class AWTCounter {
    AWTCounter() {
        Frame frame = new Frame("AWT Counter");
        Label lbl = new Label("Enter an integer");
        TextField txtCount = new TextField(10);
        Button btnCount = new Button("Count Down");
        frame.add(lbl);
        frame.add(txtCount);
        frame.add(btnCount);
        frame.setSize(400, 100);
        frame.setLayout(new FlowLayout());
        frame.setVisible(true);
        btnCount.addActionListener(new ActionListener() {
            public void actionPerformed(ActionEvent e) {
                int count = Integer.parseInt(txtCount.getText());
                if (count < 0) {
                    count = 0;
                } else {
                    count++;
                }
                txtCount.setText("" + count);
            }
        });
    }
    public static void main(String[] args) {
        new AWTCounter();
    }
}
```

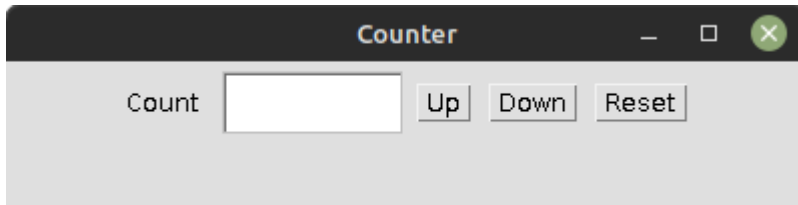
Output:



2.

```
import java.awt.*;
import java.awt.event.*;
public class CounterDemo {
    CounterDemo() {
        Frame frame = new Frame("Counter");
        Label lblCount = new Label("Count");
        TextField txtCount = new TextField(10);
        Button btnUp = new Button("Up");
        Button btnDown = new Button("Down");
        Button btnReset = new Button("Reset");
        frame.add(lblCount);
        frame.add(txtCount);
        frame.add(btnUp);
        frame.add(btnDown);
        frame.add(btnReset);
        frame.setSize(400, 100);
        frame.setLayout(new FlowLayout());
        frame.setVisible(true);
        btnUp.addActionListener(new ActionListener() {
            public void actionPerformed(ActionEvent e) {
                int count = Integer.parseInt(txtCount.getText());
                count++;
                txtCount.setText("" + count);
            }
        });
        btnDown.addActionListener(new ActionListener() {
            public void actionPerformed(ActionEvent e) {
                int count = Integer.parseInt(txtCount.getText());
                count--;
                txtCount.setText("" + count);
            }
        });
        btnReset.addActionListener(new ActionListener() {
            public void actionPerformed(ActionEvent e) {
                txtCount.setText("");
            }
        });
    }
    public static void main(String[] args) {
        new CounterDemo();
    }
}
```

Output:



3.

```
import java.awt.*;
import java.awt.event.*;
class ChooseColor {
    ChooseColor() {
        Frame frame = new Frame("Choose a color");
        Button btnRed = new Button("RED");
        Button btnGreen = new Button("GREEN");
        Button btnBlue = new Button("BLUE");
        Button btnClose = new Button("CLOSE");
        frame.add(btnRed);
        frame.add(btnGreen);
        frame.add(btnBlue);
        frame.add(btnClose);
        frame.setLayout(new FlowLayout());
        frame.setSize(400, 200);
        frame.setVisible(true);
        btnRed.addActionListener(new ActionListener() {
            public void actionPerformed(ActionEvent e) {
                frame.setBackground(Color.red);
            }
        });
        btnBlue.addActionListener(new ActionListener() {
            public void actionPerformed(ActionEvent e) {
                frame.setBackground(Color.blue);
            }
        });
        btnGreen.addActionListener(new ActionListener() {
            public void actionPerformed(ActionEvent e) {
                frame.setBackground(Color.green);
            }
        });
        btnClose.addActionListener(new ActionListener() {
            public void actionPerformed(ActionEvent e) {
                System.exit(0);
            }
        });
        btnBlue.setBackground(Color.LIGHT_GRAY);
        btnGreen.setBackground(Color.LIGHT_GRAY);
        btnRed.setBackground(Color.LIGHT_GRAY);
    }
}
```

```

        btnClose.setBackground(Color.LIGHT_GRAY);
    }

    public static void main(String[] args) {
        new ChooseColor();
    }
}

```

Output:



4.

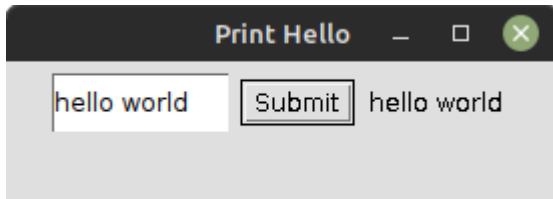
```

import java.awt.*;
import java.awt.event.*;
public class PrintHello {
    PrintHello() {
        Frame frame = new Frame("Print Hello");
        TextField txt = new TextField(10);
        Button btnSubmit = new Button("Submit");
        Label result = new Label("");
        frame.add(txt);
        frame.add(btnSubmit);
        frame.add(result);
        frame.setLayout(new FlowLayout());
        frame.setSize(400, 200);
        frame.setVisible(true);
        btnSubmit.addActionListener(new ActionListener() {
            public void actionPerformed(ActionEvent e) {
                result.setText(txt.getText());
            }
        });
    }

    public static void main(String[] args) {
        new PrintHello();
    }
}

```

Output:



5.

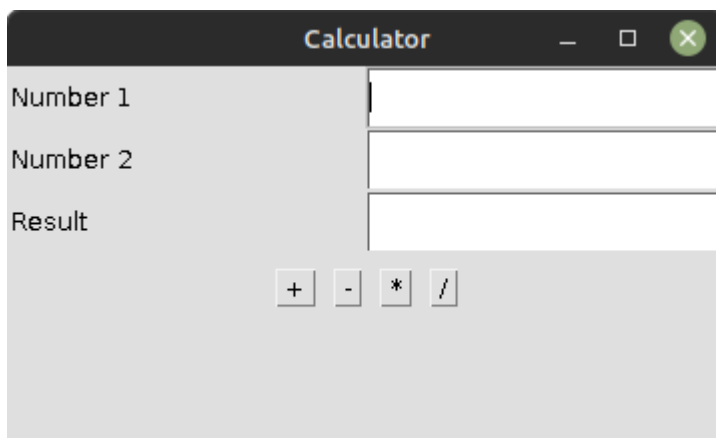
```
import java.awt.*;
import java.awt.event.*;
public class Calculator {
    Calculator() {
        Frame frame = new Frame("Calculator");
        Label l1 = new Label("Number 1");
        Label l2 = new Label("Number 2");
        Label l3 = new Label("Result");
        Panel panelUp = new Panel();
        Panel panelBtn = new Panel();
        TextField t1 = new TextField(10);
        TextField t2 = new TextField(10);
        TextField t3 = new TextField(10);
        Button btnAdd = new Button("+");
        Button btnSub = new Button("-");
        Button btnProduct = new Button("*");
        Button btnDiv = new Button("/");
        panelUp.add(l1);
        panelUp.add(t1);
        panelUp.add(l2);
        panelUp.add(t2);
        panelUp.add(l3);
        panelUp.add(t3);
        panelBtn.add(btnAdd);
        panelBtn.add(btnSub);
        panelBtn.add(btnProduct);
        panelBtn.add(btnDiv);
        panelUp.setLayout(new GridLayout(3, 2));
        panelBtn.setLayout(new FlowLayout());
        frame.add(panelUp);
        frame.add(panelBtn);
        frame.setLayout(new GridLayout(2, 1));
        frame.setSize(500, 400);
        frame.setVisible(true);
        btnAdd.addActionListener(new ActionListener() {
            public void actionPerformed(ActionEvent e) {
                int num1 = Integer.parseInt(t1.getText());
                int num2 = Integer.parseInt(t2.getText());
                int result = num1 + num2;
```

```

        t3.setText("" + result);
    }
});
btnSub.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent e) {
        t3.setText("" + (Integer.parseInt(t1.getText()) -
Integer.parseInt(t2.getText())));
    }
});
btnProduct.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent e) {
        t3.setText("" + (Integer.parseInt(t1.getText()) *
Integer.parseInt(t2.getText())));
    }
});
btnDiv.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent e) {
        t3.setText("" + (Integer.parseInt(t1.getText()) /
Integer.parseInt(t2.getText())));
    }
});
}
public static void main(String[] args) {
    new Calculator();
}
}

```

Output:



6.

```

import java.awt.*;
import java.awt.event.*;
public class Factorial {
    Factorial() {
        Frame frame = new Frame();
        Label lblNum = new Label("Number ");
    }
}

```

```

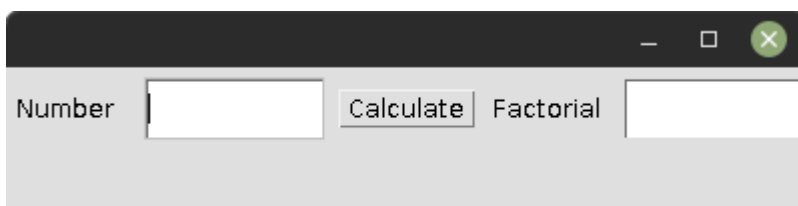
Label lblFact = new Label("Factorial");
TextField txtNum = new TextField(10);
TextField txtFact = new TextField(10);
Button btnCalc = new Button("Calculate");
frame.add(lblNum);
frame.add(txtNum);
frame.add(btnCalc);
frame.add(lblFact);
frame.add(txtFact);
frame.setLayout(new FlowLayout());
frame.setSize(400, 100);
frame.setVisible(true);

btnCalc.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent e) {
        int num = Integer.parseInt(txtNum.getText());
        int sum = 1;
        for (int i = 1; i <= num; i++) {
            sum *= i;
        }
        txtFact.setText("" + sum);
    }
});
}

public static void main(String[] args) {
    new Factorial();
}
}

```

Output:



7.

```

import java.awt.*;
import java.awt.event.*;
public class CurrencyConverter {
    CurrencyConverter() {
        Frame frame = new Frame("Calculator");
        Label l1 = new Label("Dollar");
        Label l2 = new Label("Nepalese");
        Label l3 = new Label("Euro");
        Panel panelUp = new Panel();
        TextField txtD = new TextField(10);
    }
}

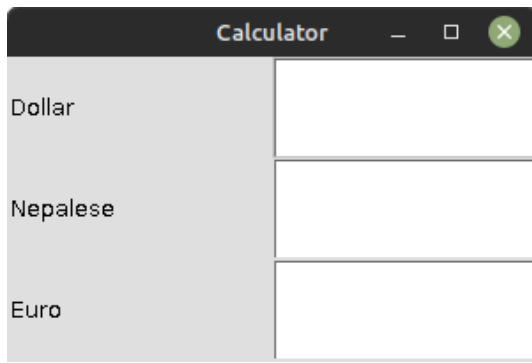
```

```

TextField txtN = new TextField(10);
TextField txtE = new TextField(10);
panelUp.add(l1);
panelUp.add(txtD);
panelUp.add(l2);
panelUp.add(txtN);
panelUp.add(l3);
panelUp.add(txtE);
txtD.addKeyListener(new KeyAdapter() {
    public void keyReleased(KeyEventDemo e) {
        Float dlr = Float.parseFloat(txtD.getText());
        txtN.setText("" + dlr * 129.57);
        txtE.setText("" + dlr * 0.97);
    }
});
txtN.addKeyListener(new KeyAdapter() {
    public void keyReleased(KeyEventDemo e) {
        Float npr = Float.parseFloat(txtN.getText());
        txtD.setText("" + npr / 129.57);
        txtE.setText("" + npr / 133.73);
    }
});
txtE.addKeyListener(new KeyAdapter() {
    public void keyReleased(KeyEventDemo e) {
        Float euro = Float.parseFloat(txtE.getText());
        txtD.setText("" + euro * 1.03);
        txtN.setText("" + euro * 133.73);
    }
});
panelUp.setLayout(new GridLayout(3, 2));
frame.add(panelUp);
frame.setSize(300, 200);
frame.setVisible(true);
}
public static void main(String[] args) {
    new CurrencyConverter();
}
}

```


Output:



8.

```
import java.awt.*;
import java.awt.event.*;
class SimpleInterestCalc {
    SimpleInterestCalc() {
        Frame frame = new Frame("Simple Interest ");
        Panel panel = new Panel();
        panel.setLayout(new GridLayout(3, 2));
        Label lblP = new Label("Principle");
        Label lblT = new Label("Time");
        Label lblR = new Label("Rate");
        Label lblResult = new Label("Result");
        TextField txtP = new TextField(10);
        TextField txtT = new TextField(10);
        TextField txtR = new TextField(10);
        Button btnCalc = new Button("Calculate");
        panel.add(lblP);
        panel.add(txtP);
        panel.add(lblT);
        panel.add(txtT);
        panel.add(lblR);
        panel.add(txtR);
        frame.add(panel);
        frame.add(btnCalc);
        frame.add(lblResult);
        frame.setLayout(new GridLayout(3, 1));
        frame.setSize(400, 400);
        frame.setVisible(true);
        btnCalc.addActionListener(new ActionListener() {
            public void actionPerformed(ActionEvent ae) {
                int p = Integer.parseInt(txtP.getText());
                int t = Integer.parseInt(txtT.getText());
                int r = Integer.parseInt(txtR.getText());
                float si = (p * t * r) / 100;
                lblResult.setText("" + si);
            }
        });
    }
}
```

```

    }
    public static void main(String[] args) {
        new SimpleInterestCalc();
    }
}

```

Output:

The screenshot shows a Java Swing window titled "Simple Interest". The window contains three text input fields labeled "Principle", "Time", and "Rate". Below these fields is a button labeled "Calculate". At the bottom of the window is a large area labeled "Result".

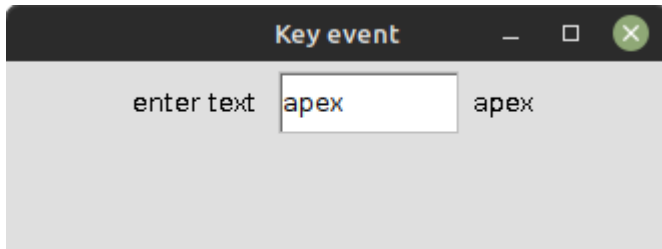
9.

```

import java.awt.*;
import java.awt.event.*;
public class KeyEventDemo {
    KeyEventDemo() {
        Frame frame = new Frame("Key event");
        Label lblTxt = new Label("enter text");
        TextField txt = new TextField(10);
        Label result = new Label("");
        frame.add(lblTxt);
        frame.add(txt);
        frame.add(result);
        frame.setLayout(new FlowLayout());
        frame.setSize(400, 200);
        frame.setVisible(true);
        txt.addKeyListener(new KeyAdapter() {
            public void keyReleased(KeyEvent k) {
                result.setText(txt.getText());
            }
        });
    }
    public static void main(String[] args) {
        new KeyEventDemo();
    }
}

```

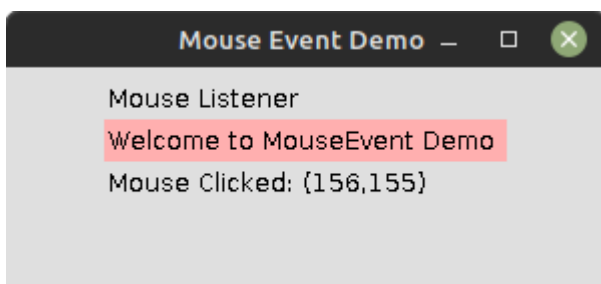
Output:



10.

```
import java.awt.*;
import java.awt.event.*;
public class MouseEventDemo {
    MouseEventDemo() {
        Frame frame = new Frame("Mouse Event Demo");
        frame.setSize(300, 400);
        Panel panel = new Panel();
        Label lblHead = new Label("Mouse Listener");
        Label lblMain = new Label("Welcome to MouseEvent Demo");
        Label lblResult = new Label("");
        lblMain.setBackground(Color.PINK);
        panel.add(lblHead);
        panel.add(lblMain);
        panel.add(lblResult);
        panel.setLayout(new GridLayout(3, 1));
        frame.setLayout(new FlowLayout());
        frame.add(panel);
        frame.addMouseListener(new MouseAdapter() {
            public void mouseClicked(MouseEvent me) {
                lblResult.setText("Mouse Clicked: (" + me.getX() + "," +
me.getY() + ")");
            }
        });
        frame.setVisible(true);
    }
    public static void main(String[] args) {
        new MouseEventDemo();
    }
}
```

Output:



11.

```
import java.awt.*;
import java.awt.event.*;
public class CheckPrime {
    Label l1;
    Label l2;
    TextField txtN;
    TextField txtP;
    CheckPrime() {
        Frame frame = new Frame("Check Prime");
        frame.setSize(300, 200);
        l1 = new Label("Number");
        l2 = new Label("Prime");
        Panel panelUp = new Panel();
        txtN = new TextField(10);
        txtP = new TextField(10);
        Button btnCheck = new Button("Check");
        btnCheck.addActionListener(new HandleClickEvent());
        panelUp.add(l1);
        panelUp.add(txtN);
        panelUp.add(l2);
        panelUp.add(txtP);
        panelUp.setLayout(new GridLayout(2, 2));
        frame.add(panelUp);
        frame.add(btnCheck);
        frame.setLayout(new GridLayout(2, 1));
        frame.setVisible(true);
    }
    class HandleClickEvent implements ActionListener {
        public void actionPerformed(ActionEvent ae) {
            txtP.setText("Checking");
            int num = Integer.parseInt(txtN.getText());
            int flag = 0;
            for (int i = 2; i < num / 2; i++) {
                if (num % i == 0) {
                    txtP.setText("No");
                    flag = 1;
                }
            }
            if (flag == 0) {
                txtP.setText("Yes");
            }
        }
    }
    public static void main(String[] args) {
        new CheckPrime();
    }
}
```

```

    }
}

```

Output:

12.

```

import java.awt.*;
import java.awt.event.*;
public class ReverseDemo {
    TextField txtNum;
    TextField txtRev;
    ReverseDemo() {
        Frame frame = new Frame("Reverse Number");
        frame.setSize(300, 200);
        Panel panel = new Panel();

        Label lblNum = new Label("Number");
        Label lblRev = new Label("Reverse");
        txtNum = new TextField();
        txtRev = new TextField();
        txtRev.setEditable(false);
        panel.add(lblNum);
        panel.add(txtNum);
        panel.add(lblRev);
        panel.add(txtRev);
        panel.setLayout(new GridLayout(2, 1));
        Button btnRev = new Button("Reverse");
        btnRev.addActionListener(new HandleEvent());
        frame.add(panel);
        frame.add(btnRev);
        frame.setLayout(new GridLayout(2, 1));
        frame.setVisible(true);
    }
    class HandleEvent implements ActionListener {
        public void actionPerformed(ActionEvent ae) {
            int num = Integer.parseInt(txtNum.getText());
            int rev = 0;
            int rem;

```

```

        while (num != 0) {
            rem = num % 10;
            rev = rev * 10 + rem;
            num = num / 10;
        }
        txtRev.setText(" " + rev);
    }
}

public static void main(String[] args) {
    new ReverseDemo();
}
}

```

Output:

Number	1234
Reverse	4321
Reverse	

13.

```

import java.awt.*;
import java.awt.event.*;
public class CheckArmstrong {
    Label l1;
    Label l2;
    TextField t1;
    Button btn;
    CheckArmstrong() {
        Frame f = new Frame("Armstrong Test");
        l1 = new Label("Number");
        l2 = new Label();
        t1 = new TextField(10);
        btn = new Button("Check");
        f.add(l1);
        f.add(t1);
        f.add(btn);
        f.add(l2);
        f.setLayout(new FlowLayout());
        f.setSize(500, 500);
        f.setLocationRelativeTo(null);
        f.setVisible(true);
    }
}

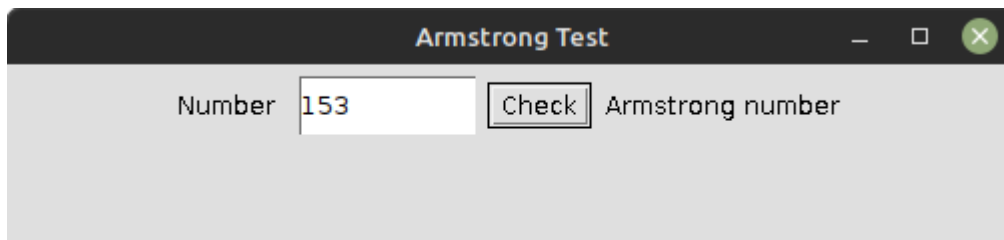
```

```

        btn.addActionListener(new HandleEvent());
    }
    class HandleEvent implements ActionListener {
        public void actionPerformed(ActionEvent ae) {
            int num = Integer.parseInt(t1.getText());
            int number, temp, total = 0;
            number = num;
            while (number != 0) {
                temp = number % 10;
                total = total + temp * temp * temp;
                number = number / 10;
            }
            if (total == num)
                l2.setText("Armstrong number");
            else
                l2.setText("Not Armstrong number");
        }
    }
    public static void main(String[] args) {
        new CheckArmstrong();
    }
}

```

Output:



Conclusion:

- Learned to use AWT components
- Learned to handle different types of events
- Learned to make GUI application using AWT