Writeup/Description

OBJECTIVE

Build an application to manage vaccination centers working on distributing vaccines to all citizens of India

Background of the problem statement:

You have been hired by the Government of India as a Full Stack Developer, with the aim of creating an application prototype that would support the vaccination of all citizens of India.

The application would:

Help citizens reach out to the centers for their vaccinations

Track the vaccination status of all citizens in the country

Track vaccination centers in each city

Support the use of CRUD database operations for the citizen and vaccination center data

Map users to specific vaccination centers

The tasks that need to be performed by you are:

Create a database using MySQL

Create the necessary code for the various layers of the application

Entity Layer: Create Vaccine Center and User entities with appropriate relationship mappings

Repository Layer: Create a layer for all database operations

Service Layer: Demonstrate dependency injection and interface segregation principle

Controller Layer: Expose necessary APIs such as:

Add citizens to the database

Retrieve all citizens

Retrieve a specific citizen

Retrieve all vaccination centers

Retrieve a specific vaccination center by ID

Retrieve a specific vaccination center and all its citizens in that city

Description:

The application aims to manage vaccination centers and distribute vaccines to all citizens of India. It provides features to help citizens schedule their vaccinations, track vaccination status, and manage vaccination centers across different cities.

Algorith/Steps:

Database Setup:

Install and set up MySQL database.

Design the database schema with tables for Vaccine Centers and Users.

Establish appropriate relationships between the tables.

Entity Layer:

Create VaccineCenter entity with attributes like center ID, name, city, address, etc.

Create User entity with attributes like user ID, name, age, vaccination status, center ID, etc.

Define relationships between VaccineCenter and User entities.

Repository Layer:

Create repository interfaces for VaccineCenter and User entities.

Implement repository interfaces to perform CRUD operations on the database.

Service Layer:

Create service interfaces for VaccineCenter and User entities.

Implement service interfaces with business logic for managing centers and users.

Use dependency injection to inject repository instances into service classes.

Controller Layer:

Build RESTful APIs using a web framework (e.g., Spring MVC, Express.js).

Implement controller classes with API endpoints for citizen and vaccination center management.

Expose necessary API endpoints for adding citizens, retrieving citizens and centers, etc.

Testing and Validation:

Write unit tests to verify the functionality of the application.

Test API endpoints using tools like Postman or cURL.

Perform integration testing to ensure smooth interactions between different layers.

Deployment and Documentation:

Deploy the application on a server or cloud platform.

Document API endpoints, request/response structures, and configuration steps.

Provide clear instructions for setting up the application and any prerequisites.

Github Link:

https://github.com/Aryan9605garg/AryanPracticeRepo