

```
1
2 package oop4_dat4_u;
3
4 /**
5  *
6  * @author Felix Rohrer <felix.rohrer@stud.hslu.ch>
7  */
8 public class Main {
9
10     /**
11      * @param args the command line arguments
12      */
13     public static void main(String[] args) {
14         Calculator myCalc = new Calculator();
15     }
16
17 }
```

```
1
2 package oop4_dat4_u;
3 import java.awt.event.WindowListener;
4 import java.awt.event.WindowEvent;
5 /**
6  *
7  * @author Felix Rohrer <felix.rohrer@stud.hslu.ch>
8  */
9 public class CloseListener implements WindowListener {
10     public CloseListener()
11     {
12         // nothing
13     }
14     public void windowActivated(WindowEvent e) {}
15     public void windowClosed(WindowEvent e) {}
16     public void windowClosing(WindowEvent e)
17     {
18         System.exit(0);
19     }
20     public void windowDeactivated(WindowEvent e) {}
21     public void windowDeiconified(WindowEvent e) {}
22     public void windowIconified(WindowEvent e) {}
23     public void windowOpened(WindowEvent e) {}
24 }
```

```

1 package oop4_dat4_u;
2
3 import java.awt.*;
4
5 /**
6  *
7  * @author Felix Rohrer <felix.rohrer@stud.hslu.ch>
8  */
9 public class Calculator extends Frame
10 {
11
12     Panel myPanel = new Panel();
13     TextField display = new TextField("0");
14     Button b0 = new Button("0");
15     Button b1 = new Button("1");
16     Button b2 = new Button("2");
17     Button b3 = new Button("3");
18     Button b4 = new Button("4");
19     Button b5 = new Button("5");
20     Button b6 = new Button("6");
21     Button b7 = new Button("7");
22     Button b8 = new Button("8");
23     Button b9 = new Button("9");
24     Button bSign = new Button("S");
25     Button bClear = new Button("C");
26     Button bGleich = new Button("=");
27     Button bDiv = new Button("/");
28     Button bMulti = new Button("*");
29     Button bPlus = new Button("+");
30     Button bMinus = new Button("-");
31     int operand1, operand2, result, operator;
32     // operator: 0=Unbekannt, 1=Plus, 2=Minus, 3=Multiplikation, 4=Division
33
34     public Calculator()
35     {
36         // Frame init
37         this.setTitle("Calculator");
38         this.setSize(250, 210);
39         this.setResizable(false);
40
41         // Layout-Mgr init
42         this.setLayout(new BorderLayout());
43
44         // Anzeige
45         display.setEditable(false);
46         display.setBackground(Color.white);
47
48         // Anzeige dem Frame hinzufügen
49         this.add(display, BorderLayout.NORTH);
50
51         // Panel für Buttons
52         // 5 Zeilen, 4 Spalten, 5px horizontal gap, 5px vertical gap
53         myPanel.setLayout(new GridLayout(5, 4, 5, 5));
54         //erste Zeile
55         myPanel.add(b7);
56         myPanel.add(b8);
57         myPanel.add(b9);
58         myPanel.add(bDiv);
59         // zweite Zeile
60         myPanel.add(b4);
61         myPanel.add(b5);
62         myPanel.add(b6);
63         myPanel.add(bMulti);
64         // dritte Zeile
65         myPanel.add(b1);
66         myPanel.add(b2);
67         myPanel.add(b3);
68         myPanel.add(bMinus);
69         // vierte Zeile
70         myPanel.add(b0);
71         myPanel.add(bSign);
72         myPanel.add(bGleich);
73         myPanel.add(bPlus);
74         // fünfte Zeile
75         myPanel.add(bClear);
76
77         // Panel dem Frame hinzufügen
78         this.add(myPanel, BorderLayout.SOUTH);
79
80         // Action Listener erzeugen und registrieren
81         ButtonListener buttonListener = new ButtonListener(this);
82         b7.addActionListener(buttonListener);
83         b8.addActionListener(buttonListener);
84         b9.addActionListener(buttonListener);
85         bDiv.addActionListener(buttonListener);
86         b4.addActionListener(buttonListener);
87         b5.addActionListener(buttonListener);
88         b6.addActionListener(buttonListener);
89         bMulti.addActionListener(buttonListener);
90         b1.addActionListener(buttonListener);
91         b2.addActionListener(buttonListener);
92         b3.addActionListener(buttonListener);
93         bMinus.addActionListener(buttonListener);
94         b0.addActionListener(buttonListener);
95         bSign.addActionListener(buttonListener);
96         bGleich.addActionListener(buttonListener);
97         bPlus.addActionListener(buttonListener);
98         bClear.addActionListener(buttonListener);
99
100         // Close Listener => das Fenster schliessen, App beenden:
101         addWindowListener(new CloseListener());

```

```
102  
103     // show  
104     this.setVisible(true);  
105 }  
106  
107 }
```

```

1 package oop4_dat4_u;
2
3 import java.awt.event.ActionEvent;
4 import java.awt.event.ActionListener;
5
6 /**
7  *
8  * @author Felix Rohrer <felix.rohrer@stud.hslu.ch>
9  */
10 public class ButtonListener implements ActionListener
11 {
12
13     private Calculator gui;
14
15     public ButtonListener(Calculator gui)
16     {
17         this.gui = gui;
18     }
19
20     public void actionPerformed(ActionEvent e)
21     {
22         // operator: 0=Unbekannt, 1=Plus, 2=Minus, 3=Multiplikation, 4=Division
23
24         //erstes Zeichen der Button Beschriftung
25         char ch = (e.getActionCommand()).charAt(0);
26         switch (ch) {
27             // + - * /
28             case '+':
29                 gui.operator = 1;
30                 break;
31             case '-':
32                 gui.operator = 2;
33                 break;
34             case '*':
35                 gui.operator = 3;
36                 break;
37             case '/':
38                 gui.operator = 4;
39                 break;
40
41             //rechnen...
42             case '=':
43                 switch (gui.operator) {
44                     case 1: // Plus
45                         gui.result = gui.operand1 + gui.operand2;
46                         break;
47                     case 2: // Minus
48                         gui.result = gui.operand1 - gui.operand2;
49                         break;
50                     case 3: // Multiplikation
51                         gui.result = gui.operand1 * gui.operand2;
52                         break;
53                     case 4: // Division
54                         gui.result = gui.operand1 / gui.operand2;
55                         break;
56                     case 0: // unbekannt
57                         gui.result = gui.operand1;
58                         break;
59                 }
60                 // ausgeben
61                 gui.operand1 = gui.result;
62                 gui.operand2 = 0;
63                 gui.operator = 0;
64                 gui.display.setText("" + gui.result); // convert int auf String
65                 break;
66
67             // Clear
68             case 'C':
69                 gui.result = 0;
70                 gui.operand1 = 0;
71                 gui.operand2 = 0;
72                 gui.operator = 0;
73                 gui.display.setText("0");
74                 break;
75
76             // Sign
77             case 'S':
78                 if (gui.operator == 0) {
79                     gui.operand1 *= -1;
80                     gui.display.setText("" + gui.operand1);
81                 } else {
82                     gui.operand2 *= -1;
83                     gui.display.setText("" + gui.operand2);
84                 }
85                 break;
86
87             // default, Zahlen
88             default:
89                 int digit = ch - '0'; // int wert "bestimmen" von Char
90                 if (gui.operator == 0) {
91                     gui.operand1 = (gui.operand1 * 10) + digit;
92                     gui.display.setText("" + gui.operand1);
93                 } else {
94                     gui.operand2 = (gui.operand2 * 10) + digit;
95                     gui.display.setText("" + gui.operand2);
96                 }
97                 break;
98         }
99     }
100 }
101 }

```