1. Propose a detailed design to add notification in HRMS. Detail design should include:
   a. Design for the database.

Employee
_id
user_id
first_name
last_name
phone_number
email
manager_id
role_ids

User
_id
username
password

Roles
_id
name
role

notification
_id
from
to
type
route
read_status
description

leaves
_id
start_date
end_date
leave_type
submitted_by
submitted_to
status

notification_settings
_id
employee_id
push_active
email_active
sms_active

   b. Design for code (Class design and relation between the classes).

1. Code structure Backend
   a. Model:
      i. Employee
      ii. Leave
      iii. Notification
      iv. Roles
      v. User
   b. Route:
      i. Auth
      ii. Leave
      iii. Notification

           iv.   Roles
           v.   Seeder
           vi.   User

c. Controller:
           i.   leaveController
           ii.   notificationController
           iii.   rolesController
           iv.   userController

d. Middleware:
           i.   Auth (check token and role wise route access)

e. Notification:
           i.   pushNotification
                 1.   socketPushNotification (socket)
                 2.   emailNotification (nodemailer)
                 3.   smsNotification (twilio)

2. Code structure Frontend
   a. AuthService (signin, logout, token store)
   b. Components
      i. navbar
         1. AppTopBar
      ii. PushNotification
         1. Notification
      iii. Sideabar
         1. sidebarLeft
      iv. User
         1. EmployeeLeaveApplication
         2. EmployeeLeaveApplicationList
         3. UserList
         4. UserProfile
      v. Dashboard
      vi. Login
      vii. Signup
   c. AppWrapper (restrict routing GUEST and Auth)
   d. App

3. Propose technologies to implement the solution:
   a. Nodejs (express) for backend
   b. MongoDB for database
   c. React for frontend
   d. JWT for rest API
   e. Socket for push notification
   f. Email (nodemailer) use google
   g. SMS (Twilio)

4. Prepare a plan to develop this notification system. The plan should include milestones.
   a. Design Database
   b. Backend socket, nodemailer and twilio implementation
   c. Frontend socket implementation