University of Maryland
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CMIS 242 6382 Intermediate Programming (2165)

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Submit Files - Project 1

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Project 1

Instructions

The first programming project involves writing a program that computes the salaries for a collection of employees of different types. This program consists of four classes. The first class is the `Employee` class, which contains the employee's name and monthly salary, which is specified in whole dollars. It should have three methods:

1. A constructor that allows the name and monthly salary to be initialized.
2. A method named `annualSalary` that returns the salary for a whole year.
3. A `toString` method that returns a string containing the name and monthly salary, appropriately labeled.

The `Employee` class has two subclasses. The first is `Salesman`. It has an additional instance variable that contains the annual sales in whole dollars for that salesman. It should have the same three methods:

1. A constructor that allows the name, monthly salary and annual sales to be initialized.
2. An overridden method `annualSalary` that returns the salary for a whole year. The salary for a salesman consists of the base salary computed from the monthly salary plus a commission. The commission is computed as 2% of that salesman's annual sales. The maximum commission a salesman can earn is $20,000.
3. An overridden `toString` method that returns a string containing the name, monthly salary and annual sales, appropriately labeled.

The second subclass is `Executive`. It has an additional instance variable that reflects the current stock price. It should have the same three methods:

1. A constructor that allows the name, monthly salary and stock price to be initialized.
2. An overridden method `annualSalary` that returns the salary for a whole year. The salary for an executive consists of the base salary computed from the monthly salary plus a bonus. The bonus is $30,000 if the current stock price is greater than $50 and nothing otherwise.
3. An overridden `toString` method that returns a string containing the name, monthly salary and stock price, appropriately labeled.

Finally there should be a fourth class that contains the main method. It should read in employee information from a text file. Each line of the text file will represent the information for one employee for one year. An example of how the text file will look is shown below:

```
2014 Employee Smith,John 2000
2015 Salesman Jones,Bill 3000 100000
2014 Executive Bush,George 5000 55
```

The year is the first data element on the line. The file will contain employee information for only two years: 2014 and 2015. Next is the type of the employee followed by the employee name and the monthly salary. For salesmen, the final value is their annual sales and for executives the stock price. As the employees are read in, `Employee` objects of the appropriate type should be created and they should be stored in one of two arrays depending upon the year. You may assume that the file will

contain no more than ten employee records for each year and that the data in the file will be formatted correctly.

Once all the employee data is read in, a report should be displayed on the console for each of the two years. Each line of the report should contain all original data supplied for each employee together with that employee's annual salary for the year. For each of the two years, an average of all salaries for all employees for that year should be computed and displayed.

Be sure to follow good programming style, which means making all instance variables `private`, naming all constants and avoiding the duplication of code. Furthermore you must select enough different kinds of employees to completely test the program.

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