**C/C++ SUM OF NUMBERS LAB REPORT**

**1) Enter your name, student ID, platform (Mac or PC) and date**

Name and StudentID: Samuel Indurkar, 0888068

Class: CIS054 C/C++ Programming

Platform (Mac or PC): Eclipse and gcc on MAC  
Date: 6/22/2017

**OBJECTIVES:**

Use a  **while** loop to input multiple numbers  
Use the **%** (modulo) operator to determine if a number is odd or even

Use variables to accumulate the totals and the average

**PROJECT DESCRIPTION:**

Write a program that reads in ten whole numbers and then outputs the sum of all the odd numbers, the sum of all the even numbers, and the sum of all numbers, whether even or odd. The user enters the ten numbers just time each and they can be entered in any order. Your program should not ask the user to enter the even and odd numbers separately. You MUST use a loop in this program. Use an integer for input. Note, use **value%2** to determine if the number is even or odd. The mod 2 (%2) returns a zero or one depending on whether the number is even (value%2 == 0) or odd (value%2 == 1).

**EXTRA CREDIT:** 3 points – must be submitted at the same time as the original lab report

In addition to displaying the three sums, display the average of all ten numbers. Since you know that ten numbers were input, the average is the SumOfAllNumbers/10.

|  |  |  |
| --- | --- | --- |
| **INPUTS** | **PROCESSING** | **OUTPUTS** |
| Ten numbers | SumOfOddNumbers = 0  SumOfEvenNumbers = 0 SumOfAllNumbers = 0  LoopCount = 0  While LoopCount < 10  Read number from the keyboard  If number is Odd  SumOfOddNumbers += number  SumOfAllNumbers += number  else  SumOfEvenNumbers += number  SumOfAllNumbers += number  LoopCount ++  End Loop  Identify and display all three sums  Compute and display the average (3 points Extra Credit) | SumOddNumbers  SumOfEvenNumbers  SumOfAllNumbers |

**LAB REPORT:**

**2) Fill in the TEST VALUES & RESULTS table. Run the program two times with a different set of numbers each time.**

|  |  |  |
| --- | --- | --- |
| **TEST DATA VALUES** | **EXPECTED RESULT**  Computed values before  the program is run | **ACTUAL RESULT**  Fill in the output displayed  by the program |
| First set of ten numbers  1,2,3,4,5,6,7,8,9,10 | SumOfOddNumbers = 25  SumOfEvenNumbers = 30 SumOfAllNumbers = 55  AVG Value = 5.5 | SumOfOddNumbers = 25  SumOfEvenNumbers = 30 SumOfAllNumbers = 55  AVG val = 5 |
| Second set of ten numbers  10,11,12,13,14,15,16,17,18,19 | SumOfOddNumbers = 75  SumOfEvenNumbers = 70  SumOfAllNumbers = 145  AVG val = 14.5 | SumOfOddNumbers = 75  SumOfEvenNumbers = 70  SumOfAllNumbers = 145  AVG val = 14 |

**DISCUSSION:**

**3) Complete the DISCUSSION section. It does not need to be long, but it needs to be complete.**3a) What did you do to develop the program? ("Followed the Directions" is not a complete description

Started with the following variables initialized to zero.

SumOfOddNumbers = 0

SumOfEvenNumbers = 0  
SumOfAllNumbers = 0

LoopCount = 0

Then added a while loop for 10 count to read a number

and update the odd/even sum, and also the cumulative sum

While LoopCount < 10

Read number from the keyboard

If number is Odd

SumOfOddNumbers += number  
 SumOfAllNumbers += number

else

SumOfEvenNumbers += number

SumOfAllNumbers += number

LoopCount ++

End Loop

At the end of loop, display all three sums

Compute and display the average using double

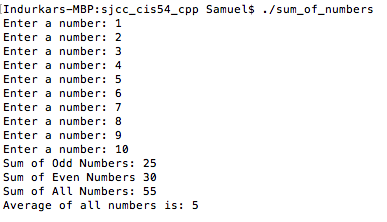
3b) What problems did you have and how did you overcome the problems?

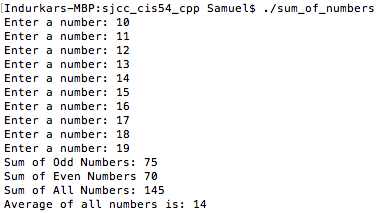
For average I tried int and double. Even with double, it was still displaying an integer (whole) number.

**PROGRAM OUTPUT:**

**4) Show two screen shots of the program execution.**

1. Run the program with ten input values



1. Run the program with a different set of ten numbers

For the Mac, hold down **command + shift + control** keys and press the **3** key.

Use **command+V** to paste the clipboard into the lab report.

For Windows, There are two ways you can capture a screen shot of only your program:

* Use Microsoft's **Snipping Tool** by clicking on the **Start** icon and selecting **"All Programs"** then **"Accessories".** Use the mouse to select the area of the screen you want to save then click Ctrl-C or select the menu items Edit-Copy to save the image to the clipboard.
* Capture the active window to the clipboard by holding down the **Alt** key and tapping the **PrintScreen** key. NOTE: some notebook computers require that you hold down a [**Fn**] key and **Alt** keys to activate the **PrintScreen** function. NOTE: Do not click PrintScreen without the Alt key. This would capture the entire screen which would make your program output difficult to see.

Use **Ctrl+V** to paste the clipboard into the lab report.

**PROGRAM LISTING:**

**5) Copy and paste the code that YOU typed to make the program work. Your program should include a comment block at the top that shows the name of the program, date, version and your name.**

/\*

\* sum\_of\_numbers.cpp

\* version 1

\* Created on: Jun 22, 2017

\* Author: Samuel

\*/

#include <iostream>

using namespace std;

int main(int argc, char\* argv[])

{

int sumOfOddNumbers = 0;

int sumOfevenNumbers = 0;

int sumOfAllNumbers = 0;

int number;

int inputCounter = 0;

while (inputCounter < 10) // count from 0 to 9

{

cout << "Enter a number: ";

cin >> number;

if (number %2 == 1) // odd number

{

sumOfOddNumbers += number;

}

else // even number

{

sumOfevenNumbers += number;

}

// also add the total of all numbers

sumOfAllNumbers += number;

// keep count of how many numbers were entered

inputCounter++;

} // end of while loop

// display the results

cout << "Sum of Odd Numbers: " << sumOfOddNumbers << endl;

cout << "Sum of Even Numbers " << sumOfevenNumbers << endl;

cout << "Sum of All Numbers: " << sumOfAllNumbers << endl;

double averageOfAllNum = sumOfAllNumbers/10;

cout << "Average of all numbers is: " << averageOfAllNum <<endl;

cout << endl; // blank line at end of program

return 0;

}