Coding Assignment

1 Problem Statement

1.1 Part 1: LIVE Classroom

You have to design a virtual classroom with a unique id where users can enter as 2 different roles:

- Student
- Teacher

The virtual classroom is nothing but a set of two lists indicating who is present in the classroom - teacher list and student list. Each list should be LIVE - it will keep changing as and when students/teachers join and leave the classroom. In addition to the dynamic lists, for the teacher side, the classroom should also have two buttons - *start class* and *end class*. Students will only be allowed to enter the class after it has started and before it has ended. Rest of the time, permission should be denied.

Example Scenario:

There is teacher t1, and students s1 and s2. Initial state of the classroom should be empty lists for students and teachers (teacherList = [], studentList = []). Currently the class has not started. Suppose a student tries to enter a class at this state, he/she will be denied entry. Now suppose a teacher enters, the new state should become (teacherList = [t1], studentList = []). Now, once the teacher clicks on the start button (which will only be visible to teachers), the class starts, which means students will be allowed to enter. Now when the student enters, the new state becomes (teacherList = [t1], studentList = [s1]) and is visible to both of them.

Wireframes:

(a) Student Side Classroom
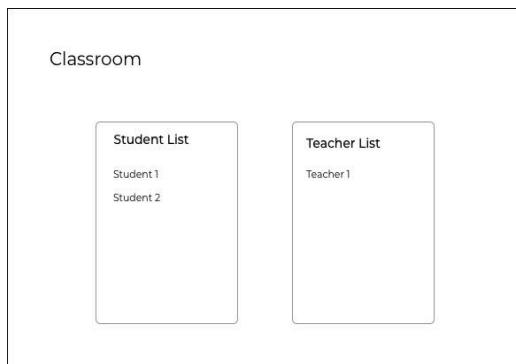
(b) Teacher Side Classroom
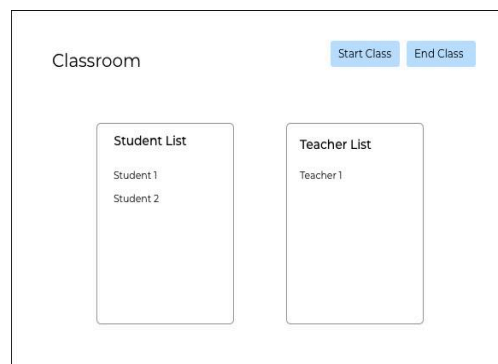
1.2 Part 2: Reports

As a manager of this classroom, I should be able to query the history of a classroom. This means that when I query the database for a given room ID, it should give me a log of the following events:
- Time at which each participant entered along with their role
- Time at which each participant exited along with their role
- Time at which class was started
- Time at which class was ended

If multiple classes are started and ended in a classroom, then I should get logs for all of those classes when I query the database for that classroom.

2. Implementation

- You can use sockets for implementation or anything else which allows you to track live events.
- No bar for type of database, use whichever you are comfortable with.
- We would prefer react, but you can use anything of your choice. The basic functionality should be there.

3. Evaluation

- Functionality of code
- Code structure (Design Pattern, clean ,reusable code)
- Database Design
- Ability to come up with test cases for testing of code