CSE 215: Programming Language II
Sec – 9 & 10, Faculty: SvA
Homework # 1, Marks: 100
Deadline: 24.04.2021

Kishor Pasha, Musa Aman, and Robin Milford are three best friends who live in Los Angeles, California, USA. The three teen friends was also detectives and adventurers and formed the group "Tin Goyenda". Kishor is the leader being the thinker, Musa is the second detective with muscle power and passion for food, and Robin, being the nerd, is the researcher and documentation specialist of the group.

You are right!! This is about the famous "Tin Goyenda" series written by Rakib Hasan in the eighties. Life was very different back then, and so was the tech. But we live in the twenty first century now and we all have the Genie of the Lamp on our hands (Internet in cellphones). So we are going to build a software system for Tin Goyenda of today. We will mostly focus on the case documentation part. To do that Tin Goyenda has explained their basic mode of operation. At first, a client comes to them with a case or they pick up a case from the surroundings. They sometimes have initial suspects, and sometimes suspects appear as a result of their investigation. Many times the initial suspects turn out to be innocent and they find a new person to be guilty.

At the beginning of the case, Robin records the initial brief description of the case along with any primary suspects. Later on, he updates the detail of the cases when they come across any major turns during investigation. He carefully records all these dates as well. At the end, he records a short summary along with the final culprits. The software system should have the capability to support their current analog system and at any given time it should be protected against any intruders by giving the read and write access to only the members of Tin Goyenda.

So, please go ahead and design and build a software system for Tin Goyenda. While designing the system you need to keep in mind the following points.

- You should use ArrayList(s) when you need to record indefinite number of objects of a type.
- Since we have not yet covered file handling in Java, try storing things in ArrayLists which will work only when the program is running and unfortunately cannot save the record for future use. This feature will be implemented in the next assignment.
- In the main method of the driver class, you can put an infinite loop inside which you should have a menu system at the beginning to enter a new case, and to modify a case. A case should have either of the two statuses: open, or close.

A. DESIGN PHASE (50 points)

This is the first phase of your solution. The chronological ordering and the mark distribution are as follows:

1. Identify the entities of the system. Just list them. *[Hint: Page 2 of Jamboard 7a]* **(5 points)**
2. Brainstorm and find out the attributes (data fields) and behaviours (methods) of these entities. *[Hint: Page 1 and 2 of Jamboard 7a.]* **(10 points)**
3. Draw the relationship diagram in UML that clearly define and quantify the relationships among your classes. *[Hint: Slide# 6 and 13 of Lecture slide 8]* **(10 points)**
4. Draw detailed UML diagrams of all the classes of your system. You should carefully think about the accessibility of your data fields and methods of your classes and clearly mark them in UML diagram. **(25 points)**

B. IMPLEMENTATION (CODING) (40 points)

1. Write all the classes that you have designed in Part A in Java. **(25 points)**
2. Write the driver class named "CaseManagementSystem.java" that will contain the main method and perform the tasks. **(15 points)**

C. GOOD CODING STYLE (10 points)

At beginning of every class you should include your name, ID, course and section number in comments. You should also put comments in parts of your code where you feel the implementation or the reasoning is not so trivial. The indentation and block styles should be uniform through out your written codes. The data fields, local variables, method and class names should be relatable and meaningful and should follow the Java convention.

Submission guideline

- *Draw the UML diagram(s) using any word processor and submit that as a PDF file.*
- *For submitting the codes (similar to lab quiz), first, make a zip file containing just the completed .java files and then submit in google classroom. Please note that it is your responsibility to submit both the soft copies of this assignment before the deadline to avoid the late count.*
- *Strict punishment will be given if copying is found in any form.*
- *There will be follow up oral exam after the submission when you need to justify your written code.*