

IST 256  
Lab Week 3 – Wednesday, February 3, 2010

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

**1. Login to lab computers**

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

Go to the Program menu and find NetBeans. Start a new project in NetBeans and create a Java GUI Application called ComputeSalary. If you need to look at the details, refer back to the instructions from last week. But remember the three main steps: create the new project, create the new JFrameForm and name it something like ComputeSalaryUI, and set the Properties under Run to have the form as the main class.

**3. The program specification**

This program should allow the user to type in the number of hours they worked in a week. Then they can click on a button to compute the salary for that week. The salary is computed as follows: If the number of hours is less than or equal to 40, the pay rate is \$10 per hour and otherwise it is \$15 per hour. Display the salary in a label.

**4. Create the Form Design.**

- **Add a label to the form** by dragging it from the Palette pane (upper right hand side).
  - Scroll down to find the text property and change it to an instruction to the user, something like “Type number of hours worked.”
- **Add a textfield to the form** by dragging it from the Palette pane.
  - Change the text property to be empty (and hit enter). Then resize the textfield on the form with your mouse.
- 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. Compute Salary.
- Add another label to the form below the button to show the Salary.
- **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.

**5. Add the Program**

**Go to the Source tab and find the actionPerformed method and add a comment before it. My comment (using the multi-line comment notation):**

```
/* Get the number of hours worked from the form and compute the Salary
 * and display it in a label
 * Programmer: Nancy McCracken
 */
```

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

```
// declare variables for hours worked and resulting salary
int hours;
double salary;

// get the number of hours that the user typed into the textfield
hours = Integer.parseInt(jTextField1.getText());

// if hours are <= 40, pay rate is $10, otherwise it is $15
if (hours <= 40) {
    salary = hours * 10.0;
}
else {
    salary = hours * 15.0;
}

// display the salary (as a decimal number) in the second label
jLabel2.setText("Salary = " + String.valueOf(salary));

}
```

- **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 an integer into the text field. Then click on the button to get the salary.
- **Test your program with three integers:**
  - **Write down what integers you typed in and what the results are here. Make sure that at least one integer is greater than 40. Do the results look plausible?**

Hours	Salary

- Note that NetBeans saves your project as you work.

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

### 1. Program Specification

Change the ComputeSalary program so that it also allows the user to type in whether they work the night shift or day shift. Then the salary is computed as follows:

The pay rate for hours  $\leq 40$  and  $> 40$  is the same as before.

In addition if the work the night shift, then they get a bonus of \$20.

### 2. Change the form:

Add a third label right under the Type hours label to say “Type shift, either night or day” and a second textbox beside it.

### 3. Add code to your program.

Go to the actionPerformed function that you wrote before.

Add a third variable declaration for a variable of type String that will represent the shift.

Get the shift from the second Textfield (jTextField2).

After the If statement (where is that?) add another If statement to add to the salary if the user should get a bonus. (If you don’t remember how to compare a String variable, just ask.)

- **Run this program** by the little green triangle on the top bar.
- **Test your program:**
  - **Perform the following 4 tests, using the input indicated and show the result.**

Test Run	Hours	Shift	Salary
1	46	day	
2	32	day	
3	46	night	
4	32	night	

**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 ComputeWings.

**2. Program Specification**

This program should allow the user to type in the number of people coming to a party where they want to serve wings. Then they can click on a button to compute the number of wings they should order for the party. First, make the number of wings be the number of people multiplied by 7. Then if the number of people is more than 10, subtract 6 wings from the number. But if the number of people is less than or equal to 10, add 6 wings to the order. Display the number of wings in a label.

**3. Create the Form Design.**

- **You'll need two labels for the form:**
  - One label should say "Type number of people"
  - The second label should say "Wings"
- **Add a textfield to the form** and place it beside the first label.
- **Add a button** to the form by dragging it from the Palette pane.
  - Change the text property of the button to be something like "Compute Number of Wings"
- **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 . Write a program that does the following.
  - Add variable declarations for two integer variables for the number of people and the number of wings.
  - Get the number of people that the user typed into the textfield
  - Compute the initial number of wings by multiplying the number of people times 7
  - Write an If statement to either add 6 wings to the number of wings or subtract it, depending on the condition specified.
  - Display the result in the second label.
- **Run the program**
- **Test the program** with 3 numbers. Show the numbers that you tried and the results here:

Number of People	Number of Wings

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