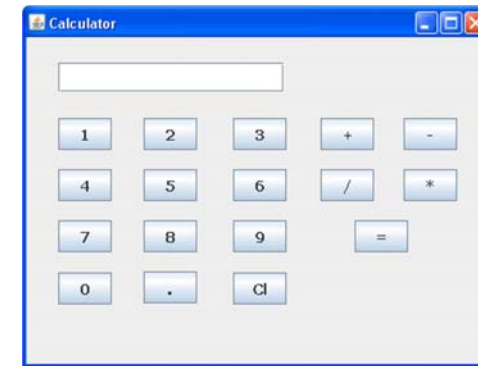


# Lecture (02) Java Forms II

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Summer 2016

## Extending the Functionality of your Calculator



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- Now that the plus button is working OK, we can add buttons to subtract, divide and multiply.
- Just like the addition button, however, these buttons won't do any calculations: the equals button will still do all the work.
- The only thing the operator buttons will do is to record which button was clicked: add, subtract, divide, or multiply.
- The first thing to do is to place some more buttons on your form.
- In the image below, we've moved the Clear button, and put all the operator buttons in the panel to the right.
- Feel free to come up with your own design, though:

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- Once you've added the new buttons, rename the default variables to btnSubtract, btnDivide, and btnMultiply.
- The technique we'll use to get which operator button was clicked is to store the button text in a field variable.
- We can then use a switch statement to examine which character is in the field variable.
- If it's the + symbol we can add; if it's the symbol we'll subtract; if it's the / symbol we'll divide; and if it's the \* symbol we'll multiply.

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- Add the following field variable to the top, just below your other two:

```
public class javaCalc extends javax.swing.JFrame {
    private double total1=0;
    private double total2=0;
    private char math_operator=' ';
}

```

- So locate your **btnPlus** code and delete the following two lines from it:

```
private void jButton12ActionPerformed(java.awt.event.ActionEvent evt) {
    // TODO add your handling code here:
    math_operator='+';
    total1=total1+Double.parseDouble(jTextField1.getText());
    jTextField1.setText("");
}

```

- The same two lines can be added to the other operator button, only changing the name of the button.

```
private void jButton16ActionPerformed(java.awt.event.ActionEvent evt) {
    if(total1==0 && math_operator==' ')total1=Double.parseDouble(jTextField1.getText());
    else total1=total1-Double.parseDouble(jTextField1.getText());
    math_operator='-';
    jTextField1.setText("");
}

```

```
private void jButton17ActionPerformed(java.awt.event.ActionEvent evt) {
    if(total1==0 && math_operator==' ')total1=Double.parseDouble(jTextField1.getText());
    else total1=total1*Double.parseDouble(jTextField1.getText());
    math_operator='*';
    jTextField1.setText("");
}

```

```
private void jButton18ActionPerformed(java.awt.event.ActionEvent evt) {
    if(total1==0 && math_operator==' ')total1=Double.parseDouble(jTextField1.getText());
    else total1=total1/Double.parseDouble(jTextField1.getText());
    math_operator='/';
    jTextField1.setText("");
}

```

- For the equals button, we can set up a switch statement to examine what is in the **math\_operator** variable.

```
private void jButton13ActionPerformed(java.awt.event.ActionEvent evt) {
    switch (math_operator)
    {
        case '+':
            total2=total1+Double.parseDouble(jTextField1.getText());
            jTextField1.setText(Double.toString(total2));
            break;
        case '-':
            total2=total1-Double.parseDouble(jTextField1.getText());
            jTextField1.setText(Double.toString(total2));
            break;
        case '*':
            total2=total1*Double.parseDouble(jTextField1.getText());
            jTextField1.setText(Double.toString(total2));
            break;
        case '/':
            total2=total1/Double.parseDouble(jTextField1.getText());
            jTextField1.setText(Double.toString(total2));
            break;
    }
}
```

```
case '/':
    total2=total1+Double.parseDouble(jTextField1.getText());
    jTextField1.setText(Double.toString(total2));
    break;
default:
    break;
}
math_operator=' ';
total1=0;
}
```

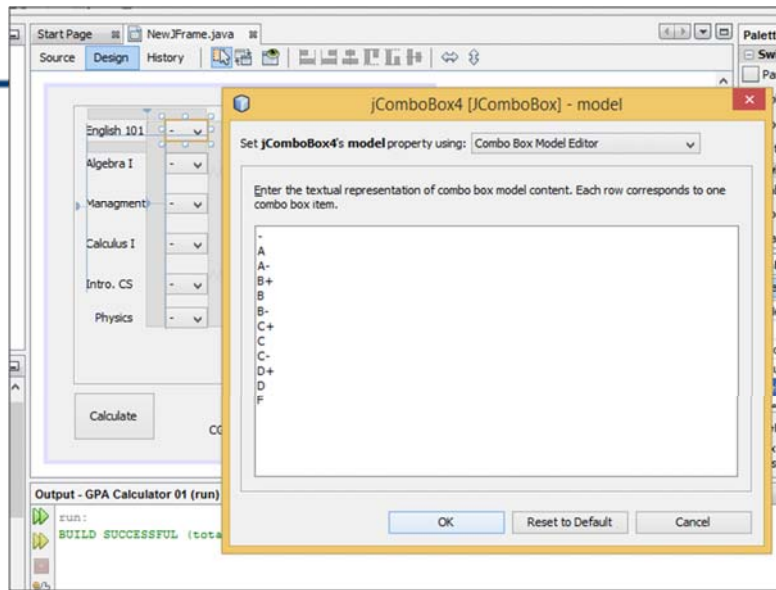
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## GPA Calculator

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Grade	GPA
A	4
A-	3.7
B+	3.3
B	3
B-	2.7
C+	2.3
C	2
C-	1.7
D+	1.3
D	1
F	0


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```
private void jButton1ActionPerformed(java.awt.event.ActionEvent evt) {
    // TODO add your handling code here:
    String[] Grades;
    Grades = new String[13];
    double CH=0;
    double GPA=0;
    Grades[0]=jComboBox1.getSelectedItem().toString();
    Grades[1]=jComboBox2.getSelectedItem().toString();
    Grades[2]=jComboBox3.getSelectedItem().toString();
    Grades[3]=jComboBox4.getSelectedItem().toString();
    Grades[4]=jComboBox5.getSelectedItem().toString();
    Grades[5]=jComboBox6.getSelectedItem().toString();
    Grades[6]=jComboBox7.getSelectedItem().toString();
    Grades[7]=jComboBox8.getSelectedItem().toString();
    Grades[8]=jComboBox9.getSelectedItem().toString();
    Grades[9]=jComboBox10.getSelectedItem().toString();
    Grades[10]=jComboBox11.getSelectedItem().toString();
    Grades[11]=jComboBox12.getSelectedItem().toString();
    Grades[12]=jComboBox13.getSelectedItem().toString();
}
```

```
for(int n=0;n<13;n++)
{
    switch (Grades[n])
    {
    case "A":
        CH+=3;
        GPA+=(3*4);
        break;
    case "A-":
        CH+=3;
        GPA+=(3*3.7);
        break;
    case "B+":
        CH+=3;
        GPA+=(3*3.3);
        break;
    case "B":
        CH+=3;
        GPA+=(3*3);
        break;
    case "B-":
        CH+=3;
        GPA+=(3*2.7);
        break;
    case "C+":
        CH+=3;
        GPA+=(3*2.3);
        break;
    case "C":
        CH+=3;
        GPA+=(3*2);
        break;
    case "C-":
        CH+=3;
        GPA+=(3*1.7);
        break;
    case "D+":
        CH+=3;
        GPA+=(3*1.3);
        break;
    case "D":
        CH+=3;
        GPA+=(3*1);
        break;
    case "E":
        CH+=3;
        GPA+=(3*0);
        break;
    case "-":
        break;
    }
    GPA=GPA/CH;
    jTextField1.setText(Double.toString(CH));
    jTextField2.setText(Double.toString(GPA));
}
```

```
case "D":
    CH+=3;
    GPA+=(3*1);
    break;
case "E":
    CH+=3;
    GPA+=(3*0);
    break;
case "-":
    break;
}
}
GPA=GPA/CH;
jTextField1.setText(Double.toString(CH));
jTextField2.setText(Double.toString(GPA));
}
```

A photograph of a wooden pier structure over water at sunset. The scene is bathed in a warm, golden light from the setting sun, which is visible in the background. The wooden beams and posts of the pier create a strong sense of perspective, leading the eye towards the horizon. The water in the foreground is dark and reflects the light from the sky and the pier. A semi-transparent, light-colored rectangular box is overlaid in the center of the image, containing the text "Thanks, See you next Lecture, isA".

Thanks,  
See you next Lecture, isA