**import** javax.swing.\*;

**import** java.awt.\*;

**import** java.awt.event.\*;

**public** **class** run **extends** JFrame {

**private** JTextField answerfield;

**private** JButton one, two, three, four, five, six, seven, eight, nine, zero, add, decimal, negative, sub, multiply, div, equals, reset, delete;

**private** String stemp1, stemp2, sanswer;

**private** **double** answer= 0.0;

**private** JPanel contentPanel;

**private** JLabel tap1, tap2, tap3, tap4, tap5, tap6;

**private** **boolean** equalsClicked= **false**, opChosen= **false**;

**char** operation= ' ';

**public** run() {

**super**("Calculator");

answerfield = **new** JTextField(**null**, 33);

answerfield.setEditable(**false**);

one = **new** JButton("1");

two = **new** JButton("2");

three = **new** JButton("3");

four = **new** JButton("4");

five = **new** JButton("5");

six = **new** JButton("6");

seven = **new** JButton("7");

eight = **new** JButton("8");

nine = **new** JButton("9");

zero = **new** JButton("0");

decimal = **new** JButton(".");

negative = **new** JButton("[-]");

add = **new** JButton("+");

sub = **new** JButton("-");

multiply = **new** JButton("x");

div = **new** JButton("/");

equals = **new** JButton("=");

reset= **new** JButton("reset");

delete= **new** JButton("Del");

tap1= **new** JLabel("");

tap2= **new** JLabel("");

tap3= **new** JLabel("");

tap4= **new** JLabel("");

tap5= **new** JLabel("");

tap6= **new** JLabel("");

Dimension dim = **new** Dimension(70, 35);

//setting buttons and fields sizes

answerfield.setPreferredSize(**new** Dimension(5, 33));

one.setPreferredSize(dim);

two.setPreferredSize(dim);

three.setPreferredSize(dim);

four.setPreferredSize(dim);

five.setPreferredSize(dim);

six.setPreferredSize(dim);

seven.setPreferredSize(dim);

eight.setPreferredSize(dim);

nine.setPreferredSize(dim);

zero.setPreferredSize(dim);

decimal.setPreferredSize(dim);

negative.setPreferredSize(dim);

add.setPreferredSize(dim);

sub.setPreferredSize(dim);

multiply.setPreferredSize(dim);

div.setPreferredSize(dim);

equals.setPreferredSize(dim);

reset.setPreferredSize(dim);

delete.setPreferredSize(dim);

tap1.setPreferredSize(**new** Dimension(300, 30));

tap2.setPreferredSize(**new** Dimension(140, 30));

tap3.setPreferredSize(**new** Dimension(350, 25));

tap4.setPreferredSize(**new** Dimension(350, 15));

tap5.setPreferredSize(**new** Dimension(350, 15));

tap6.setPreferredSize(**new** Dimension(350, 15));

Numbers n= **new** Numbers();

Calc c= **new** Calc();

//adding action listeners for numbers and functions

one.addActionListener(n); two.addActionListener(n); three.addActionListener(n);

four.addActionListener(n); five.addActionListener(n); six.addActionListener(n);

seven.addActionListener(n); eight.addActionListener(n); nine.addActionListener(n);

zero.addActionListener(n); decimal.addActionListener(n); negative.addActionListener(n);

delete.addActionListener(n);

add.addActionListener(c); sub.addActionListener(c); multiply.addActionListener(c);

div.addActionListener(c); equals.addActionListener(c); reset.addActionListener(c);

contentPanel= **new** JPanel();

contentPanel.setBackground(Color.***RED***);

reset.setForeground(Color.***BLUE***);

add.setBackground(Color.***WHITE***);

sub.setBackground(Color.***WHITE***);

multiply.setBackground(Color.***WHITE***);

div.setBackground(Color.***WHITE***);

contentPanel.setLayout(**new** FlowLayout());

contentPanel.add(answerfield, BorderLayout.***SOUTH***);

contentPanel.add(tap3); contentPanel.add(reset); contentPanel.add(tap3);

contentPanel.add(seven); contentPanel.add(eight); contentPanel.add(nine);

contentPanel.add(add); contentPanel.add(sub); contentPanel.add(tap4);

contentPanel.add(four); contentPanel.add(five); contentPanel.add(six);

contentPanel.add(multiply); contentPanel.add(div); contentPanel.add(tap5);

contentPanel.add(one); contentPanel.add(two); contentPanel.add(three);

contentPanel.add(tap2); contentPanel.add(tap6); contentPanel.add(zero);

contentPanel.add(decimal); contentPanel.add(negative); contentPanel.add(delete);

contentPanel.add(equals);

**this**.setContentPane(contentPanel);

}

**private** **class** Numbers **implements** ActionListener{

**public** **void** actionPerformed(ActionEvent event) {

JButton src= (JButton) event.getSource();

**if**(src.equals(one)) {

**if**(opChosen==**false**) {

**if**(stemp1==**null**) {

stemp1= "1";

}**else** {

stemp1= stemp1 + "1";

}

}**else** {

**if**(stemp2==**null**) {

stemp2= "1";

}**else** {

stemp2= stemp2 + "1";

}

}

}

**if**(src.equals(two)) {

**if**(opChosen==**false**) {

**if**(stemp1==**null**) {

stemp1= "2";

}**else** {

stemp1= stemp1 + "2";

}

}**else** {

**if**(stemp2==**null**) {

stemp2= "2";

}**else** {

stemp2= stemp2 + "2";

}

}

}

**if**(src.equals(three)) {

**if**(opChosen==**false**) {

**if**(stemp1==**null**) {

stemp1= "3";

}**else** {

stemp1= stemp1 + "3";

}

}**else** {

**if**(stemp2==**null**) {

stemp2= "3";

}**else** {

stemp2= stemp2 + "3";

}

}

}

**if**(src.equals(four)) {

**if**(opChosen==**false**) {

**if**(stemp1==**null**) {

stemp1= "4";

}**else** {

stemp1= stemp1 + "4";

}

}**else** {

**if**(stemp2==**null**) {

stemp2= "4";

}**else** {

stemp2= stemp2 + "4";

}

}

}

**if**(src.equals(five)) {

**if**(opChosen==**false**) {

**if**(stemp1==**null**) {

stemp1= "5";

}**else** {

stemp1= stemp1 + "5";

}

}**else** {

**if**(stemp2==**null**) {

stemp2= "5";

}**else** {

stemp2= stemp2 + "5";

}

}

}

**if**(src.equals(six)) {

**if**(opChosen==**false**) {

**if**(stemp1==**null**) {

stemp1= "6";

}**else** {

stemp1= stemp1 + "6";

}

}**else** {

**if**(stemp2==**null**) {

stemp2= "6";

}**else** {

stemp2= stemp2 + "6";

}

}

}

**if**(src.equals(seven)) {

**if**(opChosen==**false**) {

**if**(stemp1==**null**) {

stemp1= "7";

}**else** {

stemp1= stemp1 + "7";

}

}**else** {

**if**(stemp2==**null**) {

stemp2= "7";

}**else** {

stemp2= stemp2 + "7";

}

}

}

**if**(src.equals(eight)) {

**if**(opChosen==**false**) {

**if**(stemp1==**null**) {

stemp1= "8";

}**else** {

stemp1= stemp1 + "8";

}

}**else** {

**if**(stemp2==**null**) {

stemp2= "8";

}**else** {

stemp2= stemp2 + "8";

}

}

}

**if**(src.equals(nine)) {

**if**(opChosen==**false**) {

**if**(stemp1==**null**) {

stemp1= "9";

}**else** {

stemp1= stemp1 + "9";

}

}**else** {

**if**(stemp2==**null**) {

stemp2= "9";

}**else** {

stemp2= stemp2 + "9";

}

}

}

**if**(src.equals(zero)) {

**if**(opChosen==**false**) {

**if**(stemp1==**null**) {

stemp1= "0";

}**else** {

stemp1= stemp1 + "0";

}

}**else** {

**if**(stemp2==**null**) {

stemp2= "0";

}**else** {

stemp2= stemp2 + "0";

}

}

}

**if**(src.equals(decimal)) {

**if**(opChosen==**false**) {

**if**(stemp1==**null**) {

stemp1= "0.";

}**else**

**if**(stemp1 != **null**) {

**if**(stemp1.contains(".")) {

System.***out***.println("Decimal already there");

}**else** {

stemp1 += ".";

}

}

}**else** {

**if**(stemp2==**null**) {

stemp2= "0.";

}**else**

**if**(stemp2 != **null**) {

**if**(stemp2.contains(".")) {

System.***out***.println("Decimal already there");

}**else** {

stemp2 += ".";

}

}

}

}

**if**(src.equals(negative)) {

**if**(opChosen==**false**) {

**if**(stemp1==**null**) {

stemp1= "-";

}**else**

**if**(stemp1 != **null** && stemp1.startsWith("-")){

stemp1= stemp1.substring(1);

}**else** {

stemp1= "-" + stemp1;

}

}**else** {

**if**(stemp2==**null**) {

stemp2= "-";

}**else**

**if**(stemp2 != **null** && stemp2.startsWith("-")){

stemp2 = stemp2.substring(1);

}**else** {

stemp2= "-" + stemp2;

}

}

}

**if**(src.equals(delete)) {

**if**(opChosen==**false**) {

**if**(stemp1==**null**) {

System.***out***.println("No number");

}**else** {

stemp1= stemp1.substring(0, stemp1.length()-1);

}

}**else** {

**if**(stemp2== **null**) {

System.***out***.println("No number");

}**else** {

stemp2= stemp2.substring(0, stemp2.length()-1);

}

}

}

**if**(equalsClicked==**false**) {

**if**(opChosen==**false**) {

answerfield.setText(stemp1);

}**else** {

answerfield.setText(stemp2);

}

}

}

}

**private** **class** Calc **implements** ActionListener{

**public** **void** actionPerformed(ActionEvent event) {

JButton src= (JButton) event.getSource();

**if**(src.equals(add)) {

**if**(stemp1==**null**) {

System.***out***.println("\_");

}**else**

**if**(stemp1 !=**null** && stemp2==**null**) {

opChosen= **true**;

operation= '+';

}**else**

**if**(stemp1 != **null** && stemp2 != **null**) {

System.***out***.println("Two operations only");

}

}

**if**(src.equals(sub)) {

**if**(stemp1==**null**) {

System.***out***.println("\_");

}**else**

**if**(stemp1 !=**null** && stemp2==**null**) {

opChosen= **true**;

operation= '-';

}**else**

**if**(stemp1 != **null** && stemp2 != **null**) {

System.***out***.println("Two operations only");

}

}

**if**(src.equals(multiply)) {

**if**(stemp1==**null**) {

System.***out***.println("\_");

}**else**

**if**(stemp1 !=**null** && stemp2==**null**) {

opChosen= **true**;

operation= '\*';

}**else**

**if**(stemp1 != **null** && stemp2 != **null**) {

System.***out***.println("Two operations only");

}

}

**if**(src.equals(div)) {

**if**(stemp1==**null**) {

System.***out***.println("\_");

}**else**

**if**(stemp1 !=**null** && stemp2==**null**) {

opChosen= **true**;

operation= '/';

}**else**

**if**(stemp1 != **null** && stemp2 != **null**) {

System.***out***.println("Two operations only");

}

}

**if**(src.equals(equals)) {

**if**(stemp1==**null**) {

System.***out***.println("\_");

}**else**

**if**(stemp1 !=**null** && stemp2==**null**) {

System.***out***.println("Choose numbers first");

}

**if**(stemp1 != **null** && stemp2 != **null**) {

**double** d1= 0.0, d2= 0.0;

d1= Double.*parseDouble*(stemp1);

d2= Double.*parseDouble*(stemp2);

**switch**(operation) {

**case** '+':

answer= d1 + d2;

**break**;

**case**'-':

answer= d1 - d2;

**break**;

**case** '\*':

answer= d1 \* d2;

**break**;

**case** '/':

answer= d1 / d2;

**break**;

}

sanswer= Double.*toString*(answer);

answerfield.setText(sanswer);

**if**(operation== '/' && d2 == 0.0) {

answerfield.setText("Math error");

}

}

}

**if**(src.equals(reset)) {

stemp1= **null**; stemp2= **null**;

equalsClicked= **false**;

opChosen= **false**;

operation= ' ';

answerfield.setText(**null**);

sanswer= **null**;

}

}

}

}