Frontend Architecture

The frontend of the AquaCare Report Hub is designed using standard web technologies:

- HTML, CSS, JavaScript and spring MVC :

- Create a visually appealing and responsive user interface.

Backend Architecture

- SpringBoot Application

- MySQL

- Serves as the database for storing property and user information.

**Communication Flow**

Frontend and backend components communicate through a set of APIs:

- APIs for Property CRUD Operations:

- Enable seamless interaction between the frontend and backend.

**Environment Setup**

Installing XAMPP

To set up a local development environment, follow these steps:

1. Download and install XAMPP from [xampp. org](https://www.apachefriends.org/index.html).

2. Configure XAMPP to include Apache and MySQL services.

Configuring MySQL Database

1. Access the MySQL database through the XAMPP control panel.

2. Create a new database and set up the required tables for user and property information.

Backend Server Setup

. create spring project on spring initializer and and all the dependences include spring web, JPA, MSQL, SECURITY, THymleaf

. Dawnload the project

. open Intellij IDE

.open your project

. Configure the server to connect to the MySQL database.

**Backend Development**

User Authentication and Registration

API Endpoints:

- `/api/register`: Allows users to create an account.

- `/api/login`: Handles user authentication.

Property Management

API Endpoints:

- `/api/properties`: Manages CRUD operations for property listings.

Using Postman for API Testing

Postman can be used to test the functionality of the backend APIs.

**Frontend Development**

UI/UX Design

- Design a user-friendly interface for property uploading and browsing.

HTML and CSS Structure

- Structure HTML and CSS to create visually appealing pages.

JavaScript Implementation

- Implement JavaScript for frontend validation and user interaction.

Connecting Frontend to Backend APIs

- Utilize JavaScript to connect frontend components to backend APIs.

**Additional Features**

User Messaging System

- Allow users to communicate within the platform for property inquiries.

Search and Filter Options

- Implement search and filter options for users to find properties easily.

User Dashboard

- Create a dashboard for users to manage their uploaded properties and track inquiries.

**Testing**

Backend API Testing with Postman

Overview

To ensure the reliability and functionality of the AquaCare Report Hub

backend, we will use Postman to test the API endpoints.

Setup Postman Environment

1. Download and install Postman from [postman.com](https://www.postman.com/).

2. Create a new environment in Postman.

3. Define environment variables for the base URL and other relevant information.Test API Endpoints

User Authentication and Registration

Register a new user:

- Endpoint: `POST /api/register`

- Request body: Include user details (username, email, password).

- Expected response: User registration success message.

Login with the registered user:

- Endpoint: `POST /api/login`

- Request body: Provide login credentials.

- Expected response: Successful login message with an authentication token.

**Property Management**

**Create a new property listing:**

- Endpoint: `POST /api/properties`

- Request body: Include property details.

- Expected response: Success message with the created property information.

Retrieve property listings:

- Endpoint: `GET /api/properties`

- Expected response: Array of property listings.

Update an existing property:

- Endpoint: `PUT /api/properties/:propertyId`

- Request body: Provide updated property details.

- Expected response: Success message with the updated property information.

Delete a property listing:

- Endpoint: `DELETE /api/properties/:propertyId`

- Expected response: Success message indicating the deletion.

Conclusion

By performing these tests, you can ensure that the backend APIs are functioning as intended. Adjust the tests based on your specific API routes and responses.

***Frontend Testing***

Overview

For frontend testing, focus on user interactions, form validations, and data display.

User Authentication:\*\*

- Test the login and registration forms.

- Ensure proper validation for input fields.

Property Upload Form:

- Verify that users can successfully upload properties.

- Test form validations for required fields.

Property Listings Display:

- Confirm that property listings are displayed correctly.

- Test search and filter functionalities.

Conclusion

Frontend testing ensures a seamless user experience and effective interaction with the AquaCare Report Hub

Platform.

**Security Measures**

User Authentication Security

- Implement secure user authentication measures, including password hashing.

Data Protection Measures

- Ensure data protection through secure database access.