Exercise 1

(a) Create a class **`Employee`** that has

Variables:

Variable name	Data type
`name`	`String`
`salary`	`int`

Methods:

`getName()`, `setName()`, `getSalary()` and `setSalary()`

(b) Complete the following test program that creates two **`Employee`** object instances named `emp1` and `emp2`. Then perform the followings:

1. Set the name and salary of `emp1` to "*Chan Tai Man*" and 12000, respectively.
2. Set the name and salary of `emp2`to "*Tam Ping Shing*" and 13500, respectively.
3. Print the current details of `emp1` and `emp2`.
4. Increase the salary of "*Chan Tai Man*" by 10% and the salary of "*Tam Ping Shing*" by 5%.
5. Print the new details of `emp1` and `emp2`.

```
public class TestEmployee {  public static
void main(String [] args) {
        Employee emp1 = new Employee();
    Employee emp2 = new Employee();
         int oldSalary;

         // Part 1-2 here
         // Part 3 below
         System.out.println("Before-");
         System.out.println("Employee 1: name="+emp1.getName() +
                     " salary=" + emp1.getSalary());
        System.out.println("Employee 2: name="+emp2.getName() +
                       " salary=" + emp2.getSalary());

         // Part 4-5 here
     }
}
```

The output of the program is shown below.

```
Before-
Employee 1: name=Chan Tai Man salary=12000
Employee 2: name=Tam Ping Shing salary=13500
After-
Employee 1: name=Chan Tai Man salary=13200
Employee 2: name=Tam Ping Shing salary=14175
```

Exercise 2

(a) Create a class **`Student`** that has

Variables:

Attribute name	Data type
`name`	`String`
`id`	`int`
`score`	`double`

Methods: *the getter and setter methods for each of the above attributes.*

(b) Write a test program that creates three **`Student`** object instances named `stud1`, `stud2` and `stud3`. Then perform the followings:

1. Set the name, id and score of stud1 to "*Cheung Siu Ming*", 310567 and 87.1.
2. Set the name, id and score of stud2 to "*Ng Wai Man*", 451267 and 77.5.
3. Set the name, id and score of stud3 to "*Wong Sui Kai*", 789014 and 83.4.
4. Print the details of `stud1`, `stud2` and `stud3`.
5. Find and print the average score among the three students.

The output of the program is shown below.

```
Student 1: name=Cheung Siu Ming id=310567 score=87.1
Student 2: name=Ng Wai Man id=451267 score=77.5
Student 3: name=Wong Sui Kai id=789014 score=83.4

Average Score = 82.66666666666667
```

Exercise 3

Consider the following classes.

```
class AStudent {
    private String name;
    public int age;

    public void setName(String inName) {
    name = inName;
     }

    public String getName() {
    return name;
     }
}

public class TestStudent2 {  public
static void main(String s[]) {
    AStudent stud1 = new AStudent();
    AStudent stud2 = new AStudent();
    stud1.setName("Chan Tai Man");
    stud1.age = 19;
    stud2.setName("Ng Hing");
    stud2.age = -23;
         System.out.println("Student: name="+stud1.getName() +
                        ", age=" + stud1.age);
         System.out.println("Student: name="+stud2.getName() +
```

```
                            ", age=" + stud2.age);
    }
}
```

(a) What is the output of the above program?

Student: name=Chan Tai Man, age=19

Student: name=Ng Hing, age=-23

(b) Identify the problem regarding the data stored in the object `stud2`.

stud2.age = -23;

(c) Enhance the class `AStudent` by enforcing data encapsulation on the attribute `age`. If the inputted `age` is invalid, print an error message and set the age to 18.

END.