SE116 – LAB#4 2021-2022 SPRING

Aim: Introduction to object-oriented programming: Classes, objects, methods, data members, information hiding.

TO DO @ LAB:

1. Implement a program that is similar to the last week's hospital information system that records patient information. This time you will simulate a factory information system to keep the information of the workers. Your program should contain a `package` with the following two classes: `Worker` and `Test`.

The class `Worker` will contain the information about a worker. A worker may be represented with the following attributes: `int workerID`, `String fullName`, `double monthlySalary`, and `String jobDescription`. Remember that the class `Worker` should also contain `public` "set" and "get" methods to access these encapsulated attributes.

The class `Test` will contain the method `main` and one more method called `displayWorkersArrayInfo`. The method `displayWorkersArrayInfo` takes an array of `Worker` references to print out the information of the contents of the array and returns no value. This method calls the "get" methods of class `Worker` to access the related information.

In `main`, read the number of the workers in the factory and define a suitable array called `workersArray` to store the `Worker` references. Then, make each content of the array refer to new `Worker` instances. Do not forget to read and set the data for these workers. Finally, call the method `displayWorkersArrayInfo` to print out the data of each content of the array.

2. Modify your program implemented in Question**#1** in the following manner:

In class `Worker`, add the following attribute: `boolean isMaster`. This data member refers whether the corresponding worker is master (professional) or not. In class `Worker`, also add a `public` method called `calculateAnnualIncome`. This method takes no parameter and returns the annual salary (the total salary for 12 months) of a worker. If a worker is master, the annual salary will also cover an extra as 20% bonus.

Also, modify the method `displayWorkersArrayInfo` of class `Test` in order to print out the annual salary value instead of the `monthlySalary` value for each content of the array.

TO DO @ HOME:

3. Modify your program implemented in Question**#2** in the following manner:

In class `Test`, add the following 3 `static` methods and test them all:

- `maximumAnnualSalariedWorker`: This method takes an input parameter as an array of `Worker` references and returns no value. The method will print out all information of the worker with the highest annual salary. (Regarding the corresponding worker's salary, print the annual salary instead of the `monthlySalary`.)
- `minimumAnnualSalariedWorker`: This method takes an input parameter as an array of `Worker` references and returns no value. The method will print out all information of the worker with the lowest annual salary. (Regarding the corresponding worker's salary, print the annual salary instead of the `monthlySalary`.)
- `searchWorkerByJobDescription`: This method takes two input parameters; an array of `Worker` references and a job description value to be searched in the array. The method's return type is `void`. The method will print out the information of all workers whose `jobDescription` value will exactly be equal to the searched value.