

IST 256
Lab
Week 3 – Thursday, January 30, 2014

1. Correcting Programming Errors

An important programming skill is to be able to read someone else's program and understand it. Another important skill is to be able to debug errors in code.

For this part of the lab, you should download the file `DebugThisLoop.zip` and unzip it in your IST256 projects directory, or wherever you have been storing your NetBeans projects. (To unzip, right click on the zip file and select Extract All from the menu.)

In NetBeans under the File menu, use the Open Project to go to the `DebugThisLoop` folder and open that program. In the NetBeans left-hand Projects pane, use the directory structure to open the file `main.java`.

This program shows red for the errors in the program. Correct the errors and make sure that the program is running correctly.

Print the code for this program and hand it in with your lab.

2. Understanding While Loops – showing the variables of a program

For this problem, you are not to put any part of the program into NetBeans. You are to write your answers on this lab sheet.

As a program is executed, it will keep the variables in memory, and the values of the variables will change during the execution of the program.

Consider the following program:

```
int sum = 0;
int count = 0;

//sum the integers starting from 1
//      until the sum is greater than or equal 12
while (sum < 12)
{
    count++;
    sum = sum + count;
}
System.out.println("Numbers counted = " + count);
```

1. In the table below, write the values of the variables sum and count after they are initialized (in the first assignment statement) under the column labeled “init”.
2. Then for each loop iteration, write the values of the variables count and sum at the end of that loop iteration (from the assignment statements during the loop. These are labeled Val1 on up in the table. At each iteration, **decide whether the loop continues** and only put in as many values as necessary:

Variable	init	Val1	Val2	Val3	Val4	Val5	Val6	Val7
count								
sum								

What message will be printed out to the user at the end of the program? (either write the entire message or the value of the count variable here):

3. Compute Savings

Open a new project with NetBeans named something like **ComputeSavings**. Make the project have a JFrameForm for the user interface. (Remember the steps to do this?)

For this example, you are to write a similar application to the ComputeInterest project, except that this time the user wants to achieve a savings goal and needs to compute how many years it will take to achieve their goal amount. Furthermore, each year the user will add in an additional yearly savings to their balance.

Make the form for this application, giving a Label and a TextField for each item that the user must input:

Initial bank balance

Yearly savings (to be saved each year in addition to the initial amount)

Goal savings amount

There should be a button named something like Compute Number of Years to Achieve Goal. There should be two TextFields or Labels to show results: one should show the final bank balance and the other should show the number of years.

Refer to the code developed in class that has the initial bank balance and the goal savings. **You should put in this code and you must add code that will also add in the yearly savings each year.**

- Declare variables for initial savings, balance, yearly interest, yearly savings, goal and number of years.
- After the declarations of variables, set the number of years variable to start at 0 and the balance to start with the initial savings amount.
- Write a while loop.
 - The condition for the while loop should be to continue the loop as long as the balance is less than the savings goal.
 - The body of the loop will include the statements to compute the amount of interest earned per year at 5% and the new balance that **adds in the yearly interest and the yearly savings**.
 - Also add a statement to the body of the while loop to explicitly add one to the number of years variable during the loop.
- After the while loop, **display the number of years and the balance to the user. Show the balance as currency** with a currency formatter.

Test your program and write two test examples here:

	Test 1	Test 2
Initial bank balance typed by user		
Yearly savings		
Savings goal		
Number of years to achieve goal		
Final bank balance		

Hand in this lab sheet by Tuesday, February 4, with your answers and attach the code from the button to compute the number of years.