DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE CODE: DJS22ITL306   **DATE:**3/11/23

COURSE NAME: Programing Laboratory 1 (Advanced Java)   **NAME**: Anish Sharma

CLASS: S.Y B. Tech IT   **SAP ID : 60003220045**

EXPERIMENT NO.3

CO/LO: **CO1**- Modify the behavior of methods, classes, and interfaces at runtime.

AIM / OBJECTIVE: Build a desktop application with Java Beans using NetBeans IDEs.

PROBLEM STATEMENTS:
   1. Write a Java program that creates a calculator using Java Frame and swings. It
      should perform following operations on the input numbers,
      Addition, Subtraction, multiplication, division, modulus, power, Reset.

 CODE:

```
/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this
   license
 * Click nbfs://nbhost/SystemFileSystem/Templates/GUIForms/JFrame.java to edit this
   template
 */
package com.mycompany.javabeans_project;

/**
 *
 * @author abhin
 */
public class myCalci extends javax.swing.JFrame {
```

```java
/**
 * Creates new form myCalci
 */

    int num1 = 0 , num2 = 0 ;
String operator = null;     public
myCalci() {
initComponents();
    }
    /**
 * This method is called from within the constructor to initialize the form.     * WARNING:
   Do NOT modify this code. The content of this method is always     * regenerated by the
   Form Editor.
    */
    @SuppressWarnings("unchecked")
    // <editor-fold defaultstate="collapsed" desc="Generated Code">
private void initComponents() {

        jLabel1 = new javax.swing.JLabel();
t1 = new javax.swing.JTextField();
b2 = new javax.swing.JButton();        b3
= new javax.swing.JButton();        bdiv =
new javax.swing.JButton();        b1 =
new javax.swing.JButton();        b5 =
new javax.swing.JButton();        b6 =
new javax.swing.JButton();        bmul =
new javax.swing.JButton();        b4 =
new javax.swing.JButton();        b8 =
new javax.swing.JButton();        b9 =
new javax.swing.JButton();        badd =
new javax.swing.JButton();        b7 =
new javax.swing.JButton();        bdot =
new javax.swing.JButton();        bequal =
new javax.swing.JButton();        bsub =
```

```java
new javax.swing.JButton();        bclr =
new javax.swing.JButton();        b0 =
new javax.swing.JButton();
    bback = new javax.swing.JButton();

    setDefaultCloseOperation(javax.swing.WindowConstants.EXIT_ON_CLOSE);

    jLabel1.setFont(new java.awt.Font("Segoe UI", 1, 24)); // NOI18N
jLabel1.setHorizontalAlignment(javax.swing.SwingConstants.CENTER);
jLabel1.setText("My Calculator");

    t1.setFont(new java.awt.Font("Segoe UI", 1, 18)); // NOI18N
t1.setHorizontalAlignment(javax.swing.JTextField.RIGHT);
t1.addActionListener(new java.awt.event.ActionListener() {
public void actionPerformed(java.awt.event.ActionEvent evt) {
t1ActionPerformed(evt);
        }
});

    b2.setText("2");        b2.addActionListener(new
java.awt.event.ActionListener() {        public void
actionPerformed(java.awt.event.ActionEvent evt) {
b2ActionPerformed(evt);
        }
});

    b3.setText("3");        b3.addActionListener(new
java.awt.event.ActionListener() {        public void
actionPerformed(java.awt.event.ActionEvent evt) {
b3ActionPerformed(evt);
        }
});

    bdiv.setText("/");        bdiv.addActionListener(new
java.awt.event.ActionListener() {        public void
```

```java
actionPerformed(java.awt.event.ActionEvent evt) {
bdivActionPerformed(evt);
        }
});

    b1.setText("1");       b1.addActionListener(new
java.awt.event.ActionListener() {        public void
actionPerformed(java.awt.event.ActionEvent evt) {
b1ActionPerformed(evt);
        }
});
b5.setTe
xt("5");
b5.addA
ctionLis
tener(ne
w
java.awt
.event.A
ctionLis
tener() {
public
void
actionPe
rformed
(java.aw
t.event.
ActionE
vent
evt) {
b5Actio
nPerfor
med(evt
);
```

Academic Year 2022-23

SHRI VILEPARLE KELAVANI MANDAL'S
DWARKADAS J. SANGHVI COLLEGE OF ENGINEERING
(Autonomous College Affiliated to the University of Mumbai)
NAAC ACCREDITED with "A" GRADE (CGPA : 3.18)

```java
        }
    });


        b6.setText("6");        b6.addActionListener(new
java.awt.event.ActionListener() {           public void
actionPerformed(java.awt.event.ActionEvent evt) {
b6ActionPerformed(evt);
        }
    });


        bmul.setText("*");        bmul.addActionListener(new
java.awt.event.ActionListener() {           public void
actionPerformed(java.awt.event.ActionEvent evt) {
bmulActionPerformed(evt);
        }
    });


        b4.setText("4");        b4.addActionListener(new
java.awt.event.ActionListener() {           public void
actionPerformed(java.awt.event.ActionEvent evt) {
b4ActionPerformed(evt);
        }
    });


        b8.setText("8");        b8.addActionListener(new
java.awt.event.ActionListener() {           public void
actionPerformed(java.awt.event.ActionEvent evt) {
b8ActionPerformed(evt);
        }
    });


        b9.setText("9");        b9.addActionListener(new
java.awt.event.ActionListener() {           public void
actionPerformed(java.awt.event.ActionEvent evt) {
b9ActionPerformed(evt);
```

```java
        }
    });

        badd.setText("+");        badd.addActionListener(new
java.awt.event.ActionListener() {            public void
actionPerformed(java.awt.event.ActionEvent evt) {
baddActionPerformed(evt);
        }
    });

        b7.setText("7");        b7.addActionListener(new
java.awt.event.ActionListener() {            public void
actionPerformed(java.awt.event.ActionEvent evt) {
b7ActionPerformed(evt);
        }
    });

        bdot.setText(".");        bdot.addActionListener(new
java.awt.event.ActionListener() {            public void
actionPerformed(java.awt.event.ActionEvent evt) {
bdotActionPerformed(evt);
        }
    });

        bequal.setText("=");        bequal.addActionListener(new
java.awt.event.ActionListener() {            public void
actionPerformed(java.awt.event.ActionEvent evt) {
bequalActionPerformed(evt);
        }
    });

        bsub.setText("-");        bsub.addActionListener(new
java.awt.event.ActionListener() {            public void
```

```java
actionPerformed(java.awt.event.ActionEvent evt) {
bsubActionPerformed(evt);
        }
});

    bclr.setFont(new java.awt.Font("Segoe UI", 1, 12)); // NOI18N
bclr.setText("CLEAR");       bclr.addActionListener(new java.awt.event.ActionListener() {
public void actionPerformed(java.awt.event.ActionEvent evt) {
bclrActionPerformed(evt);
        }
});

    b0.setText("0");       b0.addActionListener(new
java.awt.event.ActionListener() {         public void
actionPerformed(java.awt.event.ActionEvent evt) {
b0ActionPerformed(evt);
        }
});

    bback.setFont(new java.awt.Font("Segoe UI", 1, 12)); // NOI18N
bback.setText("BACK");        bback.addActionListener(new
java.awt.event.ActionListener() {         public void
actionPerformed(java.awt.event.ActionEvent evt) {
bbackActionPerformed(evt);
        }
});

    javax.swing.GroupLayout layout = new javax.swing.GroupLayout(getContentPane());
getContentPane().setLayout(layout);        layout.setHorizontalGroup(
layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
.addComponent(t1)
      .addGroup(layout.createSequentialGroup()
        .addContainerGap()
```

```java
.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
.addComponent(jLabel1, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
            .addGroup(layout.createSequentialGroup()
                .addComponent(b1, javax.swing.GroupLayout.PREFERRED_SIZE, 64,
javax.swing.GroupLayout.PREFERRED_SIZE)
                .addGap(18, 18, 18)
                .addComponent(b2, javax.swing.GroupLayout.PREFERRED_SIZE, 64,
javax.swing.GroupLayout.PREFERRED_SIZE)
.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED, 15,
Short.MAX_VALUE)
                .addComponent(b3, javax.swing.GroupLayout.PREFERRED_SIZE, 64,
javax.swing.GroupLayout.PREFERRED_SIZE)
                .addGap(18, 18, 18)
                .addComponent(bdiv, javax.swing.GroupLayout.PREFERRED_SIZE, 64,
javax.swing.GroupLayout.PREFERRED_SIZE))
            .addGroup(javax.swing.GroupLayout.Alignment.TRAILING,
layout.createSequentialGroup()
                .addComponent(b4, javax.swing.GroupLayout.PREFERRED_SIZE, 64,
javax.swing.GroupLayout.PREFERRED_SIZE)
                .addGap(18, 18, 18)
                .addComponent(b5, javax.swing.GroupLayout.PREFERRED_SIZE, 64,
javax.swing.GroupLayout.PREFERRED_SIZE)
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
                .addComponent(b6, javax.swing.GroupLayout.PREFERRED_SIZE, 64,
javax.swing.GroupLayout.PREFERRED_SIZE)
                .addGap(18, 18, 18)
                .addComponent(bmul, javax.swing.GroupLayout.PREFERRED_SIZE, 64,
javax.swing.GroupLayout.PREFERRED_SIZE))
            .addGroup(layout.createSequentialGroup()
                .addComponent(b7, javax.swing.GroupLayout.PREFERRED_SIZE, 64,
javax.swing.GroupLayout.PREFERRED_SIZE)
                .addGap(18, 18, 18)
```

```
                    .addComponent(b8, javax.swing.GroupLayout.PREFERRED_SIZE, 64,
javax.swing.GroupLayout.PREFERRED_SIZE)
                    .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
                    .addComponent(b9, javax.swing.GroupLayout.PREFERRED_SIZE, 64,
javax.swing.GroupLayout.PREFERRED_SIZE)
                    .addGap(18, 18, 18)
                    .addComponent(badd, javax.swing.GroupLayout.PREFERRED_SIZE, 64,
javax.swing.GroupLayout.PREFERRED_SIZE))
                .addGroup(layout.createSequentialGroup()

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.TRAILING, false)
.addComponent(bclr, javax.swing.GroupLayout.Alignment.LEADING,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE,
Short.MAX_VALUE)
                    .addGroup(layout.createSequentialGroup()
                        .addComponent(b0, javax.swing.GroupLayout.PREFERRED_SIZE, 64,
javax.swing.GroupLayout.PREFERRED_SIZE)
                        .addGap(18, 18, 18)
                        .addComponent(bdot, javax.swing.GroupLayout.PREFERRED_SIZE,
64, javax.swing.GroupLayout.PREFERRED_SIZE)))
                    .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                    .addGroup(layout.createSequentialGroup()
                        .addComponent(bequal, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
                        .addGap(18, 18, 18)
                        .addComponent(bsub, javax.swing.GroupLayout.PREFERRED_SIZE, 64,
javax.swing.GroupLayout.PREFERRED_SIZE))
                    .addComponent(bback, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))))
            .addContainerGap())
    );
```

```java
        layout.setVerticalGroup(
layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
        .addGroup(layout.createSequentialGroup()
            .addContainerGap()
            .addComponent(jLabel1, javax.swing.GroupLayout.PREFERRED_SIZE, 43,
javax.swing.GroupLayout.PREFERRED_SIZE)
            .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
.addComponent(t1, javax.swing.GroupLayout.PREFERRED_SIZE, 52,
javax.swing.GroupLayout.PREFERRED_SIZE)
            .addGap(30, 30, 30)


.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
.addComponent(b3, javax.swing.GroupLayout.PREFERRED_SIZE, 40,
javax.swing.GroupLayout.PREFERRED_SIZE)
                .addComponent(b2, javax.swing.GroupLayout.PREFERRED_SIZE, 40,
javax.swing.GroupLayout.PREFERRED_SIZE)

                .addComponent(bdiv, javax.swing.GroupLayout.PREFERRED_SIZE, 40,
javax.swing.GroupLayout.PREFERRED_SIZE)
                .addComponent(b1, javax.swing.GroupLayout.PREFERRED_SIZE, 40,
javax.swing.GroupLayout.PREFERRED_SIZE))
            .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)


.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
.addComponent(b6, javax.swing.GroupLayout.PREFERRED_SIZE, 40,
javax.swing.GroupLayout.PREFERRED_SIZE)
                .addComponent(b5, javax.swing.GroupLayout.PREFERRED_SIZE, 40,
javax.swing.GroupLayout.PREFERRED_SIZE)
                .addComponent(bmul, javax.swing.GroupLayout.PREFERRED_SIZE, 40,
javax.swing.GroupLayout.PREFERRED_SIZE)
                .addComponent(b4, javax.swing.GroupLayout.PREFERRED_SIZE, 40,
javax.swing.GroupLayout.PREFERRED_SIZE))
            .addGap(10, 10, 10)
```

```
.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
.addComponent(b7, javax.swing.GroupLayout.PREFERRED_SIZE, 40,
javax.swing.GroupLayout.PREFERRED_SIZE)
            .addComponent(b8, javax.swing.GroupLayout.PREFERRED_SIZE, 40,
javax.swing.GroupLayout.PREFERRED_SIZE)
            .addComponent(b9, javax.swing.GroupLayout.PREFERRED_SIZE, 40,
javax.swing.GroupLayout.PREFERRED_SIZE)
            .addComponent(badd, javax.swing.GroupLayout.PREFERRED_SIZE, 40,
javax.swing.GroupLayout.PREFERRED_SIZE))
        .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
.addComponent(bdot, javax.swing.GroupLayout.PREFERRED_SIZE, 40,
javax.swing.GroupLayout.PREFERRED_SIZE)
            .addComponent(bequal, javax.swing.GroupLayout.PREFERRED_SIZE, 40,
javax.swing.GroupLayout.PREFERRED_SIZE)
            .addComponent(bsub, javax.swing.GroupLayout.PREFERRED_SIZE, 40,
javax.swing.GroupLayout.PREFERRED_SIZE)
            .addComponent(b0, javax.swing.GroupLayout.PREFERRED_SIZE, 40,
javax.swing.GroupLayout.PREFERRED_SIZE))
        .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)
.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
.addComponent(bclr, javax.swing.GroupLayout.PREFERRED_SIZE, 40,
javax.swing.GroupLayout.PREFERRED_SIZE)
            .addComponent(bback, javax.swing.GroupLayout.PREFERRED_SIZE, 40,
javax.swing.GroupLayout.PREFERRED_SIZE))
        .addContainerGap(10, Short.MAX_VALUE))
    );

    pack();
  }// </editor-fold>

  private void t1ActionPerformed(java.awt.event.ActionEvent evt) {
// TODO add your handling code here:
  }
```

```java
    private void b9ActionPerformed(java.awt.event.ActionEvent evt) {
// TODO add your handling code here:
      t1.setText(t1.getText() + "9");
   }

    private void bclrActionPerformed(java.awt.event.ActionEvent evt) {
// TODO add your handling code here:
      t1.setText("");
   }

    private void bbackActionPerformed(java.awt.event.ActionEvent evt) {
// TODO add your handling code here:        String str = t1.getText();
t1.setText(str.substring(0, str.length()-1));
   }

    private void b1ActionPerformed(java.awt.event.ActionEvent evt) {
// TODO add your handling code here:
        t1.setText(t1.getText() + "1");
   }

    private void b2ActionPerformed(java.awt.event.ActionEvent evt) {
// TODO add your handling code here:

      t1.setText(t1.getText() + "2");
   }

    private void b3ActionPerformed(java.awt.event.ActionEvent evt) {
// TODO add your handling code here:
      t1.setText(t1.getText() + "3");
   }

    private void bdivActionPerformed(java.awt.event.ActionEvent evt) {
// TODO add your handling code here:
      t1.setText(t1.getText() + "/");
```

```java
    }

    private void b4ActionPerformed(java.awt.event.ActionEvent evt) {
// TODO add your handling code here:
        t1.setText(t1.getText() + "4");
    }

    private void b5ActionPerformed(java.awt.event.ActionEvent evt) {
// TODO add your handling code here:
        t1.setText(t1.getText() + "5");
    }

    private void b6ActionPerformed(java.awt.event.ActionEvent evt) {
// TODO add your handling code here:
        t1.setText(t1.getText() + "6");
    }

    private void bmulActionPerformed(java.awt.event.ActionEvent evt) {
// TODO add your handling code here:
        t1.setText(t1.getText() + "*");
    }

    private void b7ActionPerformed(java.awt.event.ActionEvent evt) {
// TODO add your handling code here:
        t1.setText(t1.getText() + "7");
    }

    private void b8ActionPerformed(java.awt.event.ActionEvent evt) {

        // TODO add your handling code here:
        t1.setText(t1.getText() + "8");
    }

    private void baddActionPerformed(java.awt.event.ActionEvent evt) {
// TODO add your handling code here:
```

```java
        t1.setText(t1.getText() + "+");
    }


    private void b0ActionPerformed(java.awt.event.ActionEvent evt) {
// TODO add your handling code here:
        t1.setText(t1.getText() + "0");
    }


    private void bdotActionPerformed(java.awt.event.ActionEvent evt) {
// TODO add your handling code here:
        t1.setText(t1.getText() + ".");
    }


    private void bequalActionPerformed(java.awt.event.ActionEvent evt) {
// TODO add your handling code here:        int res=0;
        if(t1.getText().contains("+")){
            String[] cs = t1.getText().split("\\+");
int a= Integer.parseInt(cs[0]);          int b=
Integer.parseInt(cs[1]);          res =
a+b;t1.setText(""+res);
        }
        else if(t1.getText().contains("-")){
String[] cs = t1.getText().split("\\-");
int a= Integer.parseInt(cs[0]);          int b=
Integer.parseInt(cs[1]);          res = a-
b;t1.setText(""+res);
        }
        else if(t1.getText().contains("*")){
String[] cs = t1.getText().split("\\*");
int a=Integer.parseInt(cs[0]);          int b=
Integer.parseInt(cs[1]);          res =
a*b;t1.setText(""+res);

        }
```

```java
    else if(t1.getText().contains("/")){
String[] cs = t1.getText().split("\\/");
float a= Integer.parseInt(cs[0]);
float b= Integer.parseInt(cs[1]);
float res2 = a/b;        t1.setText(""+res2);
    }
  }

  private void bsubActionPerformed(java.awt.event.ActionEvent evt) {
// TODO add your handling code here:
    t1.setText(t1.getText() + "-");
  }

  /**
* @param args the command line arguments
  */
  public static void main(String args[]) {
    /* Set the Nimbus look and feel */
    //<editor-fold defaultstate="collapsed" desc=" Look and feel setting code (optional) ">
/* If Nimbus (introduced in Java SE 6) is not available, stay with the default look and feel.
* For details see http://download.oracle.com/javase/tutorial/uiswing/lookandfeel/plaf.html
    */        try {            for (javax.swing.UIManager.LookAndFeelInfo
info : javax.swing.UIManager.getInstalledLookAndFeels()) {                if
("Nimbus".equals(info.getName())) {
javax.swing.UIManager.setLookAndFeel(info.getClassName());
break;
        }
      }
    } catch (ClassNotFoundException ex) {

java.util.logging.Logger.getLogger(myCalci.class.getName()).log(java.util.logging.Level.SEVE
RE, null, ex);
    } catch (InstantiationException ex) {
java.util.logging.Logger.getLogger(myCalci.class.getName()).log(java.util.logging.Level.SE
VE RE, null, ex);
```

```java
        } catch (IllegalAccessException ex) {

java.util.logging.Logger.getLogger(myCalci.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);
        } catch (javax.swing.UnsupportedLookAndFeelException ex) {

java.util.logging.Logger.getLogger(myCalci.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);
        }
        //</editor-fold>

        /* Create and display the form */
java.awt.EventQueue.invokeLater(new Runnable() {
public void run() {            new
myCalci().setVisible(true);
            }
        });
}

    // Variables declaration - do not modify
private javax.swing.JButton b0;      private
javax.swing.JButton b1;    private
javax.swing.JButton b2;    private
javax.swing.JButton b3;    private
javax.swing.JButton b4;    private
javax.swing.JButton b5;    private
javax.swing.JButton b6;    private
javax.swing.JButton b7;    private
javax.swing.JButton b8;    private
javax.swing.JButton b9;    private
javax.swing.JButton badd;    private
javax.swing.JButton bback;     private
javax.swing.JButton bclr;    private
javax.swing.JButton bdiv;     private
```
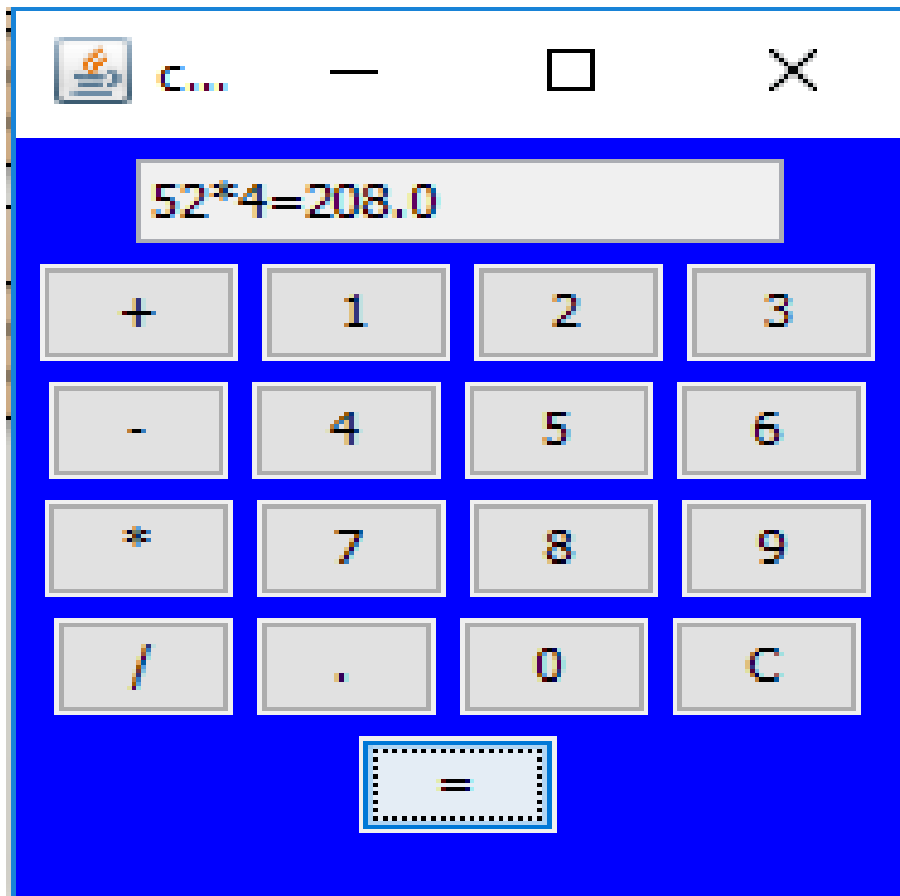
```
javax.swing.JButton bdot;       private
javax.swing.JButton bequal;

   private javax.swing.JButton bmul;
private javax.swing.JButton bsub;       private
javax.swing.JLabel jLabel1;       private
javax.swing.JTextField t1;
   // End of variables declaration
}
```

Output :

OBSERVATION:

What are the functionalities of swings?

- Pluggable look and feel
- Uses MVC architecture

- Lightweight Components
- Platform Independent
- Advanced features such as JTable, JTabbedPane, JScollPane, etc.

CONCLUSION:

With the help of Experiment 3 , we have learnt the use of java beans and the use of swings .