

## **Backend Project (no name yet)**

### **Tech Stacks:**

1. Language: Java
2. Framework Spring Boot
3. RDBMS PostgreSQL
4. Redis
5. Other tools if required
6. Create Swagger or similar tools (Postman collection, etc.) for online review

### **Tasks:**

1. Implement bubble sort algorithm
2. Show a code structure using design pattern (other than MVC) for question number
3. Create a service as follows:
  - a. CRUD API for Library with specific data id, title, content, author\_id, created\_at, updated\_at
  - b. Create Authentication (Login And Register) for CRUD articles using JWT auth. With specific users data: id, fullname, username, email, password. Login using both username or email and password.
  - c. Create multi-layered security:
    - i. Create MFA for authentication using OTP Email
    - ii. Max Failed Login Attempt 5 times in 10 minutes will block account for 30 minutes
    - iii. Create Endpoint for Audit Log for the whole feature (CRUD articles, CRUD users, Login, etc. with Detail Browser/Device Data and Timestamp)
    - iv. Implement RBAC with the following roles:
      1. Super Admin
        - a. Can perform CRUD users
        - b. Can perform CRUD operations on any article
        - c. Can access all audit logs

2. Editor
  - a. Can perform CRUD operations only on articles they own
  - b. Can view all articles (including those created by other users)
3. Contributor
  - a. Can create and update their own articles
  - b. Cannot delete articles
4. Viewer (default role for newly registered users)
  - a. Can only view public articles
  - b. Cannot create, update, or delete articles.
- d. Additional Features (Mandatory)
  - i. Create payload validation
  - ii. Create API documentation with swagger
  - iii. Create unit test with coverage > 80%
  - iv. Dockerizing Project Implement
- e. Bonus
  - i. Implement Rate Limiter API
  - ii. Implement caching using Redis, etc.