COMSC 165

Summer 2020

Programming Assignment 1

(COMSC 110 Review)

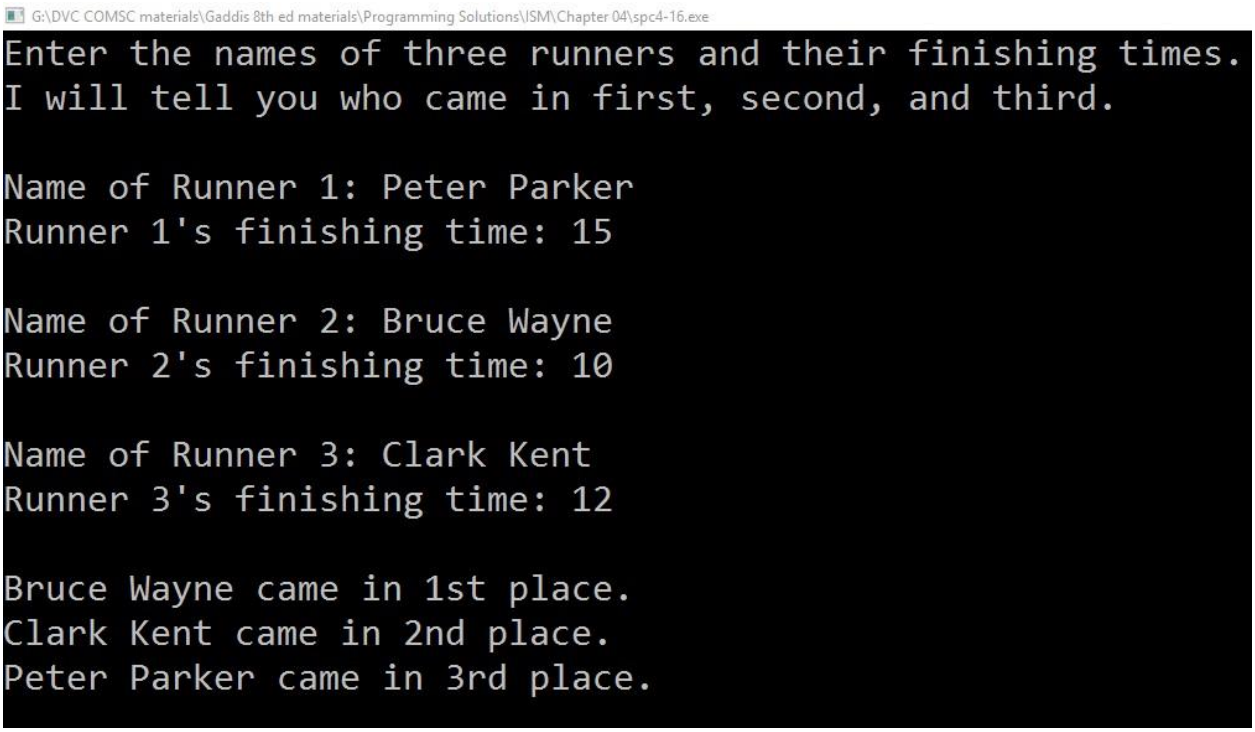
Worth 20 points (2% of your grade)

DUE: Friday, 6/19/20 by 11:59 P.M. on Canvas

NOTE: Your submission for this assignment should be a single **.cpp** file and a single **.pdf** file. The following naming convention should be used for naming your files: **firstname_lastname_165_assign1.cpp and firstname_lastname_165_assign1.pdf**. The pdf file that you submit should contain the screenshots of your sample runs of the program (see below). For example, if your first name is "James" and your last name is "Smith", then your files should be named James_Smith_165_assign1.cpp and James_Smith_165_assign1.pdf.

COMMENTS : Your program should have at least **ten (10)** different detailed comments explaining the different parts of your program. Each individual comment should be, at a minimum, a sentence explaining a particular part of your code. You should make each comment as detailed as necessary to fully explain your code. You should also number each of your comments (i.e., comment 1, comment 2, etc.).

SAMPLE RUNS: You should submit screenshots of at least **five (5)** different sample runs of your program. Each sample run needs to use different inputs, and your sample runs should **NOT** be the same as the sample runs that are used in this write-up for the assignment. You should also number each of your sample runs (i.e., sample run 1, sample run 2, etc.). Each of your sample runs should be similar to this format:



Write a **C++program** that follows the following steps:

INPUT
1. **Prompt** the user for the name of the first runner (type **string** variable) 2. **Prompt** the user for runner 1's finishing time (type **double** variable) 3. **Prompt** the user for the name of the second runner (type **string** variable) 4. **Prompt** the user for runner 2's finishing time (type **double** variable) 5. **Prompt** the user for the name of the third runner (type **string** variable) 6. **Prompt** the user for runner 3's finishing time (type **double** variable)

PROCESS
7. First, check if any of the times entered for any of the runners is less than zero. If this is the case, an error message should be displayed and then the program should end (see below). 8. If none of the times are negative, then do the following: 8A. **Determine** which runner made first place. (store this information in a variable of type **string**) 8B. **Determine** which runner made second place (store this information in a variable of type **string**) 8C. **Determine** which runner made third (last) place (store this information in a variable of type **string**)

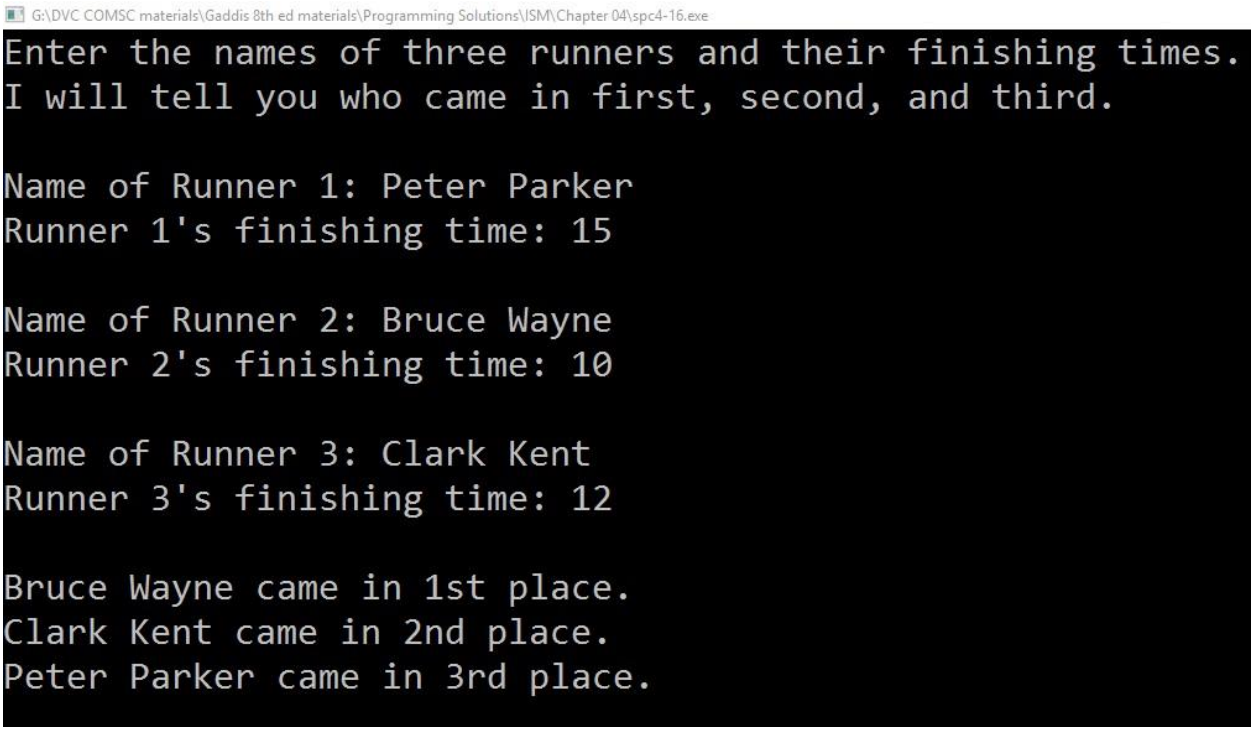
OUTPUT
9. If any of the times entered for any of the runners are negative, then **display** the error message. 10. Otherwise **display** the following 10A. **Display** which runner made first place 10B. **Display** which runner made second place 10C. **Display** which runner made third (last) place

OPTIONAL: If you would like you could also include an input validation loop into your program – if the user enters invalid data for any of the runner's times, the loop will keep asking the user to reenter the time until they enter something valid. This will normally be a requirement for any programming assignment that asks the user for input, but for this first programming assignment it is optional. You may also include functions in your program if you would like – we will be covering functions in chapter 6.

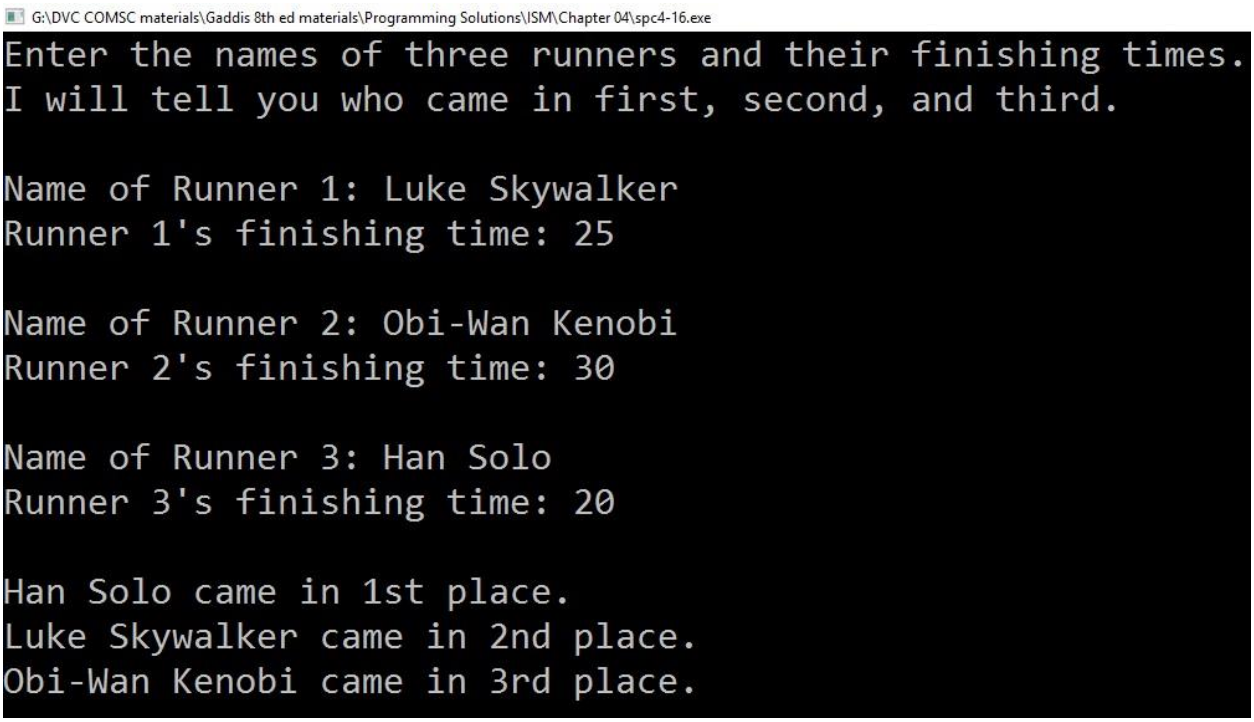
Sample Runs:

The sample runs below will show you how your program should run for various inputs. The idea is that if you run your program with my inputs shown below, the output of your program should be the same as my output. This is how you can test your program to confirm that it is correct, but you are also encouraged to come up with your own additional test cases to further test your program.

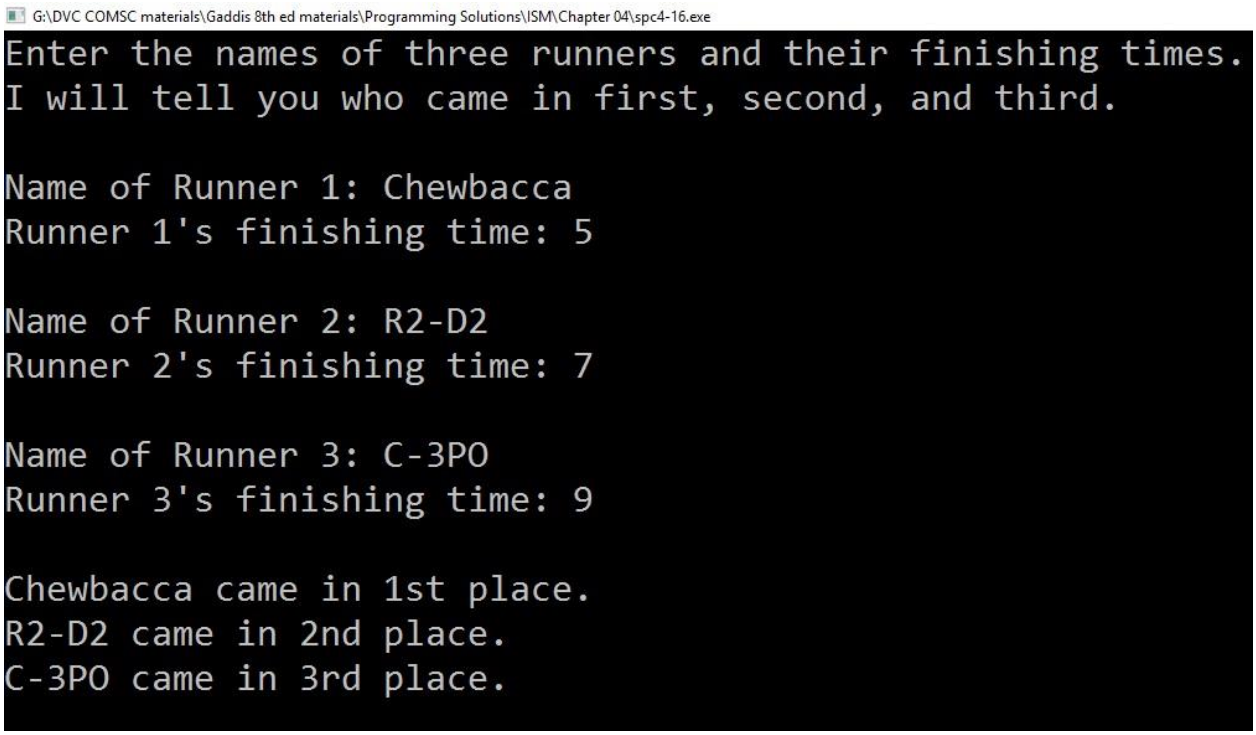
Sample Run 1:



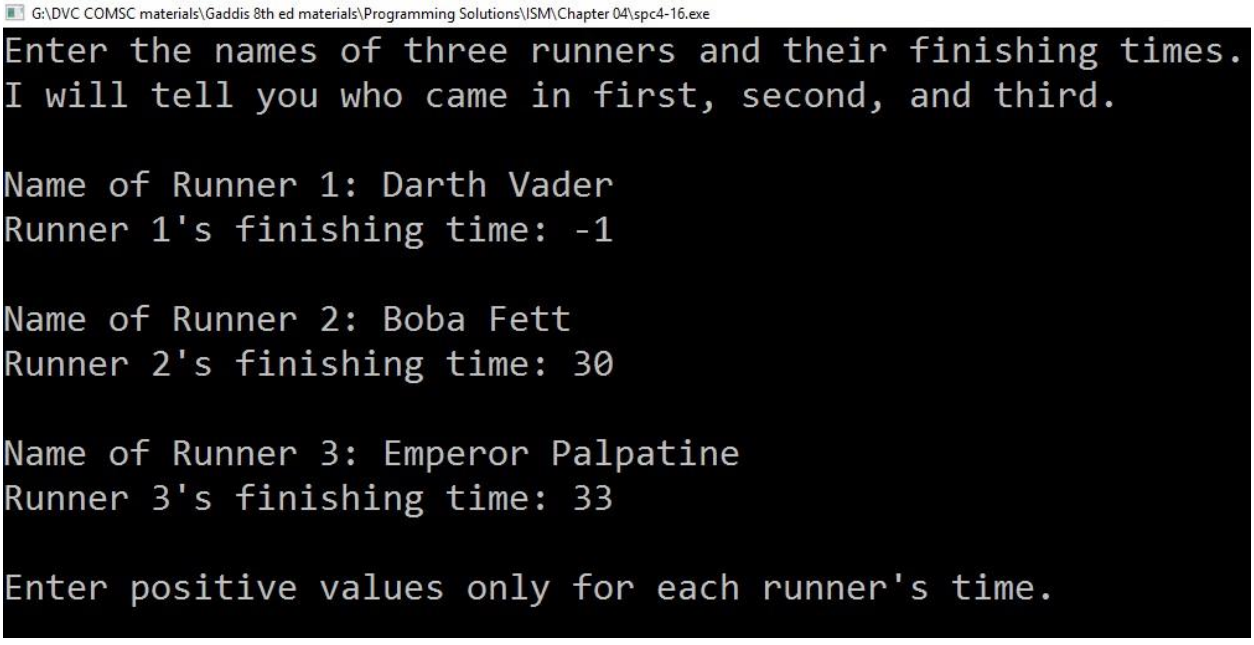
Sample Run 2:



Sample Run 3:


G:\DVC COMSC materials\Gaddis 8th ed materials\Programming Solutions\ISM\Chapter 04\spc4-16.exe
Enter the names of three runners and their finishing times.
I will tell you who came in first, second, and third.
Name of Runner 1: Chewbacca
Runner 1's finishing time: 5
Name of Runner 2: R2-D2
Runner 2's finishing time: 7
Name of Runner 3: C-3PO
Runner 3's finishing time: 9
Chewbacca came in 1st place.
R2-D2 came in 2nd place.
C-3PO came in 3rd place.

Sample Run 4:


G:\DVC COMSC materials\Gaddis 8th ed materials\Programming Solutions\ISM\Chapter 04\spc4-16.exe
Enter the names of three runners and their finishing times.
I will tell you who came in first, second, and third.
Name of Runner 1: Darth Vader
Runner 1's finishing time: -1
Name of Runner 2: Boba Fett
Runner 2's finishing time: 30
Name of Runner 3: Emperor Palpatine
Runner 3's finishing time: 33
Enter positive values only for each runner's time.