CS-181 Lab 5

Student Learning Outcomes

- More experience with the Microsoft Visual Studio Integrated Development Environment (IDE)
- More experience Creating C++ projects in MS Visual Studio
- More experience using the code editor
- More experience writing sequential code
- Coding loops

Overview

This lab provides a hands-on opportunity to apply some of the terminology and concepts presented in chapter 5.

Exercise 1: Sum of Numbers

Write a program that prompts the user for a positive integer value. Do not allow a negative value. The program must then use a loop to calculate the sum of all integers from 1 up to the user entered value. If the user enters 20, the program will compute the sum of 1, 2, 3, 4, …, 20.

While there is some room to be creative, your program output should look something like this and must display the running total and a final total as shown:

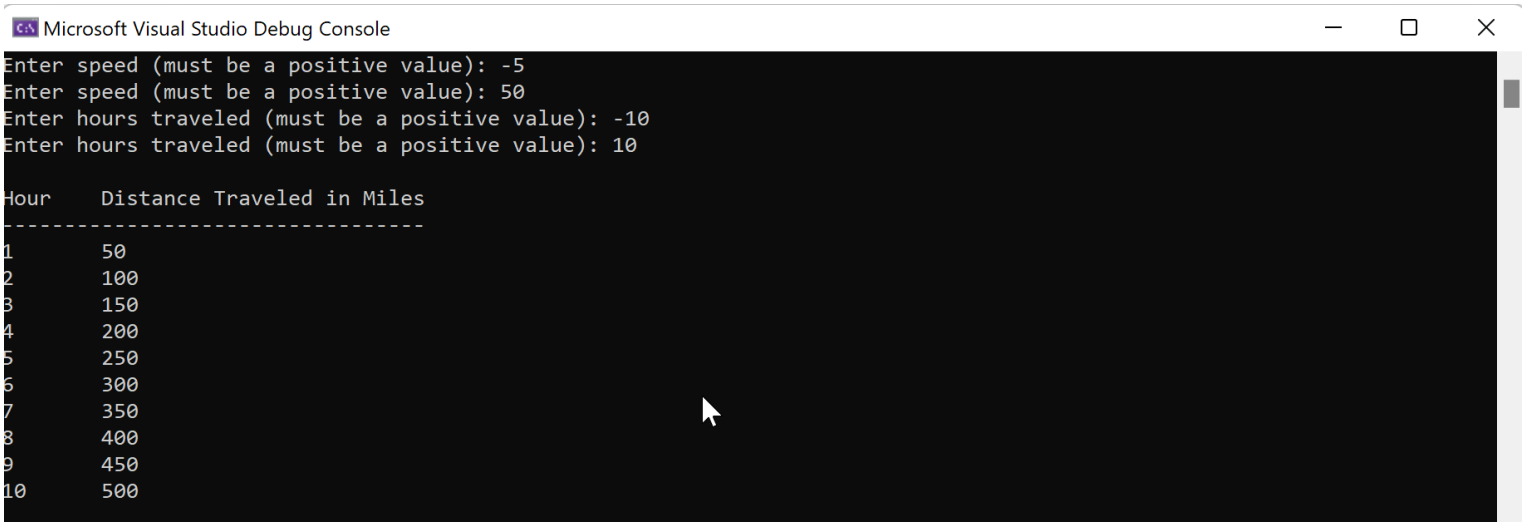
Exercise 2: Distance Traveled

Write a program that prompts the user for the speed of a vehicle in miles per hour and the number of hours traveled. The program must then use a loop to calculate and display the distance the vehicle traveled for each hour of the time period.

Input Validation: Do not accept a number less than 1 for miles per hour and hours traveled.

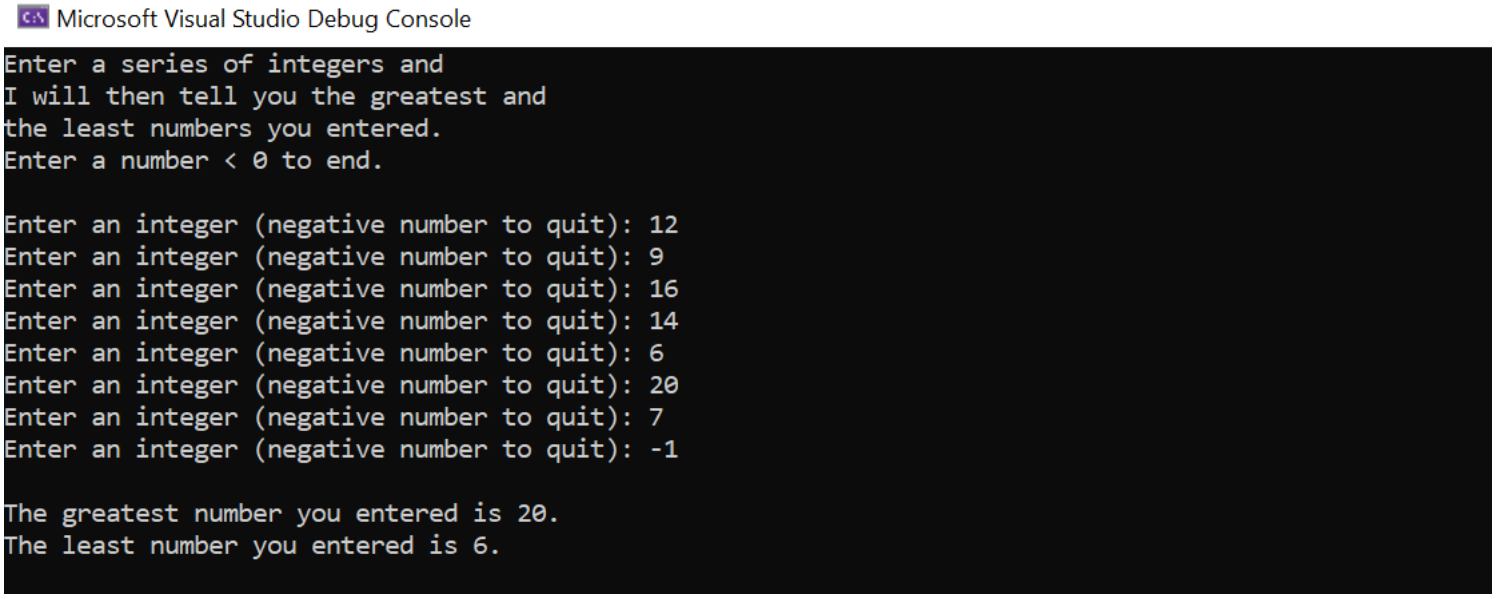
Your output must be in a tabular format as shown in he sample output below.

Your program output should look something like this:



Exercise 3: Greatest and Least Value

Write a program with a loop that lets the user enter a series of integers. The user should enter a negative number to signal the end of the series. After all the numbers have been entered, the program should display the largest and smallest numbers entered.



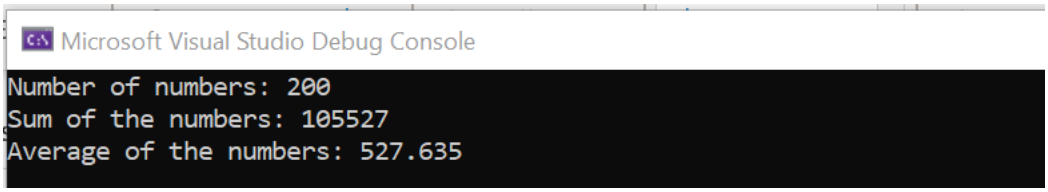
Exercise 4: Numeric Processing

For this exercise, you are given a text data file of numbers. Write a program that opens the file, reads all the numbers from the file, and calculates the following:

1. The count of numbers in the file.
2. The sum of all the numbers in the file (a running total).
3. The average of all the numbers in the file. The average is the sum / count.

The program should display the count of numbers found in the file, the sum of ll the numbers, and the average of the numbers.

Your program output, using the file given, should produce these results:



Hints for exercise 4:

Doing file I/O for the first time is a bit intimidating. If you are completely stuck on where to even start, the example on page 287 will give you a good working framework for opening, reading the file and closing it again. Take a close look at that section of the chapter. Section 5.7 gives a good example of keeping a running total. Section 5.4 covers counters which is the other piece you will need to complete this.

Assignment Submission

Your completed assignment must be uploaded to Canvas in a zip file format. Be sure you have folders for all 4 exercises in your Lab05 folder and you have all files and sub-folders needed to open with Visual Studio.

Grading Criteria:

Deliverable	**Points**	**Breakdown**
Exercise 1	12	Opens in VS, code is clear (I.e., appropriate variable names, use of constants, comments, program header), compiles, runs, produces correct output. Output formatted correctly
Exercise 2	12	Opens in VS, code is clear (I.e., appropriate variable names, use of constants, comments, program header), compiles, runs, produces correct output. Output formatted correctly
Exercise 3	12	Opens in VS, code is clear (I.e., appropriate variable names, use of constants, comments, program header), compiles, runs, produces correct output. Output formatted correctly
Exercise 4	14	Opens in VS, code is clear (I.e., appropriate variable names, use of constants, comments, program header), compiles, runs, produces correct output. Output formatted correctly
Lab Total	**50**	