EXPERIMENT No: 10
Simple Calculator

Aim

Write a java program that works as a simple calculator. Arrange Buttons for digits and the + - * % operations properly. Add text field to display the result Handle any possible exceptions like division by zero. Use Java Swing.

Input

Two digits along with operator +, -, *, /

Output Expected

Result of arithmetic operation.

Algorithm.

1. Import java.awt, java.awt.event, java.swing and java.util classes
2. Initalise JFrame with title "Simple Calculator"
3. Initalise JPanel panel1, panel2, inputPanel
4. Set layout managers GridLayout (4,3) GridLayout (6,1) GridBagLayout() for panel, panel1, inputPanel and frame respectively.
5. frame.setBounds (825, 350, 400)
6. frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE)

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7. JTextfield result = new JTextfield()
8. JButton one = new JButton("1")
9 JButton two = new JButton("2")
10 JButton three = new JButton("3")
11 JButton four = new JButton("4")
12 JButton five = new JButton("5")
13 JButton six = new JButton("6")
14 JButton seven = new JButton("7")
15 JButton eight = new JButton("8")
16 JButton zero = new JButton("0")
17 JButton nine = new JButton("9")
18 JButton AC = new JButton("AC")
19 JButton dot = new JButton(".")
20 JButton plus = new JButton("+")
21 JButton mins = new JButton("-")
22 JButton into = new JButton("*")
23 JButton by = new JButton("/")
24 JButton mod = new JButton("%")
25 JButton equal = new JButton("=")
26 Add buttons from one to dot to panel
27 Add buttons from plus to equal to panel
28. result.setHorizontalAlignment(JTextfield.CENTER)
29 Modify UI using GridBagConstraints using object c
30 frame.add(result, c)
31. Modify UI usingc
32. input Panel.add(panel, c)
33. Modify UI using c
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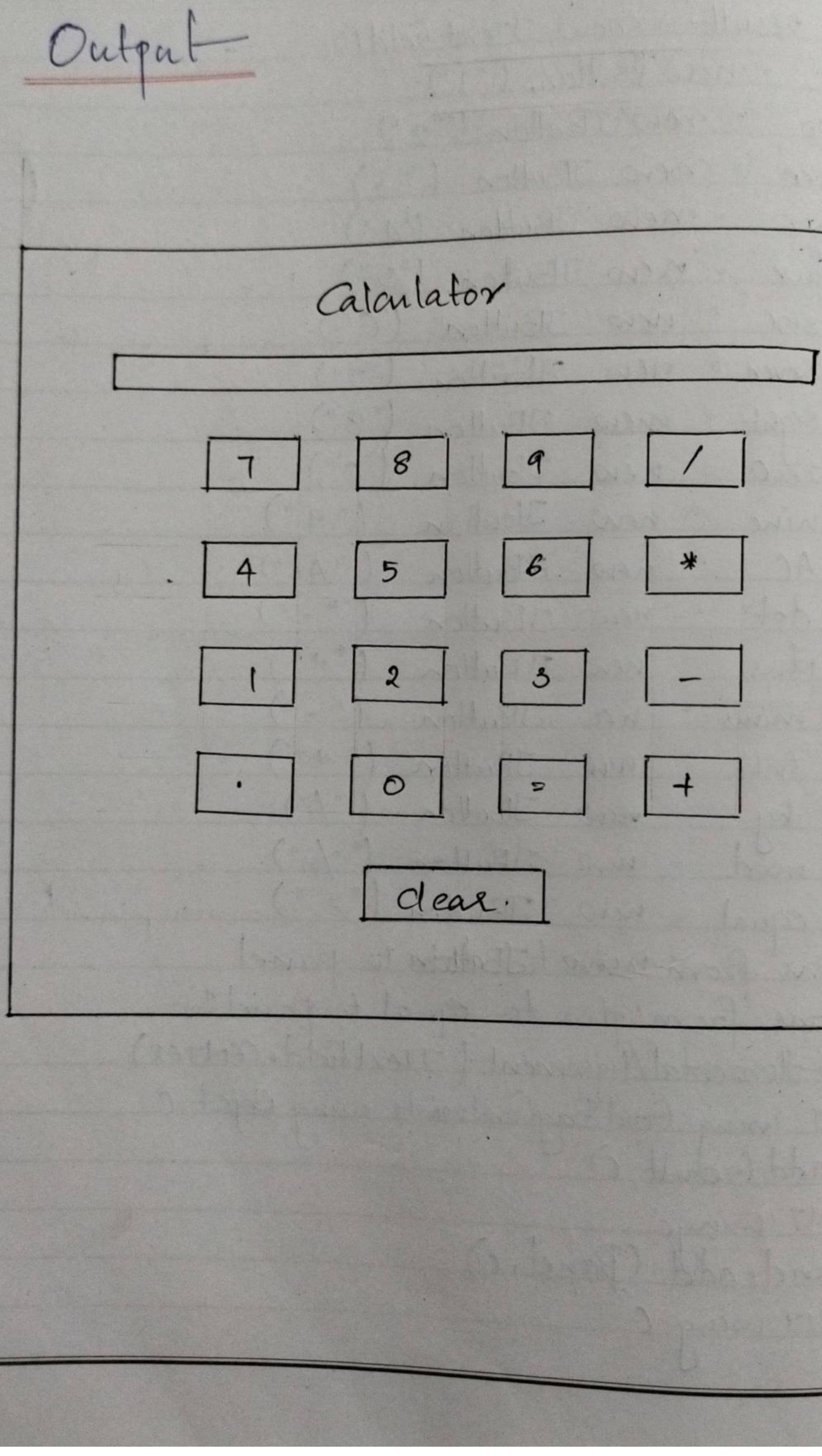
```
34. inputPanel.add(panel1,c)
35. modify UI using c
36. frame.add(inputPanel,c)
37. frame.setVisible(true)
38. panel.setVisible(true)
39. panel1.setVisible(true)
40. inputPanel.setVisible(true)
41. result.setText(result.getText()+"1")
42. result.setText("")
43 exp = result.getText()
44. i=1
45 res=0
46. z = exp.charAt(i)
47 try
48 while(z!='+'&&z!='-'&&z!='*'&&z!='/'&&z!='%')
49 i++
50 z = exp.charAt(i)
51. endwhile
52. x = float.parsefloat(exp.substring(0,i))
53 y = float.parsefloat(exp.substring(i+1, exp.length))
54. switch(z)
55 case +:
56 res = x+y
57 break
58 case -:
59 res = x-y
60 break
```

```
case *:
res = x*y
break
case /:
if y==0
break
res=x/y
break
case %
res = x%y
break
endcase
endswitch
if(y==0)
Result.setText("Not defined!")
else
result.setText(res+"")
End If
catch
result.setText("Enter two operands")
end try
STOP
```

Output

Result is obtained.

Output



```
//227
//Devika B
//Section E : Qn 1
//Calculator

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

public class calculator {

  calculator() {

    JFrame jfm = new JFrame();
    jfm.setSize(500, 500);

    JLabel jbl = new JLabel("Calculator");
    jbl.setBounds(227, 10, 400, 30);
    jfm.add(jbl);

    JTextField jtf = new JTextField();
    jtf.setEditable(false);
    jtf.setBounds(50, 50, 400, 30);
    jfm.add(jtf);

    JButton b1, b2, b3, b4, b5, b6, b7, b8, b9, b0, bdiv, bmul, bsub,
badd, bdec, beq, bdel, bclr, clear, dot;

    b1 = new JButton("1");
    b2 = new JButton("2");
    b3 = new JButton("3");
    b4 = new JButton("4");
    b5 = new JButton("5");
    b6 = new JButton("6");
    b7 = new JButton("7");
    b8 = new JButton("8");
    b9 = new JButton("9");
    b0 = new JButton("0");
    bdiv = new JButton("/");
    bmul = new JButton("*");
    bsub = new JButton("-");
    badd = new JButton("+");
    bdec = new JButton(".");
    beq = new JButton("=");
    clear = new JButton("Clear");
    dot = new JButton(".");

    b7.setBounds(90, 100, 50, 40);
    b8.setBounds(180, 100, 50, 40);
    b9.setBounds(270, 100, 50, 40);
    bdiv.setBounds(360, 100, 50, 40);

    b4.setBounds(90, 170, 50, 40);
    b5.setBounds(180, 170, 50, 40);
    b6.setBounds(270, 170, 50, 40);
    bmul.setBounds(360, 170, 50, 40);
```

```
b1.setBounds(180, 340, 50, 40);
b11.setBounds(270, 340, 50, 40);
beth.setBounds(360, 340, 50, 40);

bdec.setBounds(90, 310, 50, 40);
b0.setBounds(180, 310, 50, 40);
beq.setBounds(270, 310, 50, 40);
badd.setBounds(360, 310, 50, 40);
clear.setBounds(200, 400, 90, 40);
dot.setBounds(290, 470, 50, 40);



jfrm.add(b7);
jfrm.add(b8);
jfrm.add(b9);
jfrm.add(bdiv);
jfrm.add(b4);
jfrm.add(b5);
jfrm.add(b6);
jfrm.add(bmul);
jfrm.add(b1);
jfrm.add(b2);
jfrm.add(b3);
jfrm.add(bsub);
jfrm.add(bdec);
jfrm.add(b0);
jfrm.add(beq);
jfrm.add(badd);
jfrm.add(clear);
jfrm.add(dot);

jfrm.setLayout(null);
jfrm.setResizable(false);
jfrm.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
jfrm.setVisible(true);

b1.addActionListener(new ActionListener() {
 public void actionPerformed(ActionEvent e) {
   if (jtf.getText().equals("Enter two operands!") || jtf.getText
quals("Not defined!"))
     jtf.setText("");
   jtf.setText(jtf.getText() + "1");
 }
});
b2.addActionListener(new ActionListener() {
 public void actionPerformed(ActionEvent e) {
   if (jtf.getText().equals("Enter two operands!") || jtf.getText
uals("Not defined!"))
     jtf.setText("");
   jtf.setText(jtf.getText() + "2");
 }
});
b3.addActionListener(new ActionListener() {
 public void actionPerformed(ActionEvent e) {
   if (jtf.getText().equals("Enter two operands!") || jtf.getText
uals("Not defined!"))
     jtf.setText("");
   jtf.setText(jtf.getText() + "3");
 }
});
b4.addActionListener(new ActionListener() {
  public void actionPerformed(ActionEvent e) {
    if (jtf.getText().equals("Enter two operands!") || jtf.getText
quals("Not defined!"))
      jtf.setText("");
    jtf.setText(jtf.getText() + "4");
  }
});
5.addActionListener(new ActionListener() {
public void actionPerformed(ActionEvent e) {
  if (jtf.getText().equals("Enter two operands!") || jtf.getText
ls("Not defined!"))
```

```
    jtf.setText("");
    jtf.setText(jtf.getText() + "5");
  }
);
6.addActionListener(new ActionListener() {
 public void actionPerformed(ActionEvent e) {
    if (jtf.getText().equals("Enter two operands!") || jtf.getText
uals("Not defined!"))
      jtf.setText("");
    jtf.setText(jtf.getText() + "6");
  }
);



7.addActionListener(new ActionListener() {
 public void actionPerformed(ActionEvent e) {
    if (jtf.getText().equals("Enter two operands!") || jtf.getText
uals("Not defined!"))
      jtf.setText("");
    jtf.setText(jtf.getText() + "7");
  }
);
8.addActionListener(new ActionListener() {
 public void actionPerformed(ActionEvent e) {
    if (jtf.getText().equals("Enter two operands!") || jtf.getText
uals("Not defined!"))
      jtf.setText("");
    jtf.setText(jtf.getText() + "8");
  }
);
9.addActionListener(new ActionListener() {
 public void actionPerformed(ActionEvent e) {
    if (jtf.getText().equals("Enter two operands!") || jtf.getText
uals("Not defined!"))
      jtf.setText("");
    jtf.setText(jtf.getText() + "9");
  }
);
0.addActionListener(new ActionListener() {
 public void actionPerformed(ActionEvent e) {
    if (jtf.getText().equals("Enter two operands!") || jtf.getText
uals("Not defined!"))
      jtf.setText("");
    jtf.setText(jtf.getText() + "0");
  }
);
car.addActionListener(new ActionListener() {
 public void actionPerformed(ActionEvent e) {
    if (jtf.getText().equals("Enter two operands!") || jtf.getText
uals("Not defined!"))
      jtf.setText("");
    jtf.setText("");
  }
);
t.addActionListener(new ActionListener() {
 public void actionPerformed(ActionEvent e) {
    if (jtf.getText().equals("Enter two operands!") || jtf.getText
uals("Not defined!"))
      jtf.setText("");
    jtf.setText(jtf.getText() + ".");
  }
);
dd.addActionListener(new ActionListener() {
 public void actionPerformed(ActionEvent e) {
    if (jtf.getText().equals("Enter two operands!") || jtf.getText
uals("Not defined!"))
      jtf.setText("");
    jtf.setText(jtf.getText() + "+");
  }
);
sub.addActionListener(new ActionListener() {
 public void actionPerformed(ActionEvent e) {
    if (jtf.getText().equals("Enter two operands!") || jtf.getText
```

```
    jtf.setText("");
  jtf.setText(jtf.getText() + "-");
}
);
ul.addActionListener(new ActionListener() {
public void actionPerformed(ActionEvent e) {
  if (jtf.getText().equals("Enter two operands!") || jtf.getText
als("Not defined!"))
    jtf.setText("");
  jtf.setText(jtf.getText() + "X");
}
);


iv.addActionListener(new ActionListener() {
public void actionPerformed(ActionEvent e) {
  if (jtf.getText().equals("Enter two operands!") || jtf.getText
als("Not defined!"))
    jtf.setText("");
  jtf.setText(jtf.getText() + "/");
}
);

q.addActionListener(new ActionListener() {
public void actionPerformed(ActionEvent e) {
  try {
    String S = jtf.getText();
    int i = 0;
    char b = S.charAt(i);
    while (b != '+' && b != '-' && b != 'X' && b != '/' && b !=

      i++;
      b = S.charAt(i);
    }
    Float x, y, ans = 0f;
    x = Float.parseFloat(S.substring(0, i));
    y = Float.parseFloat(S.substring(i + 1, S.length()));
    if (b == '+') {
      ans = x + y;
    } else if (b == '-') {
      ans = x - y;
    } else if (b == 'X') {
      ans = x * y;
    } else if (b == '/') {
      ans = x / y;
    }
    if (b == '/' && y == 0) {
      jtf.setText("Not defined!");
    } else {
      jtf.setText(ans + "");
    }
  } catch (Exception ex) {
    jtf.setText("Enter two operands!");
  }
}
);


ic static void main(String[] args) {
w calculator();
```