**Each person’s program is to be an individual effort. You may not talk about the program solution or work with or get help from anyone other than the TAs or the instructor. Collaboration, outside help and code copying are strictly forbidden.**

**Program 1**

**Tea Time Dance Studio**

**Due: March 3, 11:55 p.m.**

**Objective:** Utilize good programming style, if-statements and loops to solve a payroll problem.

**Program:** You are to write a program to help the Tea Time Dance Studio calculate weekly checks for their dance instructors. There are three types of dance instructors: Gold and Silver (both are actually employees of the dance studio), and floor-renters, who teach dance lessons but are not actually employees. Rather, they pay the studio a fee to “rent floor space” for every lesson they teach. However, all the students of all instructors, even floor renters, pay their fees to the Tea Time Dance studio. At the end of the week, the studio prints checks to give all the instructors the money they have earned.

At the Tea Time Dance Studio, there are two types of lessons: private lessons, in which one instructor teaches an individual or couple, and group classes, in which one instructor teaches a number of students. Private lessons are $60 each for an hour of instruction (for either a single person or couple) and group lessons are $10 per person per lesson. Whenever the student of any type of instructor (Gold, Silver or Renter) takes a group lesson, that instructor will receive 10% of the price the student paid for the lesson. When a Gold instructor teaches a private lesson they receive 30% of the price paid for the lesson and a Silver instructor receives 20% of each private lesson they teach. Floor renters receive the full amount of the price of each private lesson they teach minus $10 per lesson as a floor rental fee. So given the current cost of $60 per private lesson, an instructor that was a renter would receive $50 per lesson and would pay $10 for the floor rental fee. If the price per private were to increase to $65, they would receive $55 per lesson and still pay $10 for the floor fee.

Gold and Silver instructors can also teach group classes, which are an hour long and they are paid a flat fee of $20 to teach a group class. Gold and Silver instructors work 40 hours per week. They are paid a minimal base hourly rate for the hours in a week when they are NOT teaching either private or group lessons. Gold instructors are paid $7.00 per hour if they are not teaching and Silver instructors are paid $6.00 per hour if they are not teaching.

Associated with each instructor is their name (of course) and a 3-digit instructor code number. If the number ends in a 1, they are Gold, if it ends in a 2, they are Silver and if it ends in any other number they are a renter. You may assume that the user enters and integer for the code. (You should determine the type of the instructor via a calculation on the code number).

Each time the program is run, the user will enter the information for all the instructors for a given week. Your program should prompt the user to enter the code for the each/the next instructor. Entering the value -1 will indicate that there is no more instructor data to enter. A value entered that is not a 3-digit code or a -1 should be flagged as an error and the user should be re-prompted to enter a correct value.

After the instructor code is entered, your program should prompt the user to enter the instructor name and the following information. For Gold or Silver instructors: the number of private lessons they taught, the number of group classes they taught and the number of group lessons their students took. To avoid data entry mistakes, the program should calculate how many hours a Gold or Silver instructor had free in a week (that is, when they were not teaching any type of class), rather than ask the user to enter that number. For floor renters, your program should prompt for the number of private lessons they taught and the number of group classes their students took. Remember, floor renters do not teach group lessons.

For each instructor your program should output: The instructor name, code and type of instructor, the number of private lessons they taught, the total paid to the studio for those lessons and the instructor’s income for those privates, (if they are Gold or Silver, the number of group classes they taught and their income for teaching group classes), the number of group lessons their students took, the amount paid to the studio for the group lessons and the instructor’s income from those group lessons. For Gold and Silver instructors, the number of free hours they had and the pay for those free hours should also be output. For every type of instructor, the total amount of money the studio collected in lesson fees and the total amount the instructor is to be paid should be output.

Finally, the total amount of money that the studio collected for private and group lessons from all instructors, the total amount of money they paid out to all instructors and the studio’s profit (or loss) should be output.

Remember good programing style, as that is part of your grade. Do not have literal values floating about in your code. Make sure your user interface is clear (and has some title on it). Make sure your output is clearly organized, labelled and formatted (not to mention correct). Be sure to have a heading comment containing the name of the program, your name and a short synopsis of the problem the program is solving. Be sure to have section comments. To the extent possible, group your output (print) statements together. Use blank lines in your program to make your code more readable and use blank lines in your output to make it more readable. It cannot be stated enough: make sure that your program does everything and displays all the output requested.

**Write the algorithm if not frankly the code for this program on paper first. If you just try to type it in as you go, it will take much longer to write and debug. Spend the extra time thinking, designing and writing code before you start typing. It will be a much, much better approach in the long run.**