CEBU INSTITUTE OF TECHNOLOGY
UNIVERSITY

IT342-G2
SYSTEMS INTEGRATION AND ARCHITECTURE 1

FUNCTIONAL REQUIREMENTS SPECIFICATION (FRS)

Project Title: Mini App

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Table of Contents

1. Introduction 3
   1.1. Purpose 3
   1.2. Scope 3
   1.3. Definitions, Acronyms, and Abbreviations 3
2. Overall Description 3
   2.1. System Perspective 3
   2.2. User Classes and Characteristics 4
   2.3. Operating Environment 4
   2.4. Assumptions and Dependencies 4
3. System Features and Functional Requirements 4
   3.1. Feature 1: 4
   3.2. Feature 2: 4
4. Non-Functional Requirements 5
5. System Models (Diagrams) 7
   5.1. ERD 7
   5.2. Use Case Diagram 7
   5.3. Activity Diagram 8
   5.4. Class Diagram 10
   5.5. Sequence Diagram 11
6. Appendices 12
7. Documentations 13

1. Introduction

1.1. Purpose

The purpose of this document is to define the functional and non-functional requirements for the **"Mini App"** Authentication System. This document serves as a guideline for the design, implementation, and verification of the system's security and user management modules. It is intended for the development team, system architects, and project stakeholders (instructors) to ensure a clear understanding of the system's deliverables.

1.2. Scope

The **Mini App** is a web-based application focused on secure user identity management. The system encompasses the following core functionalities:

- **User Registration:** Capturing detailed demographic data and credentials.
- **Authentication:** Verifying user credentials securely to grant access.
- **Session Management:** utilizing token-based providers to manage user states.
- **Dashboard Access:** Providing a secured view for authenticated users.
- **Logout:** Securely terminating user sessions.

The system boundary is limited to the authentication and user profile management modules, it does not currently include external third-party integrations (e.g., Google/Facebook login) or complex business logic beyond user management.

1.3. Definitions, Acronyms, and Abbreviations

- **FRS:** Functional Requirements Specification.
- **ERD:** Entity Relationship Diagram.
- **DTO:** Data Transfer Object (used to transfer data between the Controller and Service layers).
- **JWT:** JSON Web Token (implied mechanism for the TokenProvider).
- **Service Layer:** The architectural layer responsible for business logic.
- **Repository Layer:** The architectural layer responsible for database interactions.
- **UI:** User Interface (Frontend).

2. Overall Description

2.1. System Perspective

The Mini App operates within a **Client-Server Layered Architecture**.

- **Frontend (Client):** Handles user interactions and input validation.

- **Backend (Server):** structured into Controller, Service, and Repository layers to ensure separation of concerns.
- **Database:** A relational database storing persistent user records. The system relies on HTTP/RESTful communication between the client and the server.

2.2. User Classes and Characteristics

- **Guest User:** An unauthenticated user who can only access the "Landing Page," "Login Page," and "Registration Page." Their goal is to create an account or gain access to the system.
- **Authenticated User:** A user who has successfully logged in. They have access to the "Dashboard" and can view their profile details. They also have the ability to "Log out."

2.3. Operating Environment

- **Client Side:** Modern Web Browser (Chrome, Firefox, Edge) with JavaScript enabled.
- **Server Side:** Java-based application server (Spring Boot environment).
- **Database:** MySQL or compatible relational database management system.
- **Network:** Stable internet or intranet connection.

2.4. Assumptions and Dependencies

- **Assumption:** Users will provide valid email addresses during registration.
- **Assumption:** The browser supports LocalStorage for saving authentication tokens.
- **Dependency:** The backend API must be running and accessible for the frontend to function.
- **Dependency:** The Database service must be active to persist user data.

3. System Features and Functional Requirements

3.1. Feature 1: User Registration

Description: This feature allows a Guest User to create a new account by providing personal details and credentials. The system must validate the input, ensure the email is unique, and securely store the password.

Functional Requirements:

- **REQ-REG-01:** The system shall provide a registration form requiring the following fields: Firstname, Middlename, Lastname, Street, Barangay, Municipality, Province, Country, Email, Password, and Contact Number.
- **REQ-REG-02:** The system shall validate that the email address format is correct and does not already exist in the database (via existsByEmail check).
- **REQ-REG-03:** The AuthService shall use a PasswordEncoder to hash the raw password before saving it to the database.
- **REQ-REG-04:** Upon successful registration, the system shall redirect the user to the Login Page.
- **REQ-REG-05:** If validation fails (e.g., duplicate email), the system shall display an appropriate error message to the user.

3.2. Feature 2: User Login (Authentication)

Description: This feature allows users with existing accounts to access the secured Dashboard. It verifies the provided email and password against the stored records.

Functional Requirements:

- **REQ-LOG-01:** The system shall accept an Email and Password via the Login Modal/Page.
- **REQ-LOG-02:** The AuthService shall retrieve the user record using the email provided.
- **REQ-LOG-03:** The system shall verify the entered password against the stored hashed password using the PasswordEncoder.
- **REQ-LOG-04:** If credentials are valid, the TokenProvider shall generate an authentication token.
- **REQ-LOG-05:** The system shall return the token to the client, store it in LocalStorage, and redirect the user to the Dashboard.
- **REQ-LOG-06:** If authentication fails, the system shall display an "Invalid Credentials" error message.

3.3. Feature 3: Logout

Description: This feature allows an Authenticated User to securely terminate their session and return to the public area of the application.

Functional Requirements:

- **REQ-OUT-01:** The system shall display a confirmation modal when the user clicks the "Logout" button.
- **REQ-OUT-02:** Upon confirmation, the client shall send a logout request to the AuthController.
- **REQ-OUT-03:** The AuthService shall invalidate the user's current session/token.

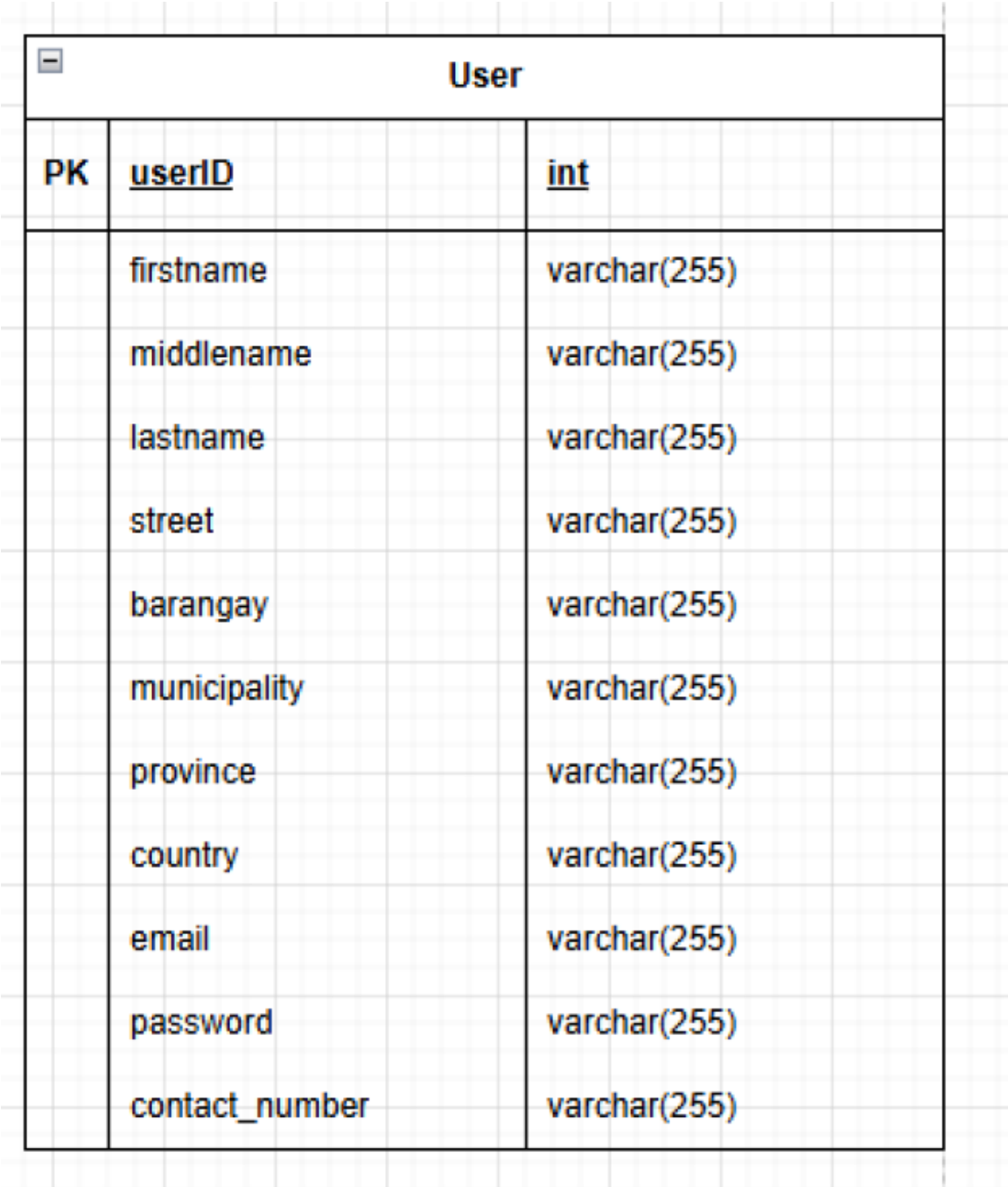
- **REQ-OUT-04:** The client application shall clear the stored authentication token from LocalStorage.
- **REQ-OUT-05:** The system shall redirect the user back to the Login Page immediately after successful logout.

4. Non-Functional Requirements

- **Security:**
  - Passwords must never be stored in plain text; they must be hashed using industry-standard algorithms (e.g., BCrypt).
  - API endpoints for the Dashboard must require a valid authentication token.
- **Performance:**
  - Login and Registration requests should be processed within 2 seconds under normal network conditions.
- **Reliability:**
  - The system should prevent data inconsistency by using database transactions during User creation.
- **Usability:**
  - The user interface should be responsive and provide clear feedback (success/error messages) for all user actions.
- **Maintainability:**
  - The code must follow the Layered Architecture (Controller-Service-Repository) to facilitate future updates and debugging.

5. System Models (Diagrams)

5.1. ERD



User		
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	middlename	varchar(255)
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	street	varchar(255)
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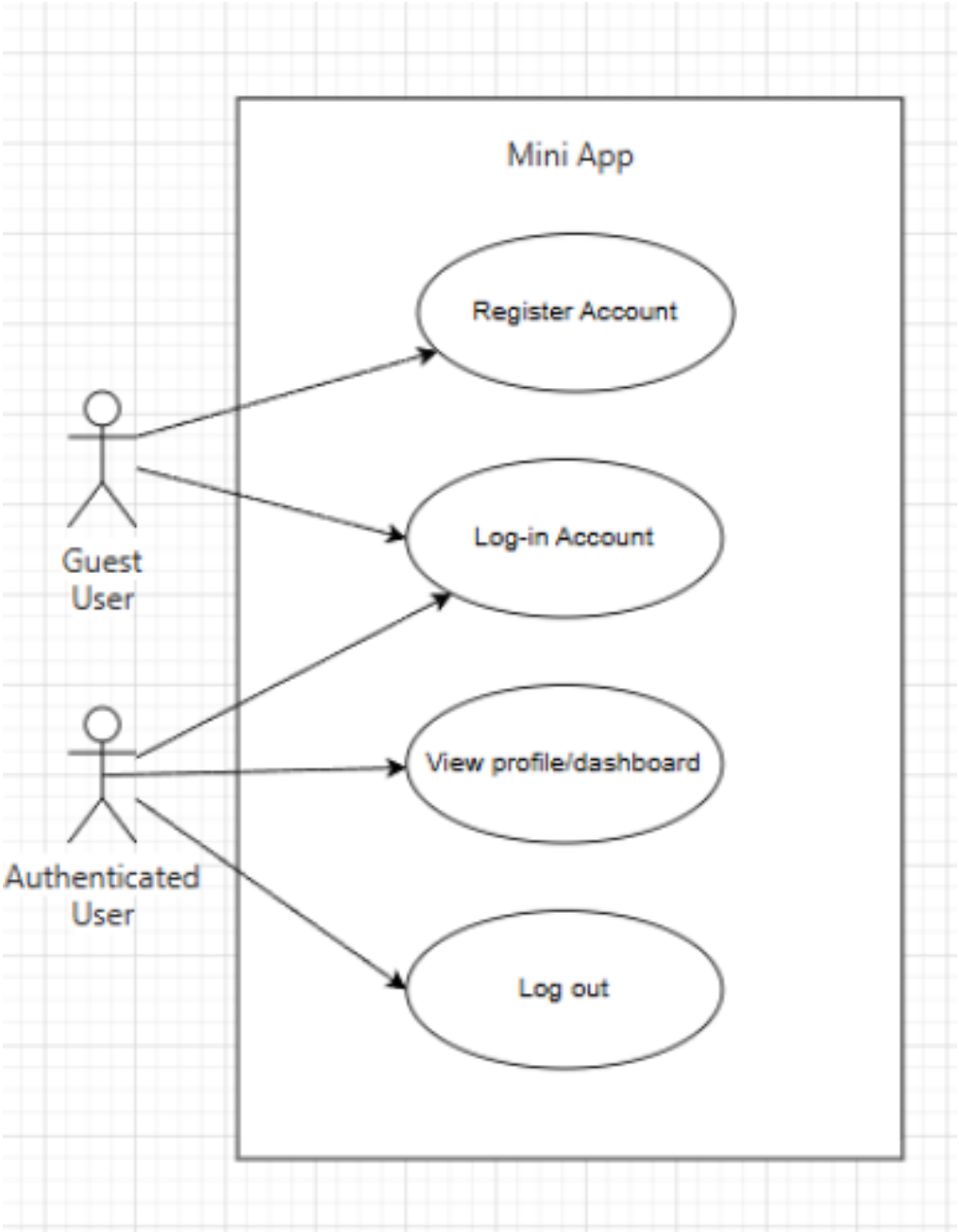
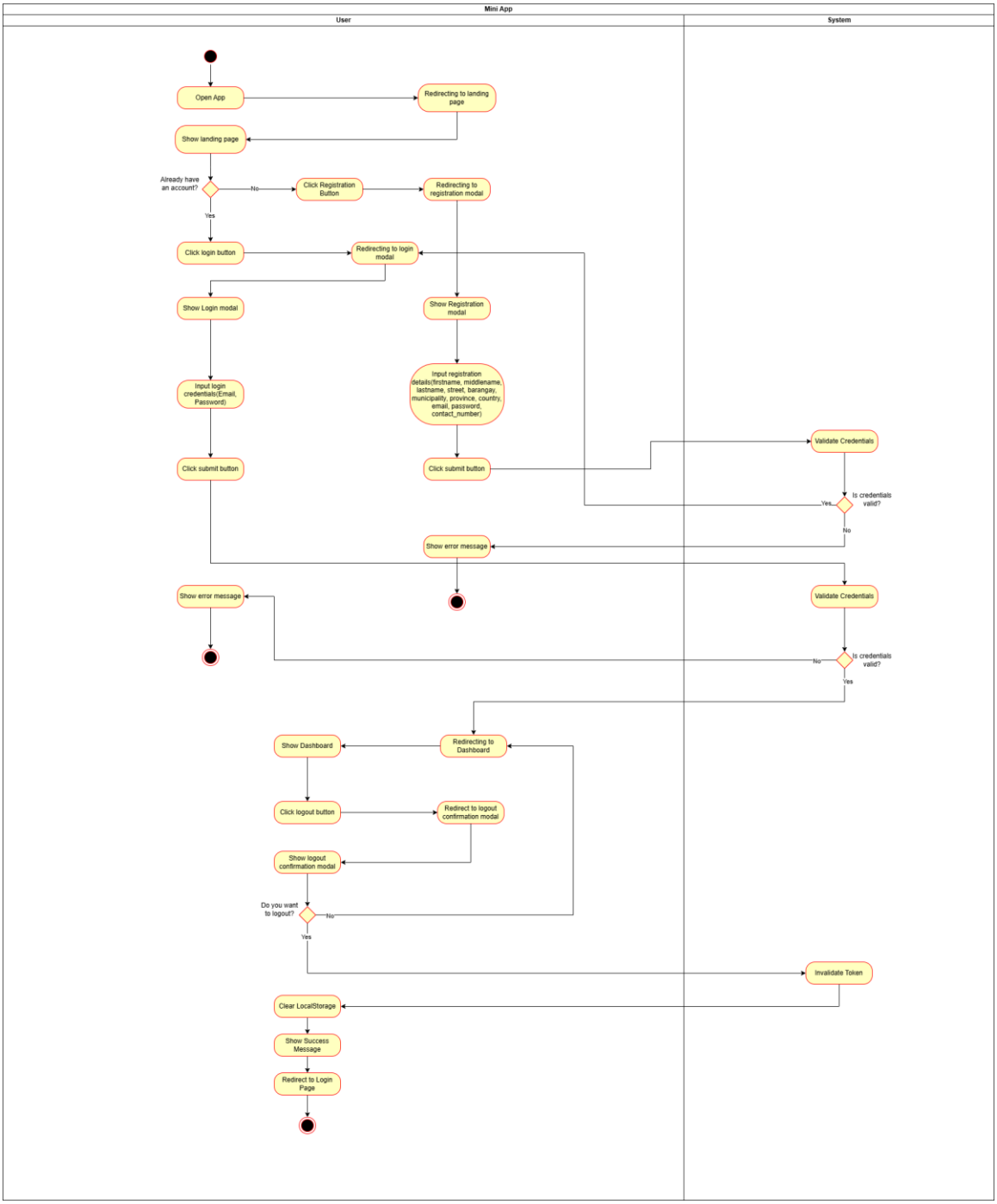
	contact_number	varchar(255)

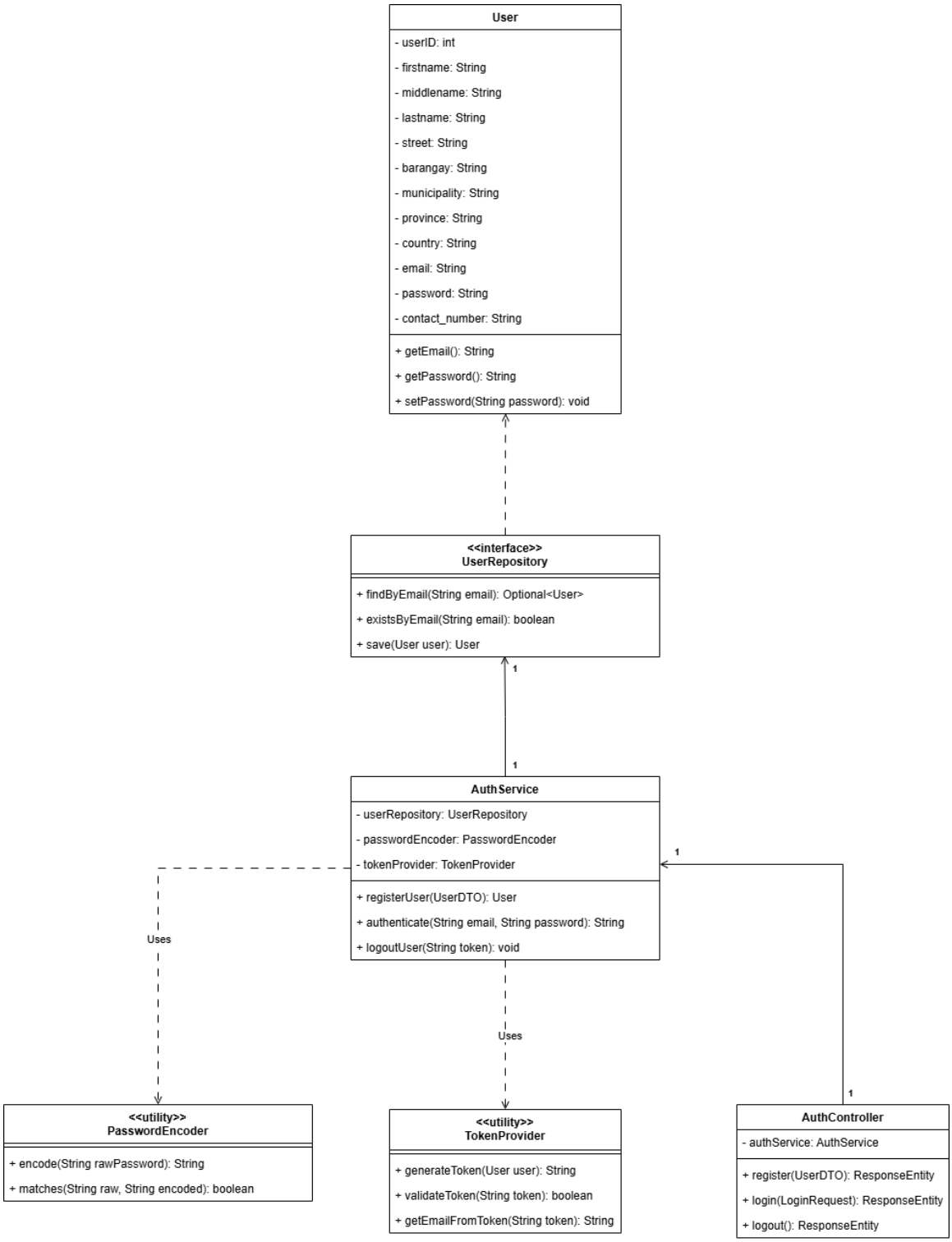
5.2. Use Case Diagram



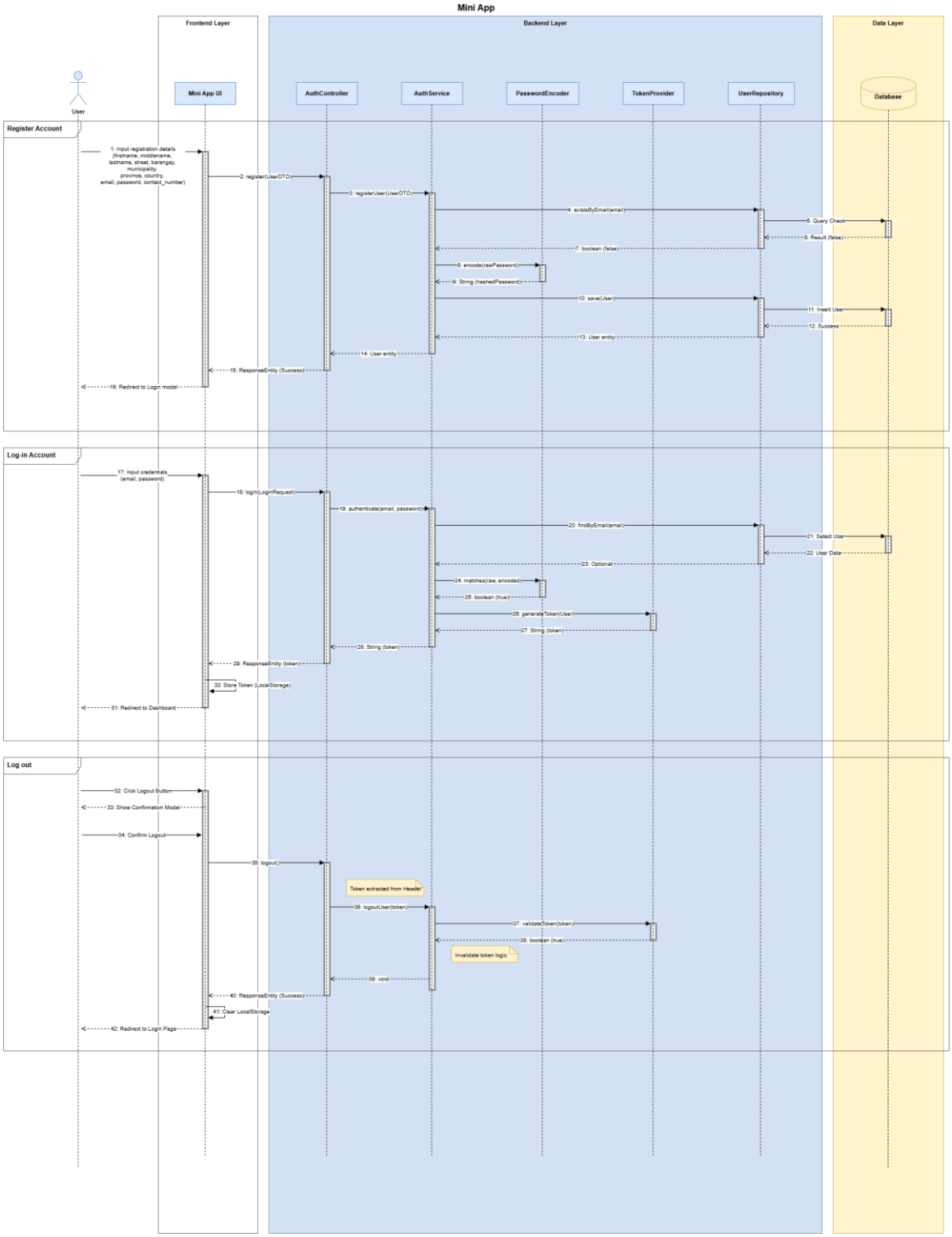
5.3. Activity Diagram



5.4. Class Diagram



5.5. Sequence Diagram



6. Appendices

A. Tech Stack Reference:

- Backend Framework: Spring Boot (Java)
- Frontend Library: ReactJS
- Database: MySQL

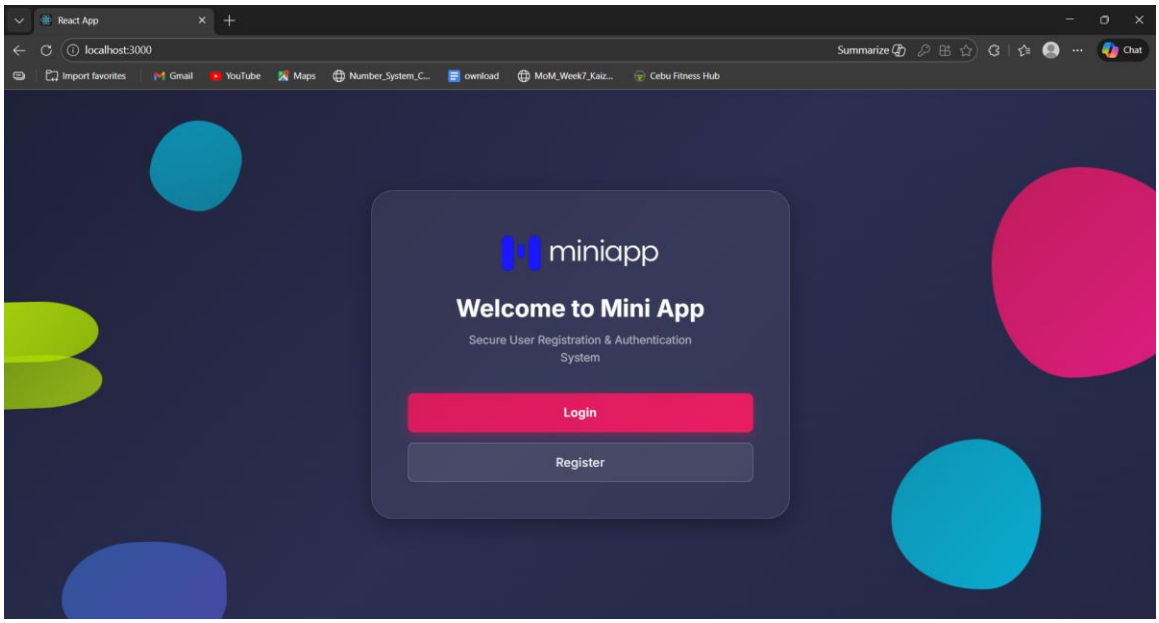
B. Security Standards:

- Password Encoding: BCrypt
- Token Standard: JWT (JSON Web Token) implementation guidelines.

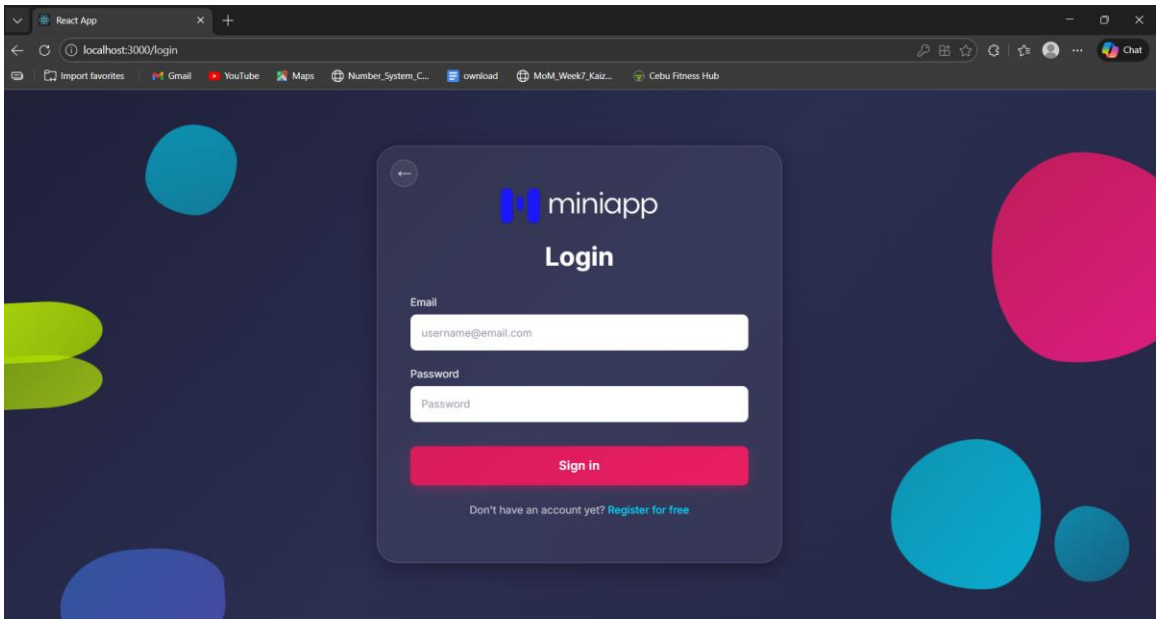
7. Documentations

Website Screenshot:

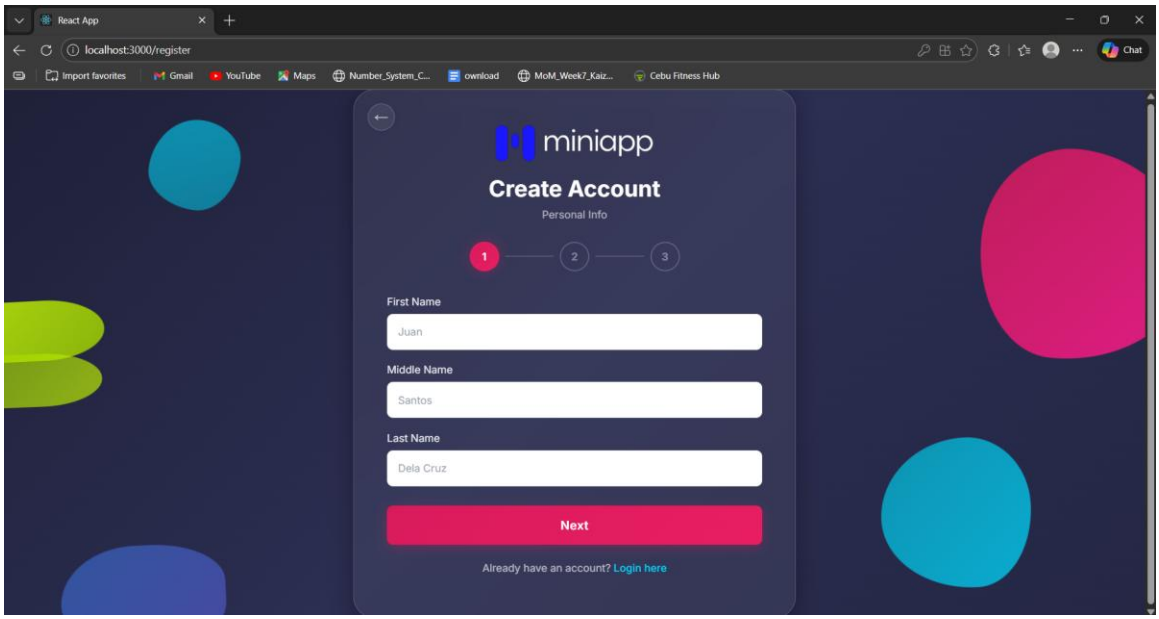
Landing page

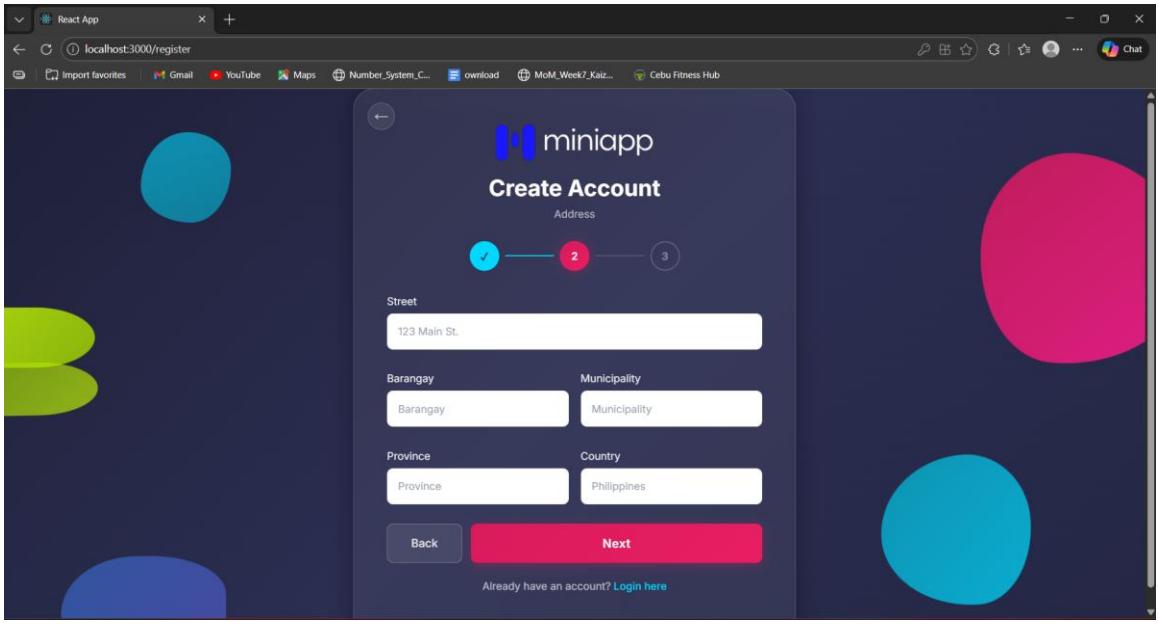


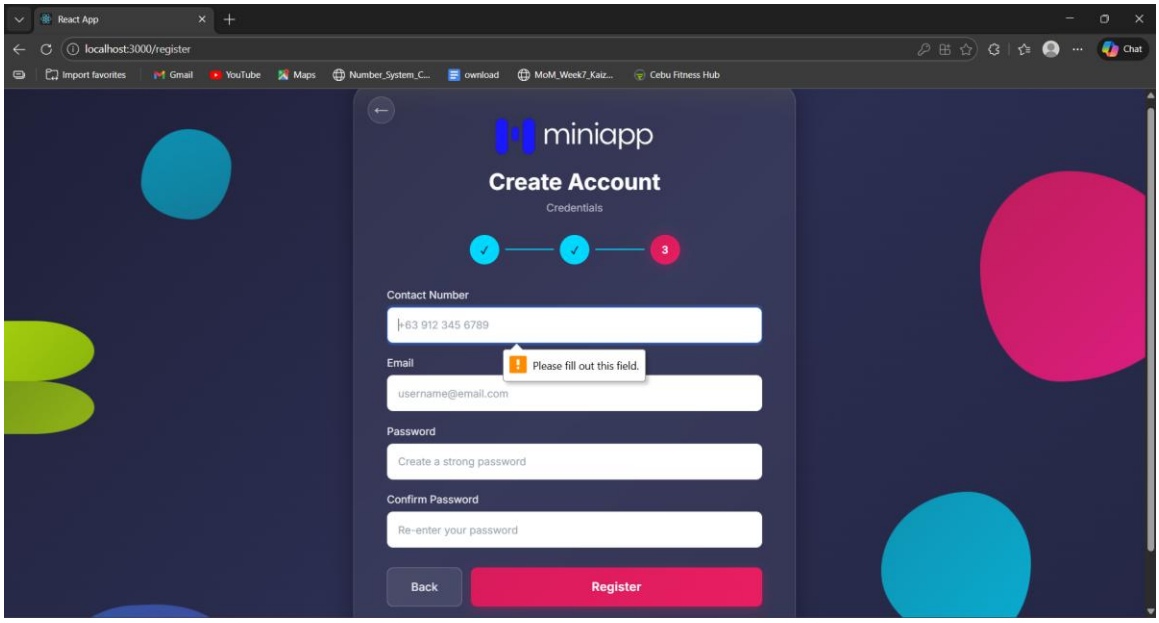
Login Page



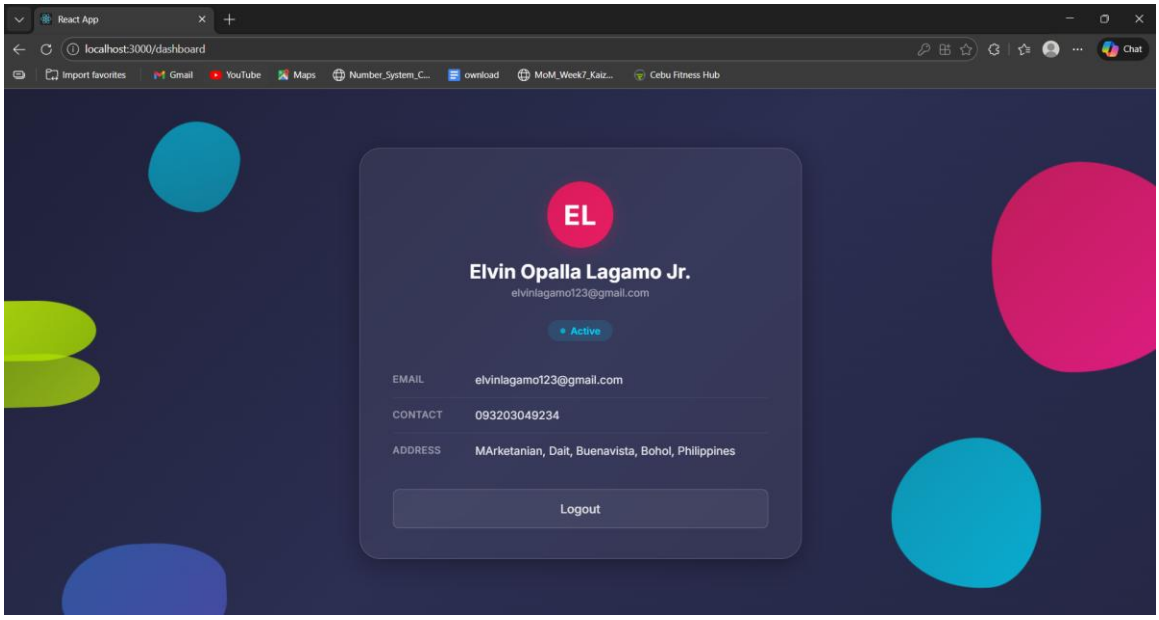
Registration Page



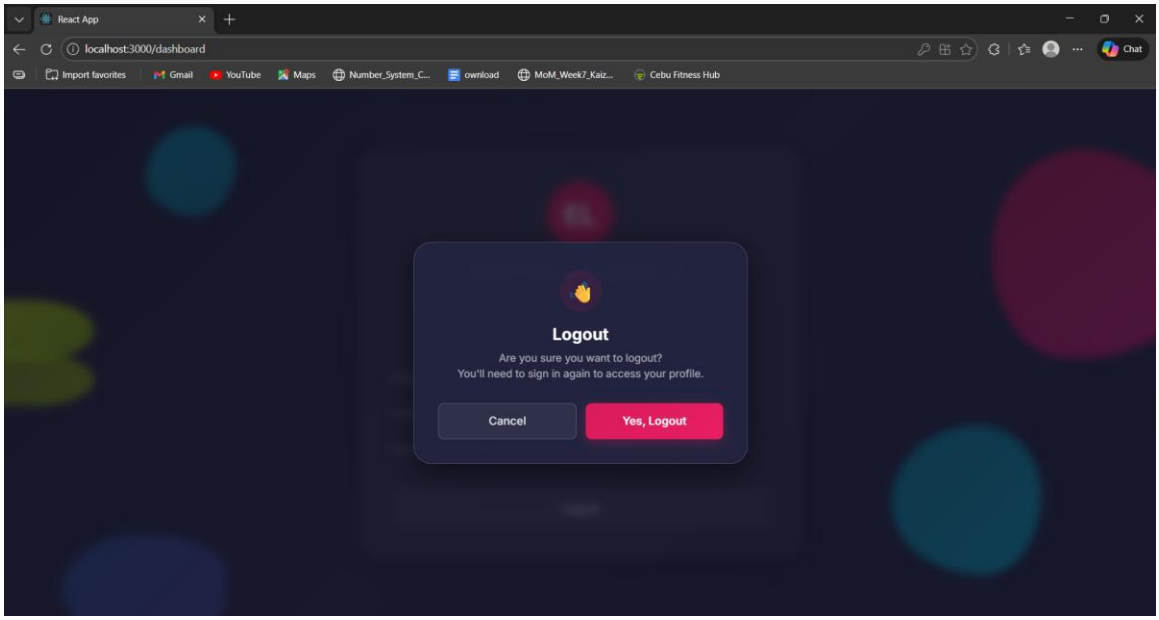


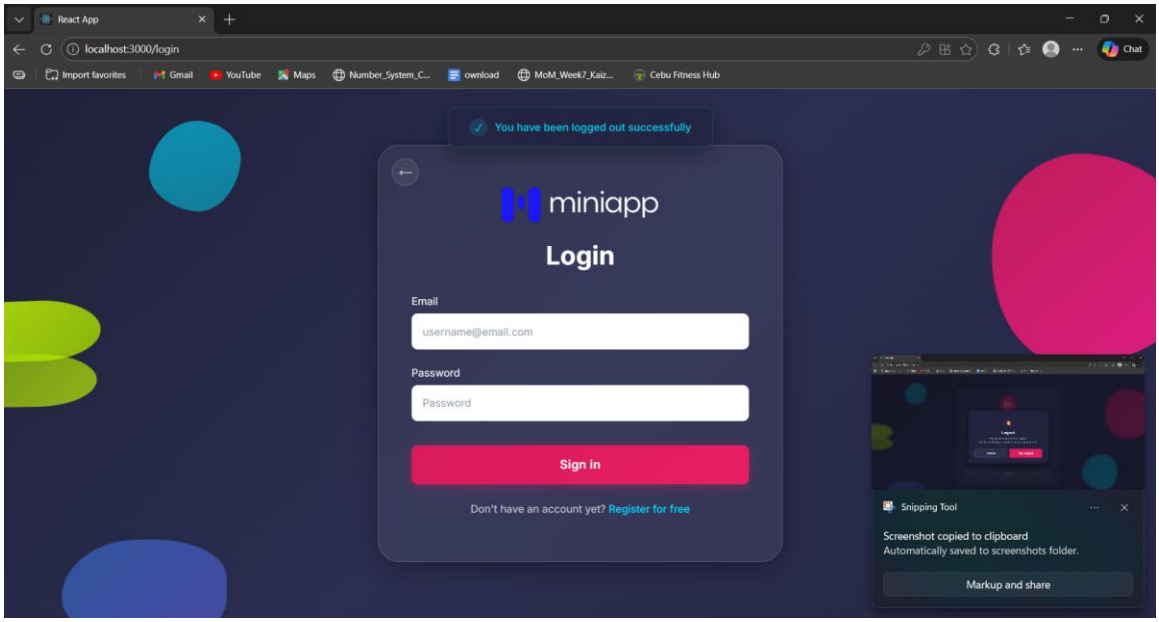


Dashboard/Profile page with Logout Button



Logout Confirmation Modal w/ Success notification

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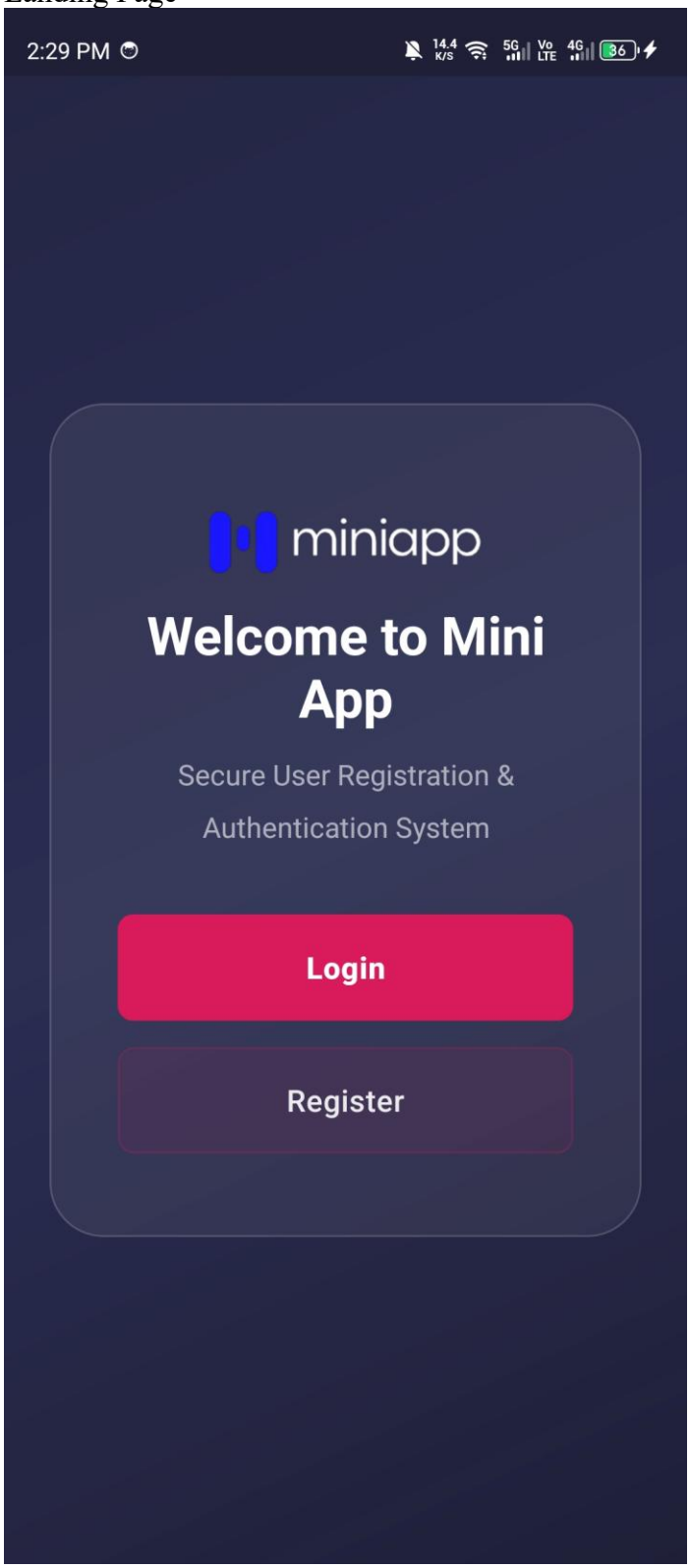
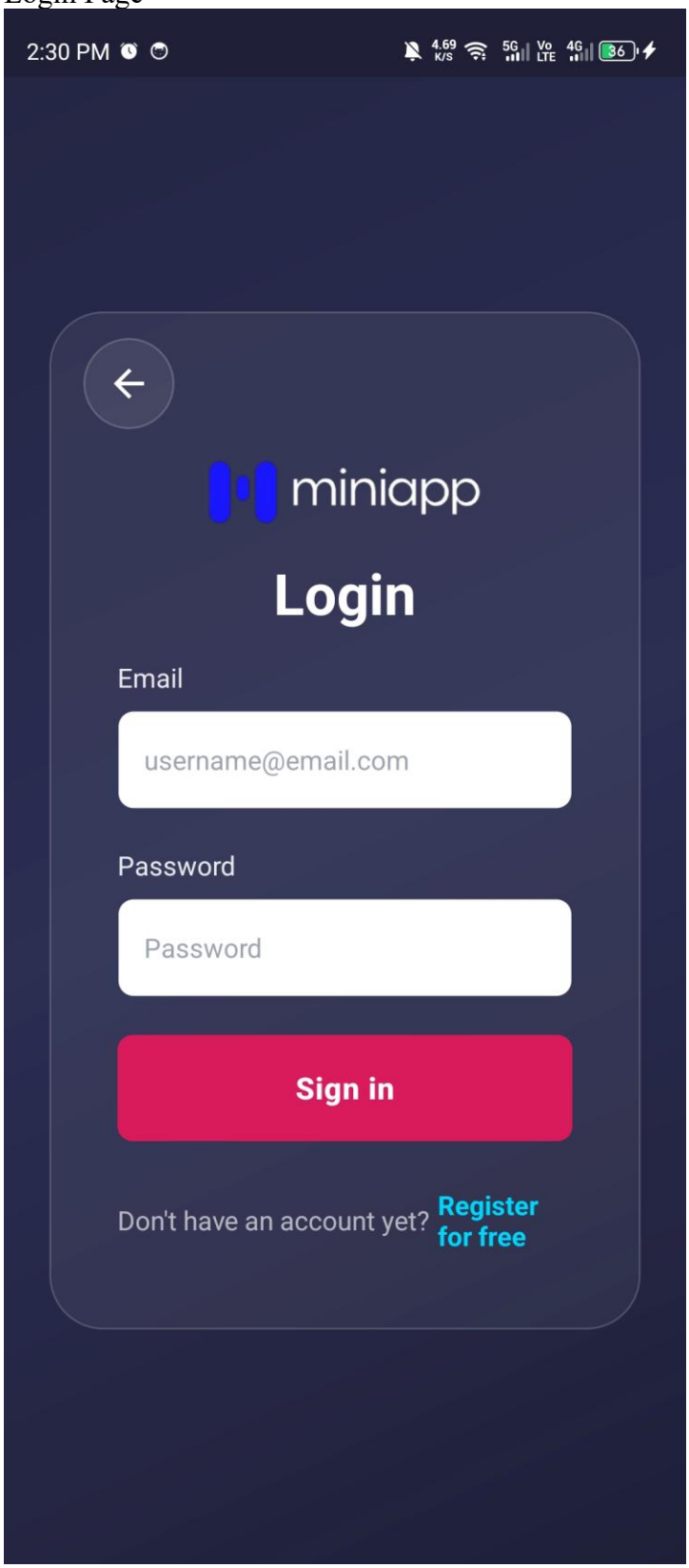
Screenshot copied to clipboard
Automatically saved to screenshots folder.
Markup and share

Mobile Screenshots
Landing Page



Login Page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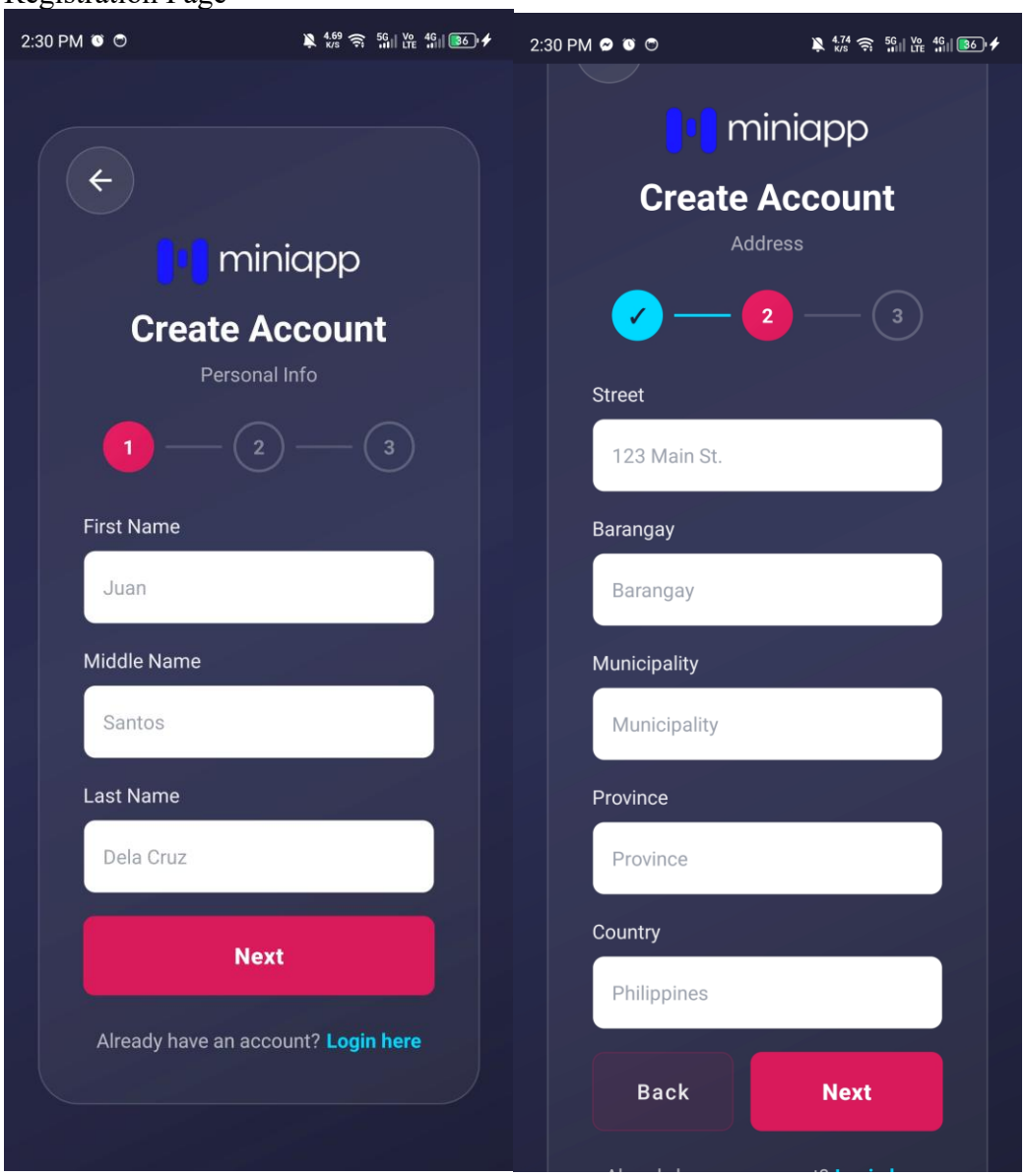
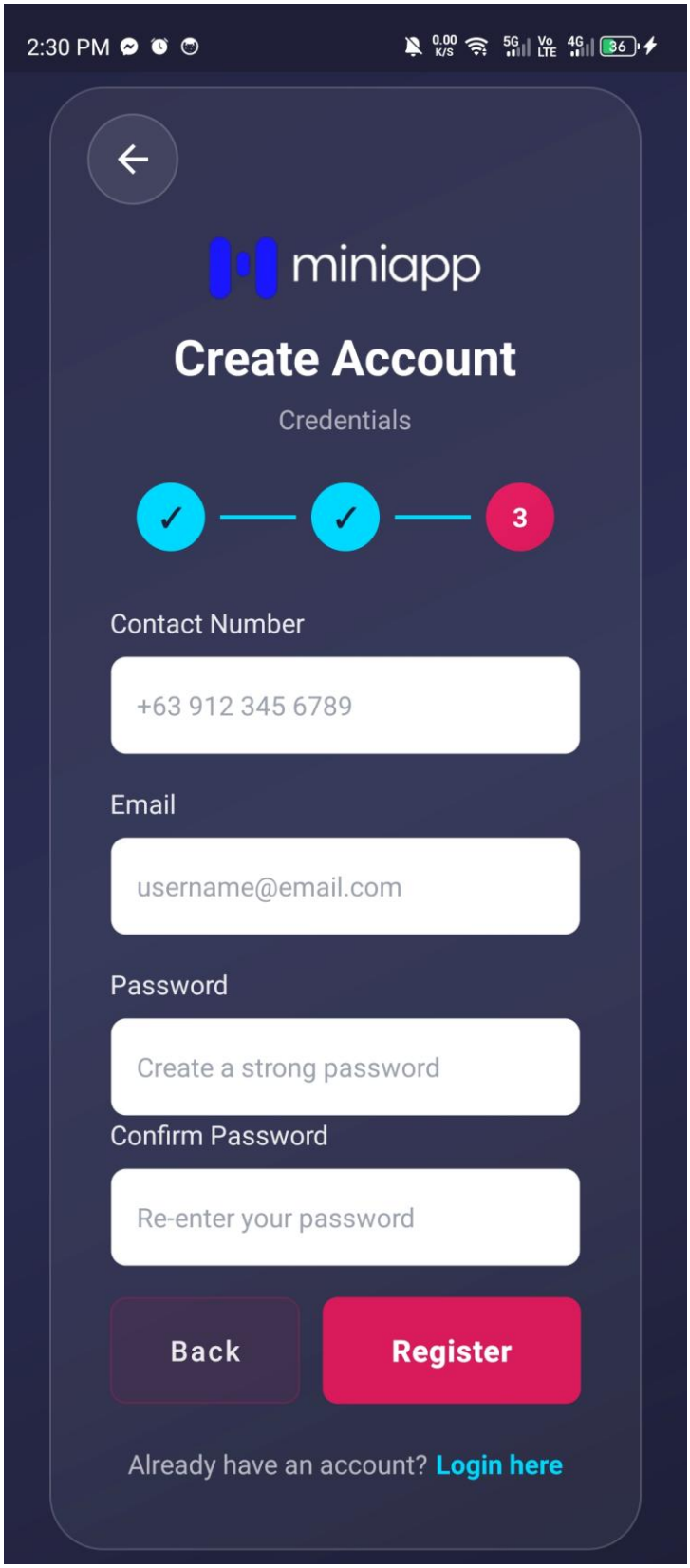
Don't have an account yet?
Register for free

Registration Page

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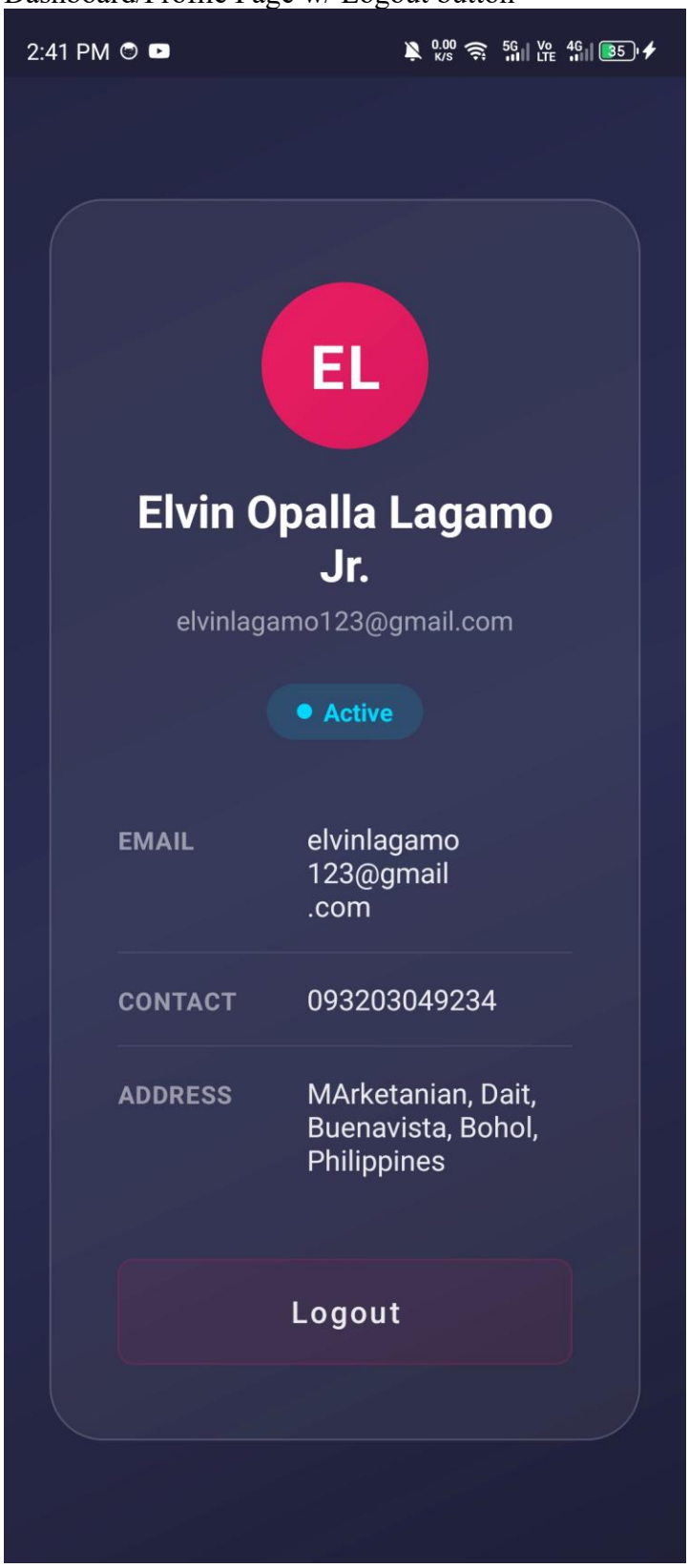
Confirm Password
Re-enter your password
Back
Register
Already have an account? Login here

Dashboard/Profile Page w/ Logout button



Logout Confirmation Modal w/ Success notification