

2017.2 Object Oriented Programming Design

Project #1 [Due : Sep. 26th (Tue) 11:59pm]

Submission.

- eClass submission – submit one zip file that contains two directories as follows
(eClass 웹사이트의 과제방에 속제 등록)
- (i) directory "prob1" – this directory should contain C++ header files (.h files) that should contain class specification of IIKH system with no member function implementation. .cpp files (i.e., function implementation part) are not necessary in this prob 1.
- (ii) directory "prob2" – this directory should contain
 - compilable C++ source code package (.cpp, .h, and solution files(.sln, and etc)) in visual studio 2008/2010/2013/2015 format.
 - the header files (.h files) in your source code package should contain class specification (with no member function implementation) and detailed comments.
 - file1.txt you used
 - README.txt – very briefly explains how to compile and execute the source code.

Problems

Prob#1. This problem is to perform Object Oriented Design of a system. Write C++ header files (.h files) that contain class specification for developing IIKH(Interactive Interlligent Kitchen Helper) that is described in Chapter 3 of Timothy Budd's book "Intro. to Object Oriented Programming" (available on our class webpage). The class specification may contain "struct" types if necessary. .cpp files are not necessary in this prob 1.

- In this problem, it is essential to choose a set of components (classes) and their member variables/functions.
- It is also important to distinguish private and public members in the classes.
- The names of classes, variables, and functions should reflect their meanings.
- You don't need to submit detailed implementation. However, you do have to insert appropriate detailed comments in your class specifications.
- Above policies will be considered when grading your homework.

Prob#2. The problem#2 is to fully develop a Student Information Management System. This program should support inserting/searching/displaying/deleting student information. After the program is terminated, the inserted student information should be maintained. **This requires you to use file processing. (Do not use external library for the file processing. Use only C++ built-in libraries.)**

Command Line Execution

The executable file takes one file as an argument.

```
> a.exe file1.txt
```

a.exe is an executable file. file1.txt contains the student information stored during the program execution. You are free to organize the format of file1.txt. If file1.txt does not exist when program execution, your program should create file1.txt. If file1.txt exists, you should use it.

(i) Main Menu

Following menu should be displayed when you execute the above command line.

```
1. Insertion
2. Search
3. Deletion
4. Exit
> _
```

(ii) If "1" (Insertion) is selected in the main menu, take input as follows and store the information into file1.txt.

```
- Insertion -
Name ?
Student ID ?
Age ?
Department ?
Tel ?
```

"Name" has up to 15 (English) characters, "Student ID" should be exactly 10 digits. "Department" has up to 20 (English) characters, "Age" has up to 3 digits, "Tel" has up to 12 digits. After user's input is completed, the program should display the main menu and wait for user's input again. Name and Student ID should not be blank. If the same student id is provided, an error message "Error : Already inserted" should be printed.

(iii) If "2" (Search) is selected, display following search menu and take additional user input.

```
- Search -
1. Search by name
```

2. Search by student ID (10 numbers)
3. Search by department name
4. Search by Age
5. List All

> 3

Department name keyword? Computer Engineering

Name	StudentID	Dept	Age	Tel
Gildong Hong	2004303077	Computer Engineering	21	01187651234
Lisa Simpson	2006303001	Computer Engineering	23	01012345678
Tom Anderson	2001034022	Computer Engineering	22	01012337613

After getting a number as a user input in the above menu, your program should get additional string input for searching for student information stored in file1.txt and display the search result. If you select "5", informations for all students are displayed.

The display order for student records should be always sorted by "Name" alphabetically (In above example, Gildong Hong->Lisa Simpson->Tom Anderson order). Go back to main menu after displaying the student records.

(iv) If "3" (Deletion) is selected , display following menu and take user input.

- Deletion -

Student ID to delete : 2006303001 (enter) <----- user input

The student information that contains Student ID 2006303001 should be deleted. Go back to the main menu, after selecting the deletion option..

Notes

1. We don't consider program's efficiency. The correctness of your program will be mainly considered in grading your program.

2. you may consider using qsort function that is defined in stdlib.h or sort function in STL.

```
void qsort(void *base, size_t num, size_t size,
           int (*comp_func)(const void *, const void *));
```