IST 256
In-Class Exercises and Lab
Week 4 – Monday, February 8, 2010

Exercise 1. For loop examples

1. Open NetBeans and create a new application project
After starting NetBeans, go to the File -> NewProject. On the first page, leave Java and Java Application selected and on the second page, type the name of a project, for example TestFor.

2. **Write application code in the method called main**.

Add the following code right after the comment with TODO: (you may have to re-type the quote characters if you copy and paste, but I tried to make them programming quotes.)

```
for (int i = 1; i < 11; i++) {
        System.out.println("Index is: " + i );
     }
```

Run this program by the little green triangle on the top bar. Look at the values in the system output pane at the bottom; you may have to scroll to see all the output.

3. Modify the code to sum the first 10 integers.

Before the for loop, declare and initialize a variable to compute the sum:
        int sum = 0;

Inside the loop, before the print statement, add a statement to add i to the sum:
        sum = sum + i;

Change the print statement to print both i and sum:
        System.out.println("Index is: " + i+ " Sum is: " + sum);
Remember to check the quotes.

In the following boxes, write the values of the variables that were printed as this program is executed:

Variable	Val1	Val2	Val3	Val4	Val5	Val6	Val7	Val8	Val9	Val10	Val11
i											
sum											

Exercise 2: Thinking about a For Loop

Suppose that you have the following program:

```
 int square, sum = 0;
 // for loop that sums the squares of the first 7 integers
for (int i = 1; i < 8; i++) {
        square = i * i;
        sum = sum + square;
        System.out.println("Index is: " + i + " Sum is: " + sum);
}
```

Without typing this program into NetBeans, in the following boxes, write the values of the variables as this program is executed:

Variable	Val1	Val2	Val3	Val4	Val5	Val6	Val7
i							
square							
sum							

Exercise 3. Writing a Java GUI application with a For statement:

1. Create a new project
Go to the File -> NewProject. On the first page, leave Java and Java Application selected and on the second page, type the name of a project, for example ComputeInterest.

2. Create the GUI form and make it the main class.
In the left hand pane, right click on the name of the project (ComputeInterest) and select New -> JFrameForm. Name the form something like ComputeInterestForm.
Now again right click on the name of the project (ComputeInterest) and this time select Properties. Now select Run in the left pane, and browse to select ComputeInterestForm as the main class in the right pane.

3. Write application code in the method called main.

In this GUI application, we assume that there is a bank offering 5% interest on its savings accounts. On the form, the user can type in two things: their savings amount and the number of years that the amount will get interest, computing annually. They will be shown what their savings amount would be increased to after that many years.

So make a form with
- two labels and two textfields where the user can type in their savings amount, sometimes called the balance, and the number of years,
- a button that they can click to get the interest computed,
- and a textfield or label where the new balance plus interest will be displayed. If it is a textfield, make it really wide.

Right click on the button and select Events -> Action -> actionPerformed to create the source code.

Add code to compute the interest in the actionPerformed method, right after the comment with TODO:

Declare two double variables called balance and yearlyinterest and initialize them to 0.0, and an integer variable for the number of years.

```
double balance, yearlyinterest = 0.0;
int numyears = 0;
```

Get the values that the user types into the textfields.

```
// get savings amount and number of years from user
balance = Double.parseDouble(jTextField1.getText());
numyears = Integer.parseInt(jTextField2.getText());
```

Use a for loop to compute the interest every year and add it to the balance to get a new balance.

```
// compute 5% interest each year and add to balance
for (int i = 1; i <= numyears; i++) {
    yearlyinterest = balance * .05;
    balance = balance + yearlyinterest;
}
```

And finally, display the result to the user.

```
// display the new balance to the user
jTextField3.setText(String.valueOf(balance));
```

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

Try at least two sets of values for the savings amount and the number of years.