

**CSE 2102: Introduction to Software Engineering**

**Objects & Classes**

**Assigned: Mar 1, 2022, Due: Mar 11, 2022**

**Part A**

Write a program to generate a salary report for a company's team of employees. The company wants to easily see which employee or employees have the highest salary, and to know how the salaries of each employee compare to the average.

The program will be written in the following steps.

1. Write a class `Employee.java` that records the name and the salary for each employee. The class should include the following methods: a) Default constructor that accepts no inputs, b) Constructor that creates an employee object when both the name and the salary are given, c) set method that sets the name and the salary of an existing employee (one set method to set both at once), d) `readInput()` method that accepts the employee data as input from the user, e) get methods (one each) for the attributes, and f) `writeOutput()` method that writes the name and the salary of employee.
2. Write a program `EmployeeReport.java` that accepts from the user the number of employees for whom the user wants to input the data. The program then writes three methods, one to accept the data for the given number of employees, second to compute the statistics, and third to display the results. The program displays the following results: a) the average salary of all the employees, b) the salary of the highest paid employee, and how it compares to the average, and c) the salary of each employee and how it compares to the average.

Input cmd:

```
java EmployeeReport
```

#### Output

```
Enter number of employees: 3
Enter data for employee # 1

Enter name of employee: John Smith
Enter employee's salary: $15000

Enter data for employee # 2

Enter name of employee: Jane Doe
Enter employee's salary: $30000

Enter data for employee # 3

Enter name of employee: Kevin Sullivan
Enter employee's salary: $60000
```

```
Average salary per employee is $35000.0
The highest salary is $60000.0

The following had the highest salary:
Name: Kevin Sullivan
Salary: $60000.0
$25000.0 above the average.

The rest performed as follows:
Name: John Smith
Salary: $15000.0
$20000.0 below the average.

Name: Jane Doe
Salary: $30000.0
$5000.0 below the average.
```

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**Part B**

A software program that is written to fulfill a specific purpose may also be adapted and reused in other contexts. Recall that reuse of design, code, and testing is a significant way to reduce the development time and costs. It is also a way to improve the reliability of a software system. In order to facilitate such reuse, it is important to consider the abstract functions that the program is trying to provide. Abstractly speaking, the above program computes the average value of some attribute or a characteristic associated with a collection of similar objects. In what other scenarios can this program be adapted and reused? Identify one such scenario.

**Submission**

The following deliverables must be submitted on HuskyCT by midnight on March 11, 2022.

- a) Well-documented code.
- b) At least 2 test cases that you used to test the code (submit in a separate document as a txt file or a word document).
- c) Please make sure that your code compiles, we will test your code offline with specific test cases (common to all).
- d) Response to Part B should be written in a separate document.
- e) Late submissions (without any legitimate excuse) will incur a penalty of 10% per day.