

IST 256  
Lab Week 2 – Wednesday, January 27, 2010

**Lab Exercise 1. Writing a first GUI program – Each student should do their own program for this exercise.**

**1. Login to lab computers**

Check your directory (folder) structure and go to your student H: drive on your SU space. Create a folder to hold all of your class projects; name it something like IST256Projects.

**2. Open NetBeans and create a new project**

Go to the Program menu and find NetBeans. Open the directions for starting a new project in NetBeans and create a Java GUI Application called NumberAdd.

**3. Create the Form Design.**

Change the size and shape of the form by dragging the corner with the mouse.

- **Add three labels to the form** by dragging the objects from the Palette pane (upper right hand side).
  - For each label, make sure that the Properties tab is selected in the lower right hand pane. Scroll down to find the text property and change it to the text you want (e.g. the first one can say Type first number:, by typing in the property window and hitting enter.) You can also change the Font typeface and size (use the ... to open and close the Font properties menu.) And you can use Foreground to change the color of the text.
- **Add three textfields to the form** by dragging the objects from the Palette pane.
  - For the first textfield, change the text property to be empty (and hit enter). Then resize the textfield on the form with your mouse.
  - For the second and third textfields, do a “copy” and “paste” to create new ones, and drag them below the first one.
  - Click on each textfield and make sure that they are Textfield1, Textfield2 and Textfield3 in order.
- Add a button to the form by dragging it from the Palette pane.
  - Change the text property of the button to be an instruction to the user, e.g. Add Numbers.
- **To add a program to be executed** when the user clicks the button, right click on the button on your form and select Event -> Action -> actionPerformed.

**Add the following code right after the comment with TODO:**

```
// declarations of variables to hold the three numbers
int num1, num2, sum;

// get the two numbers typed by the user
// and convert them from Strings to numbers of type int
num1 = Integer.parseInt(jTextField1.getText());
num2 = Integer.parseInt(jTextField2.getText());

// add the two numbers and assign the result to the variable called sum
sum = num1 + num2;

// convert the sum number to a string and display in the textfield
jTextField3.setText(String.valueOf(sum));
```

- **Run this program** by the little green triangle on the top bar.
  - When the program executes, it should bring up the user interface form, and you should type in two integers into the first two text fields. Then click on the button to get the sum.
- **Test your program with three sets of integers:**
  - **Write down what integers you typed in and what the results are here. Try some negative numbers.**

First Number	Second Number	Sum

- Note that NetBeans saves your project as you work.

### Lab Exercise 2 – Modifying the Number Add program – work as programming pairs:

Change the number add program so that it also multiplies numbers and has a Clear button to clear the previously typed numbers from the textfields.

#### 1. Change the form:

Add a fourth label to say “Result of multiplying numbers” and a fourth textbox. Add a button that says “Clear” and select Event -> Action -> actionPerformed.

#### 2. Write the Clear Button Program.

In the actionPerformed function for the second button, add the code after TODO

```

jTextField1.setText("");
jTextField2.setText("");
jTextField3.setText("");

```

#### 3. Add Code to the Add Button Program.

Go to the actionPerformed function that you wrote before.

Add a fourth variable to the variable declarations for a variable called “product”.

After the line that assigns a value to the variable “sum”, add an assignment statement:

```
product = num1 * num2
```

Then add a line to display the product in the fourth textfield:

```
jTextField4.setText(String.valueOf(product));
```

- **Run this program** by the little green triangle on the top bar.

- **Test your program with three sets of integers:**
  - Write down what integers you typed in and what the results are here. Try some negative numbers.

First Number	Second Number	Sum	Product

**Lab Exercise 3. Writing a second GUI program – This exercise is to be done as programming pairs, but exchange the role of driver and navigator.**

**1. Create a new project**

Follow the directions for starting a new project in NetBeans and create a Java GUI Application called ConvertMeters.

**3. Create the Form Design.**

- **Add three labels to the form** by dragging the objects from the Palette pane (upper right hand side).
  - One label should say “Type number in meters”
  - The second label should say “Result in feet”
- **Add two textfields to the form** by dragging the objects from the Palette pane.
- **Add a button** to the form by dragging it from the Palette pane.
  - Change the text property of the button to be something like “Convert Number”
- **To add a program to be executed** when the user clicks the button, right click on the button on your form and select Event -> Action -> actionPerformed (for this program, you can refer to what we wrote in class on Monday.)
  - Add a variable declaration for two variables of type double: meters and feet
  - Get the number of meters that the user typed in
  - Compute the number of feet by multiplying the meters time 3.28084
  - Display the result in the second textfield
- **Run the program**
- **Test the program** with 3 numbers. Show the numbers that you tried and the results here:

Number in Meters	Number in Feet

**Lab Exercise 4. Be prepared to answer questions about your program and your results.**