Project: Recommendation Engine (Cafeteria)

Roles- 1) Admin
2) Chef
3) Users (Employees)

1. Problem Statement:

Absence of personalized food recommendations, ratings, feedback leading to suboptimal food choices for customers. This results in customer dissatisfaction and disinterest.

(Currently we don't have any system where employees can give their rating, views or feedback on any food item. This system will help employees to give their recommendation and it will help the Chef to know the employee's interests.)

2. Features of Recommendation Engine (Cafeteria):

- <u>User Authentication & Authorization</u>:
  Allow users (admin, chef, employee) to log in.
  Have access to only those API based on the Role assigned to them.

Employees can login using their employee Id and name. (No Token based authentication, just normally matching the data from the table)

- Menu Management:

  Role - Admin
  Add, update, and delete menu items (food and beverages) with prices and availability status.

- Food Recommendation:

  Role – Chef
   - Chef will roll out 'X' items for breakfast/lunch/dinner for n-1 day (one day before)
   - X items will be shown to employees

   - Employees will choose what they wanted by EOD

   - Nth day cafe owner with all the response is going to prepare the food accordingly

   Each food has multiple attribute
   - consumer comment
   - consumer ratings
   - date of provide feedback

   When Chef sends a food recommendation to employees than this must go with recommendation engine
   - It will find the ratings of food and show to user
   - It will find the sentiments of comments and show to user

- Employee Feedback:

  Employees can give their feedback (comment, rating) on any food Item from the Menu including Breakfast/Lunch/Dinner Item.

- Reporting:

  Report will be generated for given scenario-

  -Monthly User Feedback for different food Items. (Chef)

- Notifications:

  Send and receive notifications using Socket. Types of Notification-
  1) For the recommendation of Next Day Menu Item.
  2) Any New Food Item added.
  3) Availability status of any food item is changed

Console application

Create a console application, from where user can select the input from console and as an output, it will perform the certain task. For example: if user wants to select any item to choose for breakfast/lunch/dinner or see the menu, on console there will be some predefined command like, press 1,2 or 3.

3) Technical Requirements-

- DBMS
  - Use MYSQL database to insert the records related to events.
  - Create triggers for updating the records in multiple tables, like if any menu item will be added.
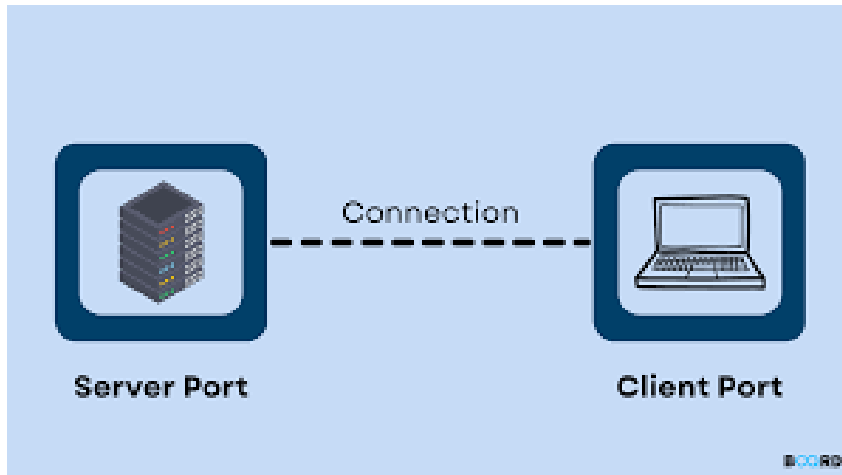 - Create stored procedure if required.
  - Database should be normalized up to 3NF.

- Queue
  Use the concept of Queue data structure to show all the notifications when any

employee logged in.

- Multi-threading
  Use multi-threading concept in order to perform multiple operations at same time. For example, inserting data into database and generating reports at the same time.

- Data Structure
  System must have different kinds of Data Structure implementation, in order to achieve required goals.

- Recommendation Algorithm
  Use algorithm to analyze the data in various ways like providing sentiments from comments.

- Socket programming (Client, server)
  Socket programming is a way of connecting two nodes on a network to communicate with each other. The server forms the listener socket while the client reaches out to the server.

4) Allowed Languages-

Java
C++

C#
Typescript

Execution Plan

Week	Task
Week-1	Understanding about Recommendation engine (for Cafeteria) with problem Domain areas be like: 1) Why we Require Recommendation Engine? 2) What can be all scenarios can be implemented? 3) How will this application function as a system? 4) What are the challenges we are going to face while building such system? 5) What can be the different use cases? 6) Is there anything available in the market already? How this solution will be different from that? Discussion on given problem statement with R&D and requirement gathering from the stockholders.
Week-2	1) Identify different entities and their relationship in the system. 2) Identify use cases with different modules.

	3) Each scenario UML Diagram (Use case Diagram, ER Diagram, Class Diagram)
Week-3 & Week-4	Finalization of UML Diagram (Use case Diagram, ER Diagram, Class Diagram) and start working on Implementation