**Lebanese American University**

**Computer Science and Math Department, Byblos**

**CSC/BIF 245 Objects and Data Abstraction**

**Fall 2021**

**Assignment #1**

**Classes and Objects**

**Due date: September 29, 2021**

You are asked to write a program to manage the employees of a company. The program should contain two classes *Employee* and *Company*. The main method should be written in class *Company*. Class *Company* has an array of employees. Each employee has a *name* (of type String), a *hire day* (of type String) and a *salary* (of type double).

The program starts by displaying the following menu on the screen:

1. Add employee
2. Delete employee
3. Raise salary
4. List all
5. Exit

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Enter your choice:

**The Add option –** If the user inputs 1, the program prompts for the name, salary , and hire day of the employee. An object is then created and added to the array. Two employees are considered equal if they have the same name and the same hire day. The company cannot have two employees that are equal.

**The Delete option-** If the user enters 2, the program prompts for the name and hire day of the employee, searches for it and if it finds it, deletes the employee from the array and then outputs a message saying that the record for the employee has been deleted. If the employee is not found, an appropriate message is displayed.

**The Raise Salary option -** If the user chooses option 3, he/she is prompted for the name of the employee. All employees with the input name are displayed in a numbered list as such:

1. John Doe, 03/01/2020
2. John Doe, 01/01/1800
3. John Doe, 02/10/ 1998

The user is then prompted for the number of the employee, *i*. When this information is input, the user is prompted for the percentage of the increase to apply to the salary of the *ith* employee in the list and the salary is updated accordingly. For example, if the user inputs 1 for i and then 3 for the raise, the salary of the first John Doe on the list is increased by 3%.

**The List All option -** If the user enters 4, the information of all the employees is displayed, one employee per line.

**The Exit option-** If the user enters 5, the program terminates.

The menu is displayed again after each option except the Exit option which terminates the program.

Any choice from the menu other than 1,2, 3, 4 or 5 displays a message informing the user of the invalidity of the choice and prompts for it again.

There are two ways to end the program normally: either by having the user choose the Exit option or when an invalid choice is entered more than 5 consecutive times.

**Notes:**

* Override the method **toString()** in the appropriate classes. Use it!
* If you need to compare two employees for equality, make sure you implement the method **equals().** So, now if you have two instances employee1 and employee2 and they have the same name and the same hire day, the following statement will return true:

**employee1.equals(employee2);**

* You may assume that the user will always enter the correct type of data (i.e. numbers for salaries, strings for names, etc.).
* Following the good coding practice guidelines we have seen in class.
* Use casting only where necessary.

**Plagiarism and cheating policy**

Cheating is a serious offense. If a student is found to have copied part or all of the assignment, he or she will receive a zero on the assignment. During exams, if a student is caught cheating, he or she will receive a zero on the exam. This might result in the student getting an F on the course. NO EXCUSES WILL BE ACCEPTED. The same applies to the person providing others with material. The same applies to plagiarism (presenting someone else’s work as being one’s own work).

**Deadline policy**

Deadlines for submitting assignments will be announced in class or on the assignments. They are firm. Students must respect them. A student failing to meet the deadline will get 5% of the grade deducted per day late. A student cannot replace an assignment with another one. If he or she fails to submit an assignment, a zero will be scored on the missed assignment. To illustrate, if the student submits assignments 1 and 3 only, he or she will get a 0 on Assignment 2, Assignment 1 or 3 cannot compensate for the missed assignment.