

IST 256
Lab Week 1 – Tuesday, January 14, 2014

The main objective of this lab is to get familiar with starting two kinds of projects in the NetBeans development environment:

- Java applications
- Java GUI programs

Lab Exercise 1. Writing a first Java application program – Each student will do their own program, and we will all work through the directions together.

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. Starting a Project in NetBeans.

Go to the Program menu and find NetBeans and start it. Read the directions for starting a new project in NetBeans and follow them down through the Java Application called Hello. This produces a main method that looks something like this:

```
public static void main(String[] args) {  
    // TODO code application logic here  
    System.out.println("Hello World");  
}
```

3. Add code in the main method to add two numbers and print the result.

Add the code that declares and initializes two variables to hold numbers, adds them, and prints the results. This code should go after the line that prints “Hello World” and before the “}” that ends the main method. You can copy and paste parts of this code, but be very careful to keep matching “{“ and “}”. Note that any text that follows two slashes “//” on a line is a comment to the user and is not part of the code. Also note that every Java statement is followed by a semicolon “;”:

```
// declare three variables of type integer  
int number1, number2, sum;  
String result;
```

Now put two lines that put numbers into the variables named number1 and number2. Pick your own two numbers and put them where this shows ?.

```
// initialize two variables to specific values  
number1 = ?;  
number2 = ?;
```

```
// add the numbers together and assign to the variable sum  
sum = number1 + number2;
```

```
// create a string that has an output label with the resulting number
```

```
result = "The sum is " + sum;
```

```
// System.out.println is a function that prints a string to the output pane  
System.out.println( result );
```

Run this program and see the result in the output pane. Is the sum what you expected?

Lab Exercise 2. Writing a first GUI program

1. Starting another Project in NetBeans.

Go back to the directions for starting a new project in NetBeans and call it NumberAdd. Follow the directions for creating a Java GUI Application.

2. 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, to change the text, either
 - 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.)
 - or select the label with one click of the mouse, then right click and select Edit Text to change the text (don't double click because you'll get extra Events created for you). Be sure and hit "enter" when you finish typing the text.
 - Change the text of the three labels to be
 - "Type First Number:"
 - "Type Second Number:"
 - "Result of Sum: "
 - 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.

3. Create and run the program

Add the following code right after the comment with TODO in the jButton1ActionPerformed method definition (middle of the code):

```
// declarations of variables to hold the three numbers
int num1, num2, sum;
String text1, text2, text3;

// get the two numbers typed by the user (as Strings)
text1 = jTextField1.getText();
text2 = jTextField2.getText();
// and convert them from Strings to numbers of type int
num1 = Integer.parseInt(text1);
num2 = Integer.parseInt(text2);

// 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
text3 = String.valueOf(sum);
jTextField3.setText(text3);
```

You can copy and paste this code, but again be careful of the “{“ and “}”. Also, it’s important for programming style to indent the code, and you can indent an entire section by selecting it and clicking on Tab.

- **Run this program** by clicking 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.**
At the end of the week, put your name on this lab sheet and hand it in. This week’s labs are due by the beginning of class on Tuesday, Jan. 21.