Lab 3: Simple classes

Objectives: The main objective of this laboratory class is to introduce the idea of an objects which have their own attributes and methods. Some attributes might be specific to the class and some might be to an instance. Other than this main objective you will also learn:

- how to read data from a file,
- how to generate random numbers
- creating arrays of objects

Task:

There are 61 students in the CO225 class – at least registered for the, class as of now. We want to track the attendance of all students and display the number of students who has less than 80% attendance.

Your first task is to develop a Java class called *Student* with suitable attributes and methods including a constructor. Each student is identified with their surname (only the surname with no initials for technical reasons). The surnames of all the students are given in a file called *co225-classlist.txt* which can be downloaded form Moodle.

All students are expected to come for 45 lecture sessions. When creating a student you are required to give his/her name and random integer (0 <= attendance <= 45) denoting his/her attendance.

The student class should provide suitable methods to;

- get the attendance percentage of a student and,
- get the average attendance percentage of all the students.

Once you have created the *Student* class, create a *Main* class which has the main method in it. Inside the main method create an array of 61 students. Create 61 students objects using the surnames given in the *co225-classlist.txt* file. Then display the names of students who's attendance percentage is less than 80.

Things which will be evaluated:
When evaluating your code we will check for

- correct use of access modifiers (private, public)
- correct use of static/non-static functions and attributes
- suitable methods and attributes in classes
- good coding practices.

Bonus Question: should the average percentage attendance be 50%? Explain.

What to turn in: submit the Class.java and Main.java and answer.txt as a single zip file via Moodle before the deadline. The answer.txt should contain the answer to the above question; which will be for bonus marks.

Sample code: you are provided with some sample code for reading files and generating random numbers. Have look at them.