CSE-214 Offline - 3

Behavioural Design Pattern

Task 1 (15 marks)

You want to build a movie streaming platform named DesiFlix. DesiFlix currently offers movies in three genres: Thriller, Horror, and Comedy. Users of the platform can select one or more of these genres as their favorites.

Your goal is to design a notification system that allows users to choose their preferred genres. Whenever a new movie is uploaded in any genre, the system should notify all users who have that genre in their list of favorites. This notification system must be implemented using multithreading or another concurrency mechanism to ensure that notifications are sent efficiently and asynchronously.

The system should:

1. Allow users to select and update their favorite genres at any time.
2. When a new movie is uploaded in a genre, send a notification to all users who have that genre marked as their favorite. The notification should include the movie's name and genre.
3. Use multithreading (or another concurrency technique) to send notifications asynchronously, ensuring that the movie upload process is not delayed by the notification process, even when multiple users are subscribed to the same genre.

In other words, when a movie is uploaded, the system should send notifications to the relevant users in parallel, so that the program remains responsive and efficient, without blocking the upload process.

Identify the design pattern(s) that can best capture the scenario above. Implement the scenario in Java.

Task 2 (10 marks)

Exam controller office plays an important role in arranging exams. In a university, the examiners send all the exam scripts and corresponding marksheets to the exam controller office after checking the exam scripts. The exam controller office scrutinizes the marks and corrects mistakes (if any). Then it publishes the results to the students. If a student thinks that he/she should have got more marks in an exam than he/she got, he/she can apply for re-examine. The exam controller office then sends the corresponding exam script to the corresponding teacher. The teacher reexamines the script and lets the exam controller office know if there is any change (increase or decrease) in marks. The exam controller office then lets the student know the results of re-examination and update the mark if there is any change.

Draw the UML diagram and submit it in a PDF file. (You don't need to write any code. Drawing the diagram would suffice)

Deadline For all sections: November 23, 2024 (Saturday) at 11:55 PM.

A submission link will be opened on Moodle for submitting your simulation. Make a folder containing all your simulation project files, zip it, and submit it following the naming format. The naming format should be your *<7_digit_student_id.zip>* (e.g., *2105999.zip*).