

Department of AIT

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Objective: To gain expertise in writing programs using Inheritance, Polymorphism, and Interfaces using Java.

Problem Definition:

1. Create an abstract class Employee with an abstract method computeMonthlySalary. The salary should be computed using the total hours worked, bonus, and monthly wages based on yearly salary. The Employee class should have First Name, Last Name, Job Title, id as attributes. The Employee class should have an address object that is an instance of Address Class which implements an Address Interface. The address interface should include public access methods to access the employees street address, Apt Number, City, State, and Zip Code.

The Employee class implementation should have the public methods to access each of the employee attributes; Data encapsulation principles should be strictly enforced.

Create a SalariedEmployee class that inherits from Employee with yearly salary as additional attribute and implement the abstract method.

Create an hourly paid employee with hourly rate and number of hours worked as additional attributes and implement the abstract method.

Finally, create an EmployeeWithBonus class that inherits from Employee with percentage bonus and yearly salary as additional attributes and implement the abstract method.

Testing the implementation:

1. Create a method to initialize employee objects with addresses. It can be called from main method and you can create a list of objects corresponding to each employee type.

Monthly salary of a salaried employee = annual Salary/12

Monthly Salary of a commissioned/bonus employee = annual Salary/12 + Percent Bonus \* Monthly Salary

Monthly Salary of an Hourly employee = Hourly Rate \* number of hours worked in a month

Assume a constant hourly rate of $10.5 an hour for hourly employees.

**Result:** Print the employee salary results to a file that has the following format

Employee Object \t Address Object (objects should be converted to String)

Example data:

123456,Susan,Smith,Manager,150000,10,0 (entry from Employee)

123456,1234 ABC Street,,Fairfax,VA,20222 (entry from Address)

Result:

123456,Susan,Smith,Manager,150000,Bonus, MonthlySalary \t 123456,1234 ABC Street,,Fairfax,VA,20222

You can refer to the sample program from the sample application development that demonstrates file writing.

The assignment is due on 9/11/2017

Grading guidelines:

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1) If you develop the Employee class including Abstract class and the other three child classes along with the Address object in the Employee class, you get 10 points. All the child classes should implement computeMonthlySalary method.

2) If a student develops the Address Interface and implements the Address class (that implements Address Interface) they will get 10 points.

3) Testing the implementation 5 points.

In addition, all the submitted assignments should compile without any errors and work without crashes. If your code does not compile you will get “0” points

**Please name your projects according to this naming convention: Firstname\_LastName\_A1\_Date**

**Where Date = Due date of the assignment.**

**Where A1 stands for Assignment 1 and A2 for assignment 2 and so on.**