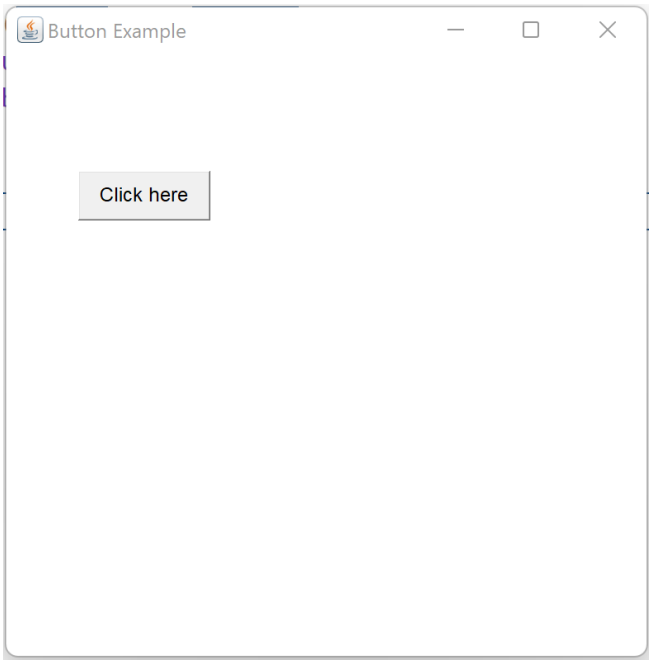
ASSIGNMENT 11

1) Write a Java program to create a button by implementing AWT(Abstract Window Toolkit).

```
// AWT example
import java.awt.*;
class AWT{
    public static void main(String args[]){
        Frame fr = new Frame("Button Example");
        Button bt = new Button("Click here");
        bt.setBounds(50, 100, 80, 30);
        fr.add(bt);
        fr.setSize(400, 400);
        fr.setLayout(null);
        fr.setVisible(true);
    }
}
```

OUTPUT:



2) Write a Java program to create a Calculator by implementing AWT.

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

class MyCalc extends WindowAdapter implements ActionListener {
    Frame f;
    Label l1;
    Button b1, b2, b3, b4, b5, b6, b7, b8, b9, b0;
    Button badd, bsub, bmult, bdiv, bmod, bcalc, bclr, bpts, bneg, bback;
    double xd;
    double num1, num2, check;
```

```
MyCalc() {
    f = new Frame("MY CALCULATOR");
    // INSTANTIATING COMPONENETS
    l1 = new Label();
    l1.setBackground(Color.LIGHT_GRAY);
    l1.setBounds(50, 50, 260, 60);

    b1 = new Button("1");
    b1.setBounds(50, 340, 50, 50);
    b2 = new Button("2");
    b2.setBounds(120, 340, 50, 50);
    b3 = new Button("3");
    b3.setBounds(190, 340, 50, 50);
    b4 = new Button("4");
    b4.setBounds(50, 270, 50, 50);
    b5 = new Button("5");
    b5.setBounds(120, 270, 50, 50);
    b6 = new Button("6");
    b6.setBounds(190, 270, 50, 50);
    b7 = new Button("7");
    b7.setBounds(50, 200, 50, 50);
    b8 = new Button("8");
    b8.setBounds(120, 200, 50, 50);
    b9 = new Button("9");
    b9.setBounds(190, 200, 50, 50);
    b0 = new Button("0");
    b0.setBounds(120, 410, 50, 50);
    bneg = new Button("+/-");
    bneg.setBounds(50, 410, 50, 50);
    bpts = new Button(".");
    bpts.setBounds(190, 410, 50, 50);
    bback = new Button("back");
    bback.setBounds(120, 130, 50, 50);

    badd = new Button("+");
    badd.setBounds(260, 340, 50, 50);
    bsub = new Button("-");
    bsub.setBounds(260, 270, 50, 50);
    bmult = new Button("*");
    bmult.setBounds(260, 200, 50, 50);
    bdiv = new Button("/");
    bdiv.setBounds(260, 130, 50, 50);
    bmod = new Button("%");
    bmod.setBounds(190, 130, 50, 50);
    bcalc = new Button("=");
    bcalc.setBounds(245, 410, 65, 50);
    bclr = new Button("CE");
    bclr.setBounds(50, 130, 65, 50);

    b1.addActionListener(this);
    b2.addActionListener(this);
    b3.addActionListener(this);
    b4.addActionListener(this);
    b5.addActionListener(this);
```

```
    b6.addActionListener(this);
    b7.addActionListener(this);
    b8.addActionListener(this);
    b9.addActionListener(this);
    b0.addActionListener(this);

    bpts.addActionListener(this);
    bneg.addActionListener(this);
    bback.addActionListener(this);

    badd.addActionListener(this);
    bsub.addActionListener(this);
    bmult.addActionListener(this);
    bdiv.addActionListener(this);
    bmod.addActionListener(this);
    bcalc.addActionListener(this);
    bclr.addActionListener(this);

    f.addWindowListener(this);
    // ADDING TO FRAME
    f.add(l1);
    f.add(b1);
    f.add(b2);
    f.add(b3);
    f.add(b4);
    f.add(b5);
    f.add(b6);
    f.add(b7);
    f.add(b8);
    f.add(b9);
    f.add(b0);

    f.add(badd);
    f.add(bsub);
    f.add(bmod);
    f.add(bmult);
    f.add(bdiv);
    f.add(bmod);
    f.add(bcalc);

    f.add(bclr);
    f.add(bpts);
    f.add(bneg);
    f.add(bback);

    f.setSize(360, 500);
    f.setLayout(null);
    f.setVisible(true);
}

// FOR CLOSING THE WINDOW
public void windowClosing(WindowEvent e) {
    f.dispose();
}
```

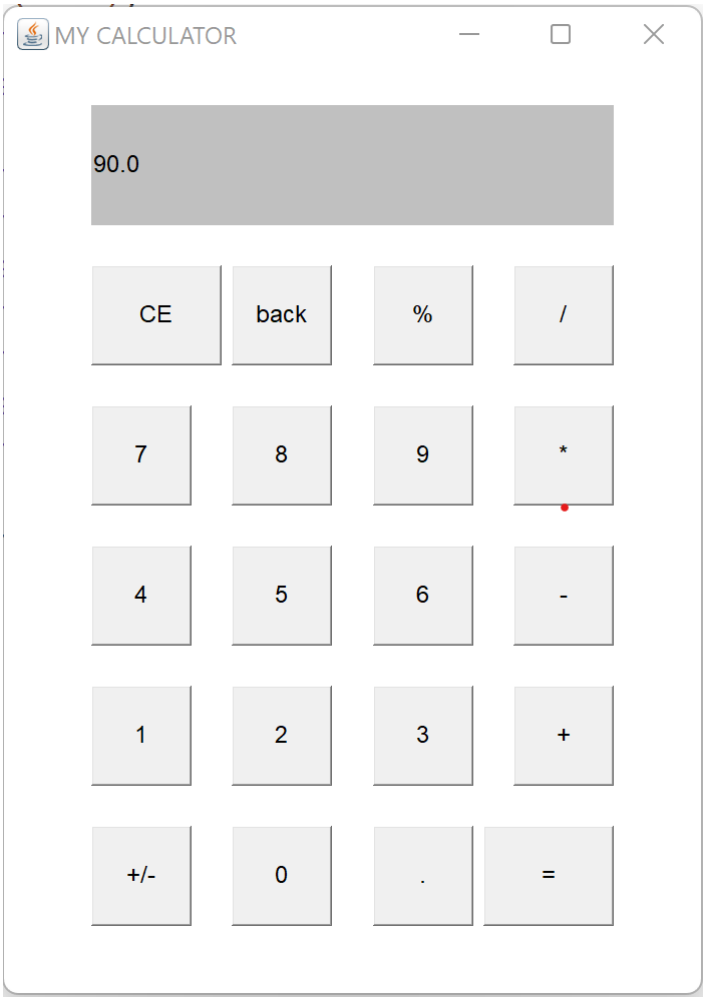
```
public void actionPerformed(ActionEvent e) {
    String z, zt;
    // NUMBER BUTTON
    if (e.getSource() == b1) {
        zt = l1.getText();
        z = zt + "1";
        l1.setText(z);
    }
    if (e.getSource() == b2) {
        zt = l1.getText();
        z = zt + "2";
        l1.setText(z);
    }
    if (e.getSource() == b3) {
        zt = l1.getText();
        z = zt + "3";
        l1.setText(z);
    }
    if (e.getSource() == b4) {
        zt = l1.getText();
        z = zt + "4";
        l1.setText(z);
    }
    if (e.getSource() == b5) {
        zt = l1.getText();
        z = zt + "5";
        l1.setText(z);
    }
    if (e.getSource() == b6) {
        zt = l1.getText();
        z = zt + "6";
        l1.setText(z);
    }
    if (e.getSource() == b7) {
        zt = l1.getText();
        z = zt + "7";
        l1.setText(z);
    }
    if (e.getSource() == b8) {
        zt = l1.getText();
        z = zt + "8";
        l1.setText(z);
    }
    if (e.getSource() == b9) {
        zt = l1.getText();
        z = zt + "9";
        l1.setText(z);
    }
    if (e.getSource() == b0) {
        zt = l1.getText();
        z = zt + "0";
        l1.setText(z);
    }
```

```
if (e.getSource() == bpts) { // ADD DECIMAL PTS
    zt = l1.getText();
    z = zt + ".";
    l1.setText(z);
}
if (e.getSource() == bneg) { // FOR NEGATIVE
    zt = l1.getText();
    z = "-" + zt;
    l1.setText(z);
}

if (e.getSource() == bback) { // FOR BACKSPACE
    zt = l1.getText();
    try {
        z = zt.substring(0, zt.length() - 1);
    } catch (StringIndexOutOfBoundsException f) {
        return;
    }
    l1.setText(z);
}
// AIRTHMETIC BUTTON
if (e.getSource() == badd) { // FOR ADDITION
    try {
        num1 = Double.parseDouble(l1.getText());
    } catch (NumberFormatException f) {
        l1.setText("Invalid Format");
        return;
    }
    z = "";
    l1.setText(z);
    check = 1;
}
if (e.getSource() == bsub) { // FOR SUBTRACTION
    try {
        num1 = Double.parseDouble(l1.getText());
    } catch (NumberFormatException f) {
        l1.setText("Invalid Format");
        return;
    }
    z = "";
    l1.setText(z);
    check = 2;
}
if (e.getSource() == bmult) { // FOR MULTIPLICATION
    try {
        num1 = Double.parseDouble(l1.getText());
    } catch (NumberFormatException f) {
        l1.setText("Invalid Format");
        return;
    }
    z = "";
    l1.setText(z);
    check = 3;
```

```
    }
    if (e.getSource() == bdiv) { // FOR DIVISION
        try {
            num1 = Double.parseDouble(l1.getText());
        } catch (NumberFormatException f) {
            l1.setText("Invalid Format");
            return;
        }
        z = "";
        l1.setText(z);
        check = 4;
    }
    if (e.getSource() == bmod) { // FOR MOD/REMAINDER
        try {
            num1 = Double.parseDouble(l1.getText());
        } catch (NumberFormatException f) {
            l1.setText("Invalid Format");
            return;
        }
        z = "";
        l1.setText(z);
        check = 5;
    }
    // RESULT BUTTON
    if (e.getSource() == bcalc) {
        try {
            num2 = Double.parseDouble(l1.getText());
        } catch (Exception f) {
            l1.setText("ENTER NUMBER FIRST ");
            return;
        }
        if (check == 1)
            xd = num1 + num2;
        if (check == 2)
            xd = num1 - num2;
        if (check == 3)
            xd = num1 * num2;
        if (check == 4)
            xd = num1 / num2;
        if (check == 5)
            xd = num1 % num2;
        l1.setText(String.valueOf(xd));
    }
    // FOR CLEARING THE LABEL and Memory
    if (e.getSource() == bclr) {
        num1 = 0;
        num2 = 0;
        check = 0;
        xd = 0;
        z = "";
        l1.setText(z);
    }

}
```

```
    // MAIN METHOD where objects of MyCalc is instantaiated
    public static void main(String args[]) {
        new MyCalc();
    }
}
```

OUTPUT:



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