**CMPE 202 Health Club Management System**

1. **Component Breakdown**

To implement an end-to-end HealthClub Membership Management system, we will need to develop both a back-end API and a front-end web/mobile UI. The system will have three user roles: Members, Non-Members, and HealthClub employees, each with their respective privileges and functionalities. The APIs will be accessible via the UI, and the data will be stored in a database.

## Backend API:

The backend API will be developed using Java Spring Boot. The API will have the following endpoints:

1. **Home page endpoint:** This endpoint will return information about the Gym and memberships available and Class schedules. It will be viewable by all users.

2. **Login/Registration endpoint:** This endpoint will allow users to log in or register as members or non-members.

3. **View Members page endpoint:** This endpoint will show a member's individual class schedule.

4. **View Activities endpoint:** This endpoint will allow enrolled members to view their activities in the past week, month, or last 90 days.

5. **Signup for classes endpoint:** This endpoint will allow members to sign up for classes in advance.

6. **Log hours endpoint:** This endpoint will allow members to log hours spent on Treadmill, Cycling, Stair machines, or weight training.

7. **Enroll new members endpoint:** This endpoint will allow HealthClub employees to enroll new members.

8. **Checkin members endpoint:** This endpoint will allow HealthClub employees to check in members into the Gym each time they enter.

9. **Checkout members endpoint:** This endpoint will allow HealthClub employees to check out members each time they exit the Gym.

10. **Signup non-members endpoint:** This endpoint will allow HealthClub employees to sign up non-members for free trials.

11. **View analytics dashboard endpoint:** This endpoint will allow HealthClub employees to view a dashboard showing User activity summarized by location, classes, and enrollment by day/week, hours spent in the gym by day/week/month, number of visitors by the hour each day, weekday, weekend, and any other useful dashboard.

The backend API will be developed using Java Spring Boot and hosted on an auto-scaled EC2 cluster with a load balancer.

**Frontend UI:**

The front-end UI will be developed using ReactJS and Bootstrap, and it will be designed to be accessible via desktop.

The UI will have the following pages:

1.  **Home page:** This page will display information about the Gym and memberships available and Class schedules.

2.  **Login/Registration page:** This page will allow users to log in or register as members or non-members.

3.  **Members page:** This page will show a member's individual class schedule.

4.  **Activities page:** This page will allow enrolled members to view their activities in the past week, month, or last 90 days.

5.  **Classes page:** This page will allow members to sign up for classes in advance.

6.  **Log hours page:** This page will allow members to log hours spent on Treadmill, Cycling, Stair machines, or weight training.

7.  **Enroll new members page:** This page will allow HealthClub employees to enroll new members.

8.  **Checkin members page:** This page will allow HealthClub employees to check in members into the Gym each time they enter.

9.  **Checkout members page:** This page will allow HealthClub employees to check out members each time they exit the Gym.

10.  **Signup non-members page:** This page will allow HealthClub employees to sign up non-members for free trials.

11.  **Analytics dashboard page:** This page will allow HealthClub employees to view a dashboard showing User activity summarized by location, classes, and enrollment by day/week, hours spent in the gym by day/week/month, number of visitors by the hour each day, weekday, weekend, and any other useful dashboard.