American University of Sharjah
Computer Science and Engineering
CMP256 Spring 2022 Course Project
Submission: May 11, 2022

Your group has been mandated to implement a Student Information System (SIS). The proposed SIS consists of three main modules:

1. The Graphical User Interface (GUI)
2. The Information Repository (IR)
3. The Functionality Engine (FE)

Upon starting the system, the user is met with a login window, where he/she enters the username and the password. The SIS has to authenticate the user by checking for the username and password. If the username or password are not correct, the system shall prompt the user with an error message and ask them to reenter their data again. (Additional feature: you can make the SIS block the user out on the third wrong attempt to login)
The GUI of the SIS shall allow three types of users to access the SIS:

A. Student user
B. Instructor
C. Administrator

Roles of the users in the system:

A. The Student user can access his/her information which includes:
    1. Name
    2. ID
    3. Username
    4. Password
    5. Major
    6. Courses taken in the current term:
        a. Name of course
        b. Number of course
        c. Grade of student in the course
    7. GPA of the student

The student shall be able to add courses in a specific term by loading course information from a text file that is formatted as follows:
Course Number; Course Name; Number of Credits
Adding courses shall be doable using a button and through a menu.
A student can take up to 5 courses per term.

The student shall be able to display his/her data in the form of a table similar to the following example:

Name	Someone	ID	12345	Major	CMP
Semester	Fall 2020				
Courses	Name	Number	Credits	Grade	
1	Introduction to Something	CS101	3	75	
2	Advanced Something	CS201	3	90	
3	Something Else	MS101	2	65	
			GPA	78	

GPA is computed on the 100 scale as a weighted average of the grades of the courses taken in the semester.
The student shall be able to save the course data in a file using a button and through a menu.

B. The Instructor user can access instructor information which includes:
    1. Name
    2. ID
    3. Username and Password
    4. Department
    5. Courses taught in the current semester
    6. Grades of students in a course

An instructor shall be able to change:
1. His/her name
2. Grade of a student in a course
3. His/her Password

The instructor shall be able to display his/her data in a table format as follows:

1. Personal Data Table

Name	teacher	ID	4321	Department	CS
Term	Fall 2020				
Courses					
Name	Number				
Introduction to Something	CS 101				

The Instructor shall be able to add courses to his/her schedule by entering it through an interface that uses text-fields, one course at a time. An instructor can add up to 3 courses per term.

2. Course Information Table

Name	teacher	ID	4321	Department	CS
Term	Fall 2020				
Course	CS 101	Introduction to Something			
ID	Name	Grade			
12345	Someone	75			
23456	Someone Else	83			

A course can accommodate up to 20 students. Grades are on a 100 scale.
The SIS shall display the ID and name of students who already added themselves to the course. An instructor can only change the grades of the students by using a popup window accessible by a button (Change Grades), one student at a time.

An Instructor can choose to save the data of a course into a file that can be read later by the Instructor and by the Administrator.

C. The Administrator user can access and display all information in the SIS in the same way students and instructors do.
The administrator shall be able to change all data in the system in similar ways to students and instructors. The administrator cannot change the grades of students.

General Features

1. The implementation of the SIS shall make use of the MVC design pattern with a clear separation of the three components in the pattern.

Additional features (Optional)

1. The SIS shall allow more than one user to access their data concurrently through the utilization of threads (A thread for each user accessing the system). Proper synchronization shall be used to guarantee consistency of data in the SIS.

2. Use threads to keep the GUI as responsive as possible when multiple users are accessing the system.

Submission:
You need to submit:

1. A brief document to describe your program:
    a. The classes used and how data and behavior are distributed between classes
    b. The Distribution of behavior on threads including how synchronization was utilized
2. The source code of the program along with an executable JAR file.

Evaluation Scheme:

1. Correct implementation of the required functionality (**65%**)
    a. Completeness of the implementation (40%):
        i. The program runs correctly (25 %)
        ii. Absence of crashing errors (The exceptions are well handled) (15%)
    b. GUI and use of MVC (25%)
2. Clear and easy to read source code (**15%**)
3. Proper concise documentation (**10%**)
4. Presentation (**10%**)
5. Bonus: Use of Threads (**10%**)