**ITCS 1212L**

**Lab 7**

**Loops II and Files**

**Objectives:**

* **To work with the while loop**
* **To introduce the do-while loop**
* **To work with the for loop**
* **To work with nested loops**
* **To briefly introduce the concept of files**
* **Work with the debugger**

**Lab 7a:**

Create a project named Lab7a in CodeBlocks. Type the following code in the main and make sure to compile it with debug option enabled.

**Sample Code:**

1 int main( )

2 {

3 char goAgain;

4 int number = 0;

5 //initialize the variable used in the condition;

6 goAgain = ‘y’ ;

7

8 //this is the while loop header

9 while (goAgain == ‘y’) {

10 cout << “Here I am in the loop, my variable counter has a value of : “<< number << endl;

11

12 number = number + 1;

13

14 cout <<“Do you want to loop again, enter y for yes: “;

15

16 //this updates the condition. IMPORTANT

17

18 cin >> goAgain;

19 }

20 cout << “You are done looping, bye! Here is how many times you repeated the loop: “<<number<<endl;

21

22 return 0;

23 }

1. Debug your program using the following two scenarios.
   1. Click the mouse to place it at the start of the line of code you want.
   2. Click the Run to Cursor button on the Debugging toolbar.
   3. Click the Debugging Windows button.
   4. Choose the Watches command to watch how the value of number changes as you loop through the program using ‘Next line’.
   5. Remove the breakpoints, let the program run and finish it.
2. Set up a Breakpoint at lines 9 and 12.
   1. Use next Line to trace the program.
   2. Let the program run and finish it.

A sample program is given to you in lab 7a. You need to use the debugger to execute the program and check the values of the variables.

**TA Check: \_\_\_\_\_\_\_\_\_\_\_\_**

**Lab 7b:**

Create a project named Lab7b in CodeBlocks. For lab 7b, you need to write a program that will calculate a tip on a meal, until the user decides to quit. The user needs to enter the price of the meal and the percent of the tip for each iteration using ‘while’ loop.

**TA Check: \_\_\_\_\_\_\_\_\_\_\_\_**

**Lab 7c:**

Create a project named Lab7c in CodeBlocks. Study the following code. You need to run this code in the debug mode to check how the program validates the user’s input (price) that is positive. In the lab7c, you need to test the following program using both negative and positive input.

int main( )

{

double price;

do

{

cout <<“Enter a positive price for an item: “;

cin >> price;

}while(price <= 0);

//when this is true, the block repeats-when the

// user enters bad data the loop exits when the

// user enters good data because the condition

// becomes false

cout << “Great, you entered a positive value for price!”;

return 0;

}

Add a block comment on top of this code and explain briefly what does this program do.

**TA Check: \_\_\_\_\_\_\_\_\_**

**Lab 7d:**

Create a project named Lab7d in CodeBlocks. In lab7d, you need to write and test a program to validate user input. The user must enter two double values, one greater than 5, one less than zero AND a menu choice of ‘A’, ‘B’ or ‘C’. This can be done using three do-while loops. (Maybe you can figure out more efficient way of doing that in less number of loops.) The only thing this program does is input validation. Simply print a message after each do-while loop stating the data entered is valid.

**TA Check: \_\_\_\_\_\_\_\_\_\_\_**

**Lab 7e:**

Create a project named Lab7e in CodeBlocks.

You should have studied the following code:

#include<iostream>

using namespace std;

int main( ) {

double testScore;

double total;

double average;

total = 0;

cout << “Enter the score for test 1: “;

cin >> testScore;

total = total + testScore;

cout << “Enter the score for test 2: “;

cin >> testScore;

total = total + testScore;

cout << “Enter the score for test 3: “;

cin >> testScore;

total = total + testScore;

average = total/3;

cout << “The average for the three tests is: “ << average << endl;

return 0;

}

In this lab, you need to change the above code so it will calculate an average and print the new average of several test scores, which the number of them is determined by the user. Also, this can be done for any number of ‘students’ which means that you have to use a nested-loop. You need to look at the code example from the textbook that was discussed during the lecture.

**TA Check: \_\_\_\_\_\_\_\_\_\_**

**Lab 7f:**

Create a project named lab7f in CodeBlocks. In this lab, you need to use a for-loop to write a program to print 10 random integers in the range of 1 to 30. Be sure to look at the output to be sure all the numbers printed are in this range.

**TA Check: \_\_\_\_\_\_\_\_**

**Lab 7g:**

Create a project named lab7g in CodeBlocks. In this lab, you need to use a for-loop to write a program to print 10 random integers in the range of 1 to 30. Be sure to look at the output to be sure all the numbers printed are in this range.

**TA Check: \_\_\_\_\_\_\_\_**

**Lab 7f:**

Create a project named lab7f in CodeBlocks. In this lab, you need to use the web services from lab3b to calculate the stock portfolio. The program should ask the user to enter the number of stocks and based on that would use a loop to prompt the user for the stock symbol. The program should have a running total to calculate the total value of the stock portfolio.

**TA Check: \_\_\_\_\_\_\_\_**