Name: _____ Form A

CS 002 Midterm 2 Practice 0: Conceptual Questions (last modified Spring 2021).

(Not Applicable, Shown for educational purposes only)

1. Explain the difference between using cin for input and cin.get().

2. What is Top Down Design? What is Procedural Abstraction? (You need to be able to explain what a black box is)

3. In C++, why are the random numbers generated called *pseudorandom* numbers? What role does the seed play?

4. What is the difference between the return statement, the break statement, and the exit statement?

5. Explain what a local variable is, and what a global variable is.

6. What does it mean to overload a function? What are the requirements? Give an example of 2 overloaded functions.

7. What is a formal parameter? What is an argument?

8. Explain how the call-by-value mechanism works, and how it differs from the call-by-reference mechanism. Draw diagrams and give an example as necessary.

9. Explain some techniques for debugging and testing functions (3).

Example Programming Tasks

1. -declare an array of size 10 and initialize every element to a random number in the range 15 - 40.

2. -Write code that will let the user type in two numbers, and then searches through a sorted array for those two numbers. The program should then print out all elements in the array that are between those two values, unless one of them (or both) was not found.

-Your code should make use of proper programming techniques and include at least two separate functions from the main function, as well as a simple means to test the code. You may make function calls to any named algorithm that was discussed in class.

3. Using ONLY C Arrays, write a function arrayDelete(, , ,) that takes 3 arguments and has no return type. It will delete the value in the specified location of an integer array and shift all other values to the left accordingly.
   -The total number of elements in the array should be updated as well.
   -The program should loop indefinitely, printing out the contents of the array each time.
   -Your code should make use of proper programming techniques and include at least two separate functions from the main function, as well as a simple means to test the code. You may make function calls to any named algorithm that was discussed in class.

4. -Using ONLY C Arrays, write a function arrayInsert(, , ,) that takes 4 arguments and has no return type. It will insert a specified value into the specified location of an integer array and shift all other values to the right accordingly.
   -The total number of elements in the array should be updated as well.
   -The program should loop indefinitely, printing out the contents of the array each time.
   -Your code should make use of proper programming techniques and include at least two separate functions from the main function, as well as a simple means to test the code. You may make function calls to any named algorithm that was discussed in class.

5. -Open a file called "poem1.txt" for input. "poem1.txt" is a text file of words from a poem. You may download it in "Text Files" under "Files" on Canvas.

   -Write code that will count how many words are in the text file and display it.

6. -Open a file called "numbers1.txt" for input. "numbers1.txt" is a text file of various characters, including numbers and dashes.
   -Each digit in the file represents a number. Each dash represents an actual "-" character. Read in all characters from the file and output them as is, along with the average of all 11 numbers in the text file (3.4545).