ENGR 0012 – Spring 2019 – HW10

Acceptable behaviors for this assignment include:

- Consulting your textbook or other written material
- Asking your team members
- Asking your professor or TA

Note that consulting materials and asking others is only acceptable as long as they do not provide you with the solutions – you have to come to the solution on your own!

Unacceptable behaviors for this assignment include:

- Copying the solution(s) from a solution manual, book, or other written material
- Copying the solutions(s) from assignments submitted in previous semesters
- Providing the solutions to a classmate, student in other section, student in future section, or online solution banks
- Asking someone to complete the assignment for you

Design a C code that will perform the tasks outlined below. The program will require five functions. The purpose of the program is to allow the user to enter two real numbers, then choose whether to add, subtract, multiply, or divide these two numbers and display the results to the screen as well as a file.

Main function

- Should display the integrity statement: "We in Team TeamNumber certify that we have completed this assignment in an honest manner."
- Should have all the necessary variable declarations defined at the beginning of the program (all local variables), followed by call statements to the six functions required for this program
- Should only display the content of Function1 once
- Should call Function2 to get user choice
- Should use an if statement such that:
    - If the user selected that they would like math operations, the program should ask the user to provide two real numbers. Then, it should ask the user to enter the operation they would like: (a) addition, (s) subtraction, (m) multiplication, or (d) division – error check the response. The user choice should be a character. Should then call Function3 to perform the desired math operation. Should then call Function4 to display results.
    - If the user selected that they would like to create an array, the program should ask the user to enter how many elements they would like in the array (must be an array of integers, and must not have more than 5 elements). Error check the user's response. Should then ask the user to enter the numbers that go in the array. Should then call Function5 to find the max number and max location in the array. Should then call Function6 to display results.
- Should ask the user if they would like to run the program again (error check response!).

Function1

- Should display group number, member names, date, and purpose of the program
- This is a no input – no output function

Function 2

- Should ask the user to select (1) if they would like to perform math operations or (2) if they would like to create an array (must error check user entry). The user's choice (whether they chose math or array) should be returned to the main function.

Function 3

- Should receive the user's selected math operation and the values that were entered, and perform the math operation on those values.
- Should use a switch-case to perform the user-selected operation, and send the result back to the main.

Function 4

- Should display the entered values, the chosen operation (whether addition, subtraction, etc.), and the result of the operation to the screen as well as a file called *results.txt*. (The results should be appended to this file.). See example below.

Function 5

- Should use a for loop to find the max number in the array that was already created by the user, and should also find the location where this max value occurred (which element position in the array contains the max value).

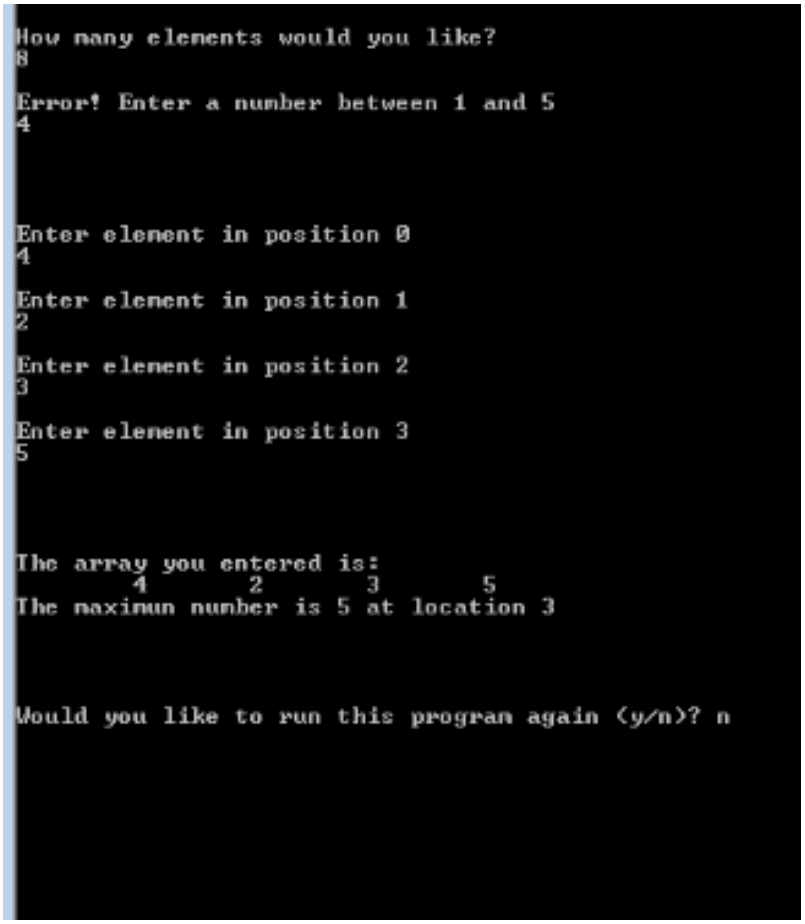
Function 6

- Should display the array initially entered by the user, as shown below, as well as the maximum number and max location, to the screen as well as a file called *results.txt*. (The results should be appended to this file.)

DO NOT USE GLOBAL VARIABLES IN THIS ASSIGNMENT.

Sample program output, starting from Function 1:

```
Date
Group R1: Name 1, Name 2, Name 3

The purpose of this program is to do some math and matrix operations




Would you like to perform math operations or create an array?
1) Math operations
2) Array
Enter integer value for choice (1 or 2): 3

ERROR: You must enter a 1 or 2!
Try again: 1




Enter a value for the first number:
2

Enter a value for the second number:
3




Select the math operation to perform on the two numbers.
a - Addition
s - Subtraction
m - Multiplication
d - Division
Enter char value for choice (a, s, m, or d): f

ERROR: You must enter a, s, m, or, d!
Try again: m




The two values you entered were 2.000000 and 3.000000
Of the math operations a-add, s-subtract, m-multiply, d-divide, you chose:
 m

The calculated result is 6.00




Would you like to run this program again (y/n)? g

Error, please enter Y or N: y

Would you like to perform math operations or create an array?
1) Math operations
2) Array
Enter integer value for choice (1 or 2): 2
```



Include a comment with your team number and team member names at the top.
Include comments, indentation, and whitespace so that your program is neat and understandable to anyone who reads it.

This is a team assignment. Upload the .cpp file through your class computer using the official file submission link (found on the desktop of class computers in GSCC 138 or BEH 229 at the beginning of the class when this assignment is due). Name your .cpp file Instructor_Time_HW10_TeamName (e.g. Mena_10am_HW10_TeamL03).