

2013.2 Object Oriented Programming Design

Project #1 [Due : ~~Sep. 29th~~ Oct. 1st (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 a C++ header files (.h files) that should contain class specification of IIKH system with no member function implementation. .cpp file is not necessary in this prob 1.
- (ii) directory "prob2" – this directory should contain
 - compilable source code package (.cpp, .h, and solution files(.sln, and etc)) in visual studio 2008 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 , file2.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". The class specification may contain "struct" types if necessary. .cpp file is 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 student information. After the program is terminated, the inserted student information should be maintained. This requires you to use file processing.

Command Line Execution

The executable file takes two files as arguments.

```
> a.exe file1.txt file2.txt
```

a.exe is an executable file. file1.txt contains the student information saved during the program execution. file2.txt contains the mapping table between department code and department name. You are free to organize the format of file1.txt. If file1.txt does not exist when execution, your program should create file1.txt. If file1.txt exists, you should use it. file2.txt has following format.

```
038 Computer Engineering
037 EECS
039 Material Engineering
034 Business
```

(i) Main Menu

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

```
1. Insertion
2. Search
3. Sorting Option
4. Exit
> _
```

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

```
Name ?
Student ID ?
City ?
Tel ?
```

"Name" has up to 15 (English) characters , "Student ID" should be exactly 10 digits where first 4 digits represent admission year, next 3 digits represent department code, and next 3 digits represent serial number. "City" has up to 10 (English) characters, "Tel" has up to 12 digits. You should use file2.txt for the mapping information between

department code and name. 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 admission year (4 numbers)
4. Search by department name
5. Search by City
6. List All

> 4

Department name keyword? Computer Engineering

Name	StudentID	Dept	City	Tel
Lisa Simpson	2006303001	Computer Engineering	Daegu	01012345678
Gildong Hong	2004303077	Computer Engineering	Seoul	01187651234

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 "6", informations for all students are displayed. The display order for student records should be based on the selection of "sorting option" (The default is "sort by name"). Go back to main menu after displaying the student records.

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

- Sorting Option

1. Sort by Name
2. Sort by Student ID
3. Sort by Department name
4. Sort by City

>

Go back to the main menu, after selecting the sorting option..

Notes

1. There is no deletion menu.
2. We don't consider program's efficiency. The correctness of your program will be mainly considered in grading your program.
3. 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 *))
```