

**Faculty of Engineering and Information Technology**

**Computer Science Department**

**Comp 2310 Assignment #2**

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| **Individual work assignment.** | **Due Date: Tue 20/12/2022 by 10:00 pm on Ritaj** |

***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, Encs247, 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, Encs337, 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 = 16

0

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.
  + 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

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.