Assignment 3

1. Write a program including two functions: ***main*** function and ***inverse*** function.

a) The sub-function ***inverse*** will be responsible for inversing the integers in an array inputted as parameter. E.g., the original data in the parameter array are in the sequence 20 10 40 5; after calling of the function ***inverse***, the data in the array are in the sequence 5 40 10 20. The ***inverse*** function can include more than one parameter so that the elements in the array can be inversed.

b) The ***main*** function will do the following jobs.

i. read a sequence of integers (assume that the total number of integers is less than 20)and store the data from keyboard in an array named ***Data*** in the inputted sequence.

ii. Call the function ***inverse***， passing the array ***Data*** *(and other necessary information)* as the actual parameters.

iii. Print out the elements in the array ***Data*** in their sequence in the array.

2. There is a sequence of numbers $a_1, a_2, a_3, \ldots, a_n$. Where $a_n = 2a_{n-1} + 1$, $a_1 = 2$. Please write a program to find a_{16}. Use recursive function.

3. Please write a recursive function ***int strchar (char str[], char ch)*** which will return the number of occurrences of the ***ch*** in the ***str***. For example, *strchar("abac", 'a')* will return *2*. Please also write a main function which will call ***strchar*** and print return value.

4. Write a program to read students' names and scores from keyboard and store the information in an array, then sort them according to scores in descending order and print out the sorted list. Assume that there are no more than 20 students. The program must satisfy the following requirements.

a. The program should contain two functions: main, sort.

b. The main function reads information from keyboard, calls the sort function, passes information to it for sorting and finally prints out the sorted information.

Each student information includes name and score. It is assumed the input from the keyboard ends when score is -1. For example, if the input is

Judy 10
Nina 100
Hello -1

Then the output is

Nina 100
Judy 10

Submission requirements:

Compress .cpp files (and .h file) and submit the compressed file into iSpace before 11:55 pm, 7 May 2020.