



Faculty of Engineering and Information Technology

Computer Science Department

Comp 2310 Assignment #2

Individual work assignment.	Due Date: Tue 20/12/2022 by 10:00 pm on Ritaj
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Using **ONLY eclipse IDE**, write a complete Java program that first creates the following two classes:

- 1- class **Course** which contains the following attributes and member methods:
 - name (dept. short name (exactly 4 chars long) e.g. Comp = String) - private
 - Id (course id e.g. 2310 = integer) - private
 - Appropriate constructors (default and non default) as well as the appropriate setter and getter methods.
 - A printInfo() method to print the attributes and their values in an organized manner.

- 2- class **Teacher** which contains the following attributes and member methods:
 - name (teacher's name = String) - private
 - id (teacher's id number = integer) - private
 - basicSalary (double) - private
 - extraPaymentRate (double) - private
 - coursesTaught (group of courses taught by teacher = Array of type Course) – private
 - Appropriate constructors (default and non default) as well as the appropriate setter and getter methods.
 - A printInfo() method to print the attributes and their values in an organized manner.

 - Method countCourseLevel(...) which takes a level (integer 1-4) as an argument and returns the number of courses of that level e.g.:
 - If courses taught by the teacher are: Comp1310, Encls247, Comp2310, Comp233, Comp483 and the level required is level 2 then the number of courses in that level are 3 (sum of all courses whose id starts with 2)

 - Method calculateExtraPayment(...) which returns the value of extra payment calculated as follows (**Note: rate in formula = extraPaymentRate**):
Number of level 1 courses * 1 * rate + Number of level 2 courses * 2 * rate +
Number of level 3 courses * 3 * rate + Number of level 4 courses * 4 * rate.

e.g. If courses taught are Comp2310, Enes337, Comp336, Comp432, Comp433 and the **extraPaymentRate** entered by the user is 10 then the extraPayment is:
 $0*1*10 + 1*2*10 + 2*3*10 + 2*4*10 = 160$

You now need to create a driver class (main class) to test your program which should do the following:

- Create an array of Teachers after asking the user to enter their count.
- Ask the user to enter the different attributes and fill them for each teacher.
 - o For courses, you need to ask the user to enter the number of courses first and then enter their info (name (e.g. comp) and id (e.g. 2310)).
- Your program should then display the following menu:
....Enter your choice....(1-5):
 - 1- Print Teacher Information:
displays all attributes and their values for a teacher based on his/her id entered by the user.
 - 2- Display teachers' total salaries:
displays the name of each teacher and his/her total salary (totalSalary = basicSalary + extraPayment).
 - 3- Change basicSalary for a teacher:
Allows the user to enter a teacher's id number and then modify his/her basic salary.
 - 4- Display sum of Total Salaries
Displays the sum of all total Salaries (sum of basic salaries and extra payments) for all teachers.
 - 5- Exit
 - End the program
- Your program should keep working until the user selects 5 →Exit.

Please note the Followings:

1. Your program should be well commented based on Java formal documentation.
2. **Due Date: Tue 20/12/2022 by 10:00 pm** as a reply for this message via Ritaj.

Your Program should run very similar to the following sample run:

```
Enter number of teachers
2
Enter teacher's name, id, basic salary, and extra payment rate
Ahmad 1234 2000 10
Enter number of courses taught
3
Enter Course names and ids
Comp
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2310
 Encs
 247
 Comp
 433
 Enter teacher's name, id, basic salary, and extra payment rate
 Subha 2341 3000 20
 Enter number of courses taught
 2
 Enter Course names and ids
 Comp
 132
 Comp
 432

Enter your choice of tasks (1-5):

- 1- Print teacher Info
- 2- Display all teachers names and total Salaries
- 3- Change basic salary for a teacher
- 4- Display sum of total salaries for all teachers
- 5- Exit

... and so on

What you need to turn in:

- 1- Using one of the free UML drawing tools (e.g. UMLet) draw a complete UML diagram for both the Teacher and Course classes and put them both in a Word file called ***umls.doc*** in your project folder.
- 2- Your project folder (containing all your ***.java*** project files and file *umls.doc*) should be compressed (.rar) and saved as ***ass2_youridnumber_yourLabsectionnumber.rar*** (for example if your student id number is 1211234 and your lab **section** is section 9 then the assignment project folder should be called ***ass2_1211234_s9.rar***). Turn in your assignment by ***replying to the course coordinator's message*** on Ritaj and attaching your code .rar file (***ass2_youridnumber_yourLabsection.rar***).
- 3- You must include your full name, student id number, and lab section number in a comment at the beginning of each of your class code files.

Late Assignments (even one minute late) will NOT be accepted for any reason.