

ALGORITHM

1. User Authentication

- Implement a login page with username and password validation.
- Users can register for an account.
- After successful login or registration, users are directed to the Success page; otherwise, an Error page is displayed.

2. Citizen Management:

- Users can add citizen data to the MySQL database.
- Users can retrieve all citizens.
- Users can retrieve data of a specific citizen using their ID.
- Users can update citizen data.
- Users can delete a citizen by entering the citizen's ID.

3. Vaccination Status:

- Users can track the vaccination status of citizens.
- A citizen must have exactly two vaccinations to be considered fully vaccinated.

4. Vaccination Center Management:

- Users can add a vaccination center to the MySQL database.
- Users can map citizens to specific vaccination centers (One-to-One mapping).
- Users can enter a center ID and retrieve all citizens associated with that center.
- Users can retrieve all vaccination centers.
- Users can retrieve a specific vaccination center by its ID.
- Users can update vaccination center data.
- Users can delete a vaccination center by entering the center's ID.

5. Technology Stack:

- Develop the application using Java, Spring Boot, Spring Data JPA, Spring MVC, and MySQL Database.

6. Validation:

- Implement both frontend and backend validation.
- Ensure that data retrieval requires valid IDs.
- Verify that vaccination status is accurate.
- Validate that citizen mapping is one-to-one.
- Display appropriate error messages for validation failures.

7. Business Logic/Exception Scenarios:

- Ensure one-to-one mapping between citizens and vaccination centers.
- Detect and display an error message if a citizen is already mapped to a center.
- Implement exception handling for any unexpected errors in the application.

8. User Interface:

- Develop user-friendly web pages for each feature (Login, Register, Citizen Management, Vaccination Center Management, etc.).
- Implement navigation between pages based on user actions.

9. Security:

- Use Spring Security to secure the application, including user authentication and authorization.

10. Database Schema:

- Design the database schema for citizens, vaccination centers, and their relationships.

11. Logging and Monitoring:

- Implement logging to track user actions and application behavior.
- Monitor the application for errors and performance issues.

12. Testing:

- Conduct thorough testing, including unit tests, integration tests, and user acceptance tests to ensure the application works as expected.

13. Deployment:

- Deploy the application on a server with appropriate configurations.

14. Documentation:

- Provide documentation for users and developers on how to use and maintain the application.