2022 Fall CPSC 240 Assignment 3

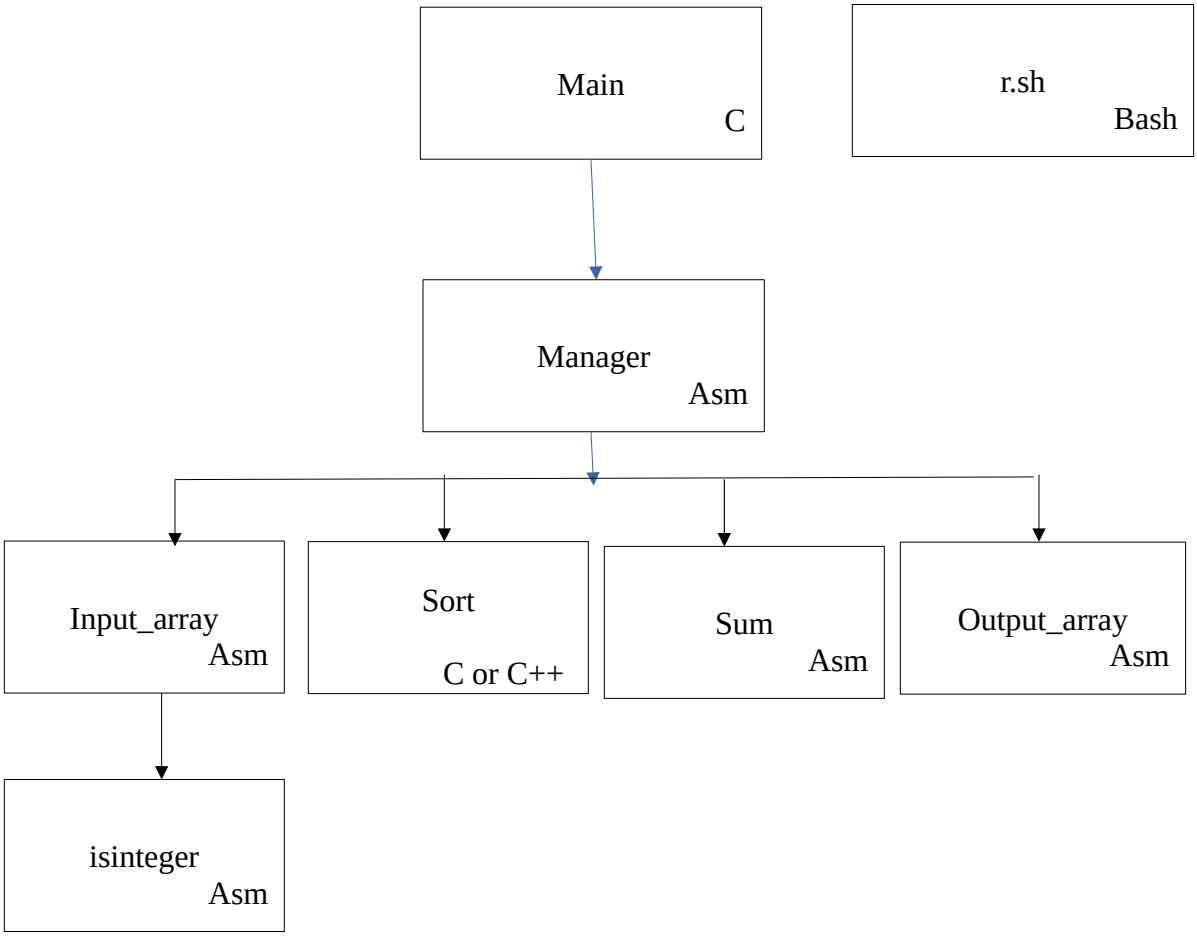
Arrays

Preface

This program provide experience with the following concepts
- =make an array
- =implement iteration
- =make professional looking programs
- =apply a license to a program
- =pass parameters to a called function

Programming requirements

Make a hybrid program (Assembly, C++, and C) partitioned according to the following diagram



Caution: The diagram above is fragile. It is a composition of many individual pieces.

Sample run #1

```
Welcome to Marvelous Arrayss
Bought to you by Jessica Ward

Please enter your name:  Sandra Wainwright

This program will sum your array of integers
Enter a sequence of long integers separated by white space.
After the last input press enter followed by Control+D:
  3
 -12
  9
  21
  -4
  13  <enter>  <cntl+D>

These number were received and placed into the array:
3   -12    9     21    -4   13

The sum of the 6 numbers in this array is 30.

This is the sorted array
-12
-4
3
9
13
21

This program will return execution to the main function.

I hope you liked your arrays Sandra Wainwright
Main will return 0 to the operating system.    Bye.
```

Color codes:
Blue background is produced by module Input_Array

Yellow background is produced by module Manager

Green background is produced by module Display_Array

Rose background is produced by module Main

Module sum does not produce any output.

Sample run #2

```
Welcome to Marvelous Arrays
Bought to you by Jessica Ward

Please enter your name:  Larry Silk

This program will sum your array of integers
Enter a sequence of long integers separated by white space.
After the last input press enter followed by Control+D:
3
-12
9
2R7
An error was detected.  Re-enter the number
27
- - 7
An error was detected.  Re-enter the number
+ + 400
An error was detected.  Re-enter the number
-4
5   <enter><cntl+D>


These numbers were received and placed into the array:
3   -12    9    27    -4     5

The sum of the 5 numbers in this array is 28.

This is the sorted array
-12
-4
3
5
9
27

This program will return execution to the main function.

I hope you liked your arrays Larry Silk
Main will return 0 to the operating system.   Bye.
```

Sample run #3

Welcome to Marvelous Arrays
Bought to you by Jessica Ward

Please enter your name: Chris Sawyer

This program will sum your array of integers
Enter a sequence of long integers separated by white space.
After the last input press enter followed by Control+D:
3
-9
2
12
10
13
 <enter> <cntl+D>

These numbers were received and placed into the array:
3 -9 2 12 10 13

The sum of the 6 numbers in this array is 31.

This is the sorted array.
-9
2
3
10
12
13

This program will return execution to the main function.

I hope you liked your arrays Chris Sawyer
Main will return 0 to the operating system. Bye.

What happens when one of your horizontal inputs in an invalid number?

Other facts

The language used in each module is shown in the individual rectangles.

Obviously you change the name of the author in the example to be your own name.

Make a bash file that compiles and runs everything related to this program.

Make sure your program receives the rating "Professional".

There are multiple functions in the program. You can see their names in the diagram near the beginning of this document. There are library functions not shown in the diagram such as islong and atol.

Main calls Manager; Manager calls Input_Array, Display_Array and Sum.

When you submit the program do include all the source files need for the grader to run the program from one folder. Don't forget the bash file.

Send to the quality assurance expert, aka the grader, all the files needed to run your program. Make his life easy. Don't expect him to find a copy of the source file you did not submit. You may send him a read.me file to explain how to run your program if that is really necessary. He will award you a higher score if you make his job easier. Your program must run immediately after execution of the bash file.

Finally: Time is limited

Do not sent programs that do not run or crash during an attempted run. Those programs all receive zeros. Save the graders time by keeping non-executing programs at your computer. There is nothing he can do with a non-executing program. Submitting a non-operating program wastes everybody's time.

Due date: October 13 at 11:59pm

Send to cpscgrader@proton.me

The submitted program must be a true attachment. A link to a program in a cloud will not be graded.

Reminder: Make your source files look professional. Your files should tell the whole story of how the program was built. This is for the programmer who comes after you when you have moved on to another higher-paying position.

Final comment: Humans make errors. That is a given. I have proofread this document a number of times. If you discover a writing error I will appreciate knowing about it. Tell me about an error and I will fix it for the whole class to benefit.

Calendar: The midterm is scheduled for the week of October 14 through 17.