**Program1 (Individual assignment): 20Pts**

**Due Dates**

Due date: Wednesday, February 20 @ 11:59pm

Grace date: Friday, February 22 @ 11:59pm

**Program Description and Requirements**

For this program, you will be implementing a simple Department Management System.

1. You need three classes: *DepartmentManagement.java, Department.java,* and *Professor.java.*

*Prog1.java* will be provided.

2. Class *DepartmentManagement* maintains a list of all departments.

3. Class *Department* maintains a list of all professors in the department.

4. For each professor, we only care about one’s id, name, and salary, among which id can uniquely identify a professor in a department. It is not allowed to have two professors in the same

department with the same id. It is possible that a professor belongs to more than one department.

5. **Sample Input and Output** is provided on next page. In the main menu, the user will firstly be asked to enter a department name (or quit), which leads to further possible operations:

1) list all professors (show a list of all professors in the department),

2) add a new professor (ask the user to provide name, id, and salary for a professor),

3) delete a professor (ask the user to enter the id of the professor to delete),

4) get the average salary of all professors in the department, and

5) return to main menu where the user will be asked to enter a department name or quit. If the user enters a department name, you should first check if the department has already existed in the department list. If not, add the new department into the list. Otherwise pull out all data associated with the department.

6. Print “Thanks for your generosity!” if the user enters a salary higher than 1000 for a professor, otherwise print “Thanks! Be more generous next time.”

7. Please refer to the Prog0, which may give you some hints on how to start.

**Important Notes:**

1. You must follow the software development ground rules that is available in Canvas and alpha.ion server.

2. Consider the program a piece of art. So, it should be properly designed. You will also lose points for inefficient design of the program. For example, you will lose several points if you do your entire work in a single function or inside a single class even if it gives correct output. To get full points, you must first consider different design choices. Some design considerations can be as follows: how many classes should be optimal for this problem, how to design a function so that it can be easily reused, etc.), then think critically on their advantages/disadvantages and then make wise decision to design your code.

3. Fully test your program before submission.

4. To get full points, submit to Grader before due date. If you submit after due date and before grace date you can still receive full points only if you have 0 differences and NO deviation from the programming guide lines. Programs submitted after the grace date will get a max of 25% of the grade (Only 5 for this program) based on the number of differences and the adherence to the programming ground rules!

**Sample Input and Output:**

Department Management System is running...!

Mainmenu: please enter a department name or enter Q to quit:

cs

Please enter

LP to list all professors,

AP to add a professor,

DP to delete a professor,

AVG to get the average salary of all professors,

RM to return to mainmenu

lp

Professor list is empty. Add a professor first.

Please enter

LP to list all professors,

AP to add a professor,

DP to delete a professor,

AVG to get the average salary of all professors,

RM to return to mainmenu

ap

Please enter professor's name:

Joe

Please enter professor's id:

111

The professor you just added: name=Joe and id=111

Please enter the salary of the professor:

102345

Thanks for your generosity!

Please enter

LP to list all professors,

AP to add a professor,

DP to delete a professor,

AVG to get the average salary of all professors,

RM to return to mainmenu

ap

Please enter professor's name:

Qi

Please enter professor's id:

222

The professor you just added: name=Qi and id=222

Please enter the salary of the professor:

343564

Thanks for your generosity!

Please enter

LP to list all professors,

AP to add a professor,

DP to delete a professor,

AVG to get the average salary of all professors,

RM to return to mainmenu

lp

The professor list:

name=Joe and id=111

name=Qi and id=222

Please enter

LP to list all professors,

AP to add a professor,

DP to delete a professor,

AVG to get the average salary of all professors,

RM to return to mainmenu

avg

The average salary in cs department is 222954.5

Please enter

LP to list all professors,

AP to add a professor,

DP to delete a professor,

AVG to get the average salary of all professors,

RM to return to mainmenu

dp

Please enter professor's id:

111

The prof with id=111 has been deleted.

Please enter

LP to list all professors,

AP to add a professor,

DP to delete a professor,

AVG to get the average salary of all professors,

RM to return to mainmenu

lp

The professor list:

name=Qi and id=222

Please enter

LP to list all professors,

AP to add a professor,

DP to delete a professor,

AVG to get the average salary of all professors,

RM to return to mainmenu

rm

Mainmenu: please enter a department name or enter Q to quit:

cs

Please enter

LP to list all professors,

AP to add a professor,

DP to delete a professor,

AVG to get the average salary of all professors,

RM to return to mainmenu

lp

The professor list:

name=Qi and id=222

Please enter

LP to list all professors,

AP to add a professor,

DP to delete a professor,

AVG to get the average salary of all professors,

RM to return to mainmenu

rm

Mainmenu: please enter a department name or enter Q to quit:

q

Thanks for using Department Management System!