

IST 256
Lab
Week 4 – January 22, 2010

1. Programming Practice

A. Suppose that you have a variable declared to hold the balance of a checking account with a minimum balance rule:

double balance;

and that an initial part of the program gets the value of the balance from the user.

Write a conditional statement that updates the balance with any monthly fee. The rule for the fee is that if the balance is less than \$500 (the minimum balance), an account fee of \$20 is subtracted from the balance, and otherwise, no fee is taken. Write your answer here:

B. Suppose that you have a variable that is declared to hold the purchase amount for a customer:

double purchase;

and that an initial part of the program gets the value of the purchase from the user.

Write some code that will compute the sales tax for this purchase at 8%, adds it to the purchase and saves it into a variable called total. Show all variable declarations that you would make:

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.

A. Consider the following program:

```
int sum = 0;
int count = 1;

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

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

1. In the table below, write the values of the variables count and sum 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 number will be shown to the user in Label1.Text at the end of the program? (write it here):

4. 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.

Write this application, allowing the user to type in:

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 and a TextField or Label to show the results.

You may want to refer back to the code developed in class that has the initial bank balance and the goal savings. But 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 to the user.

Test your program and write one example here:

Initial bank balance typed by user	
Yearly savings	
Savings goal	
Number of years to achieve goal	

Hand in this lab sheet with your answers.