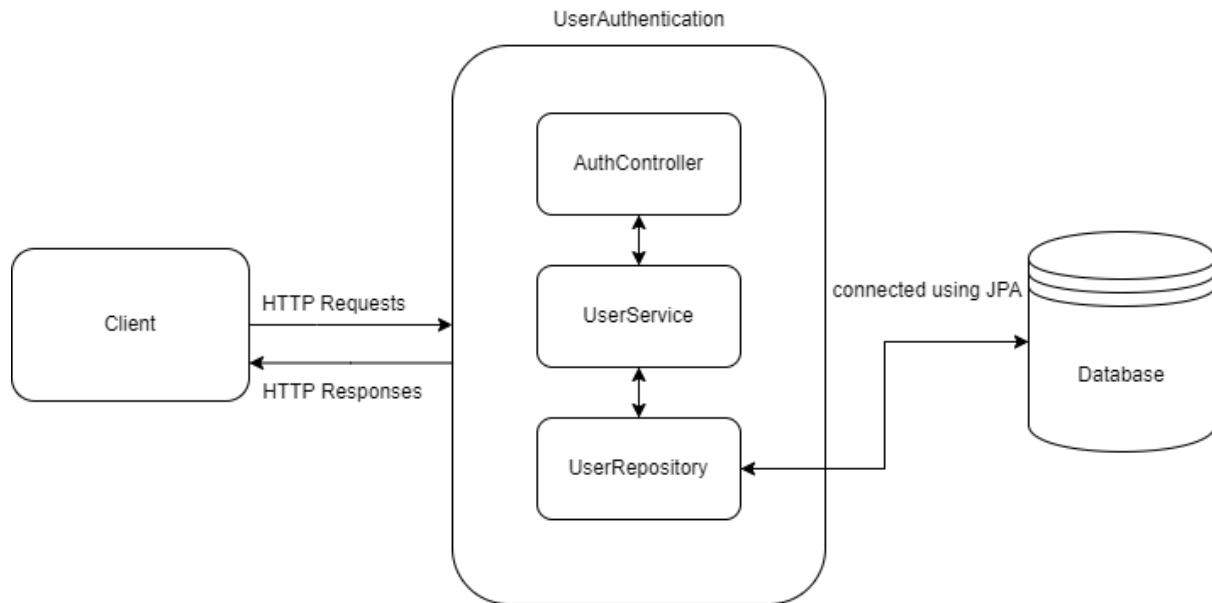


## High Level Design-



## Low Level Design-

### 1. API Layer :

- Endpoints :
  - POST /api/auth/sign\_up
  - GET /api/auth/lookup\_user
  - POST /api/auth/login
- AuthController Class : Implements & handles HTTP requests.
  - signup(UserEntity user) : Creates a new user account in the database.
  - login(UserEntity user) : handles user authentication by checking the provided username and password and returns a token if user authentication is successful.
  - lookupUser(String authHeader) : Retrieves user information based on valid token.

### 2. Service Layer :

- UserService : Class which Implements user-related business logic.
  - createUser(String username, String password,String name,String role) : Creates a new user account.
  - getUserByUsername(String username) : Retrieves user details by username from the repository.
- PasswordEncoder : Class for encoding and verifying user password
  - encodePassword(String password) : encodes the password using bcrypt hashing algorithm and returns hashed password.
  - verifyPassword(String password,String hashedPassword) : verifies both the password equal or not.
- JWTTokenProvider : Class that generates & validates tokens.

- generateToken(String username) : generates a token with expiry time.
  - validateToken(String token) : validates the token.
  - getUsernameFromToken(String token) : Retrieves user name from the token.
  - Utility : Class for implementing extra utility operations
    - convertObjectToJson(Object obj) : converts object into json format.
3. Entity Model :
- UserEntity: Class serves as a blueprint for user objects, defines their properties and methods to store and retrieve it.
4. Data Access Layer :
- UserRepository: Interface which extends JPA repository for interaction with database for user-related operations.
    - save(UserEntity user): Saves user data to the database.
    - findByUsername(String username): Retrieves user data by username.
5. Database Schema :
- Table name : users
  - columns:
    - id (INT, PRIMARY KEY, AUTO\_INCREMENT)
    - username (VARCHAR, Unique)
    - password (VARCHAR)
    - name (VARCHAR)
    - role (VARCHAR)