



CEBU INSTITUTE OF TECHNOLOGY
U N I V E R S I T Y

IT342-Section SYSTEMS INTEGRATION AND ARCHITECTURE 1

FUNCTIONAL REQUIREMENTS SPECIFICATION (FRS)

Project Title: User Registration and Authentication

Prepared By: Dabon, Kenn Xavier C.

Date of Submission: 2/6/26

Version: 1.0

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1. Introduction

1.1. Purpose

The purpose of this system is to provide a secure and scalable foundation for user identity management and authorization. It allows users to create accounts and authenticate securely. This document is intended for software developers, system architects, and testers to understand the system's design and functional expectations.

1.2. Scope

The system will facilitate:

- Secure user registration with data validation.
- Token-based authentication (JWT) for login.
- Protected access to user dashboards and profile editing.
- Session termination (Logout).

1.3. Definitions, Acronyms, and Abbreviations

- JWT: JSON Web Token
- DTO: Data Transfer Object
- API: Application Programming Interface
- UI: User Interface (ReactJS)

2. Overall Description

2.1. System Perspective

The system is a basic authentication application that links a React-based frontend with a Spring Boot backend and a database. It operates within a larger software environment, allowing users to interact through a web and mobile interface while the backend handles authentication logic and data storage.

2.2. User Classes and Characteristics

This system has two different types of users:

- Guest: A user who has not logged in. Can ONLY access the Login and Register pages.
- Registered User: A user who has successfully created an account. They can log in, view the dashboard, and edit their profile details.

2.3. Operating Environment

Client: Any modern web browser (Chrome, Firefox, Edge, Safari, etc.) with JavaScript enabled.

Server: Spring Boot

Database: MySQL

2.4. Assumptions and Dependencies

Users must have a stable internet connection.

Passwords must be stored as hashes, never as plain text.

3. System Features and Functional Requirements

3.1. Feature 1:

Description: Allows a guest to create a new account by providing the necessary credentials.

Functional Requirements:

- The system shall validate the email provided is in a correct format.
- The system shall check if the email or username already exists in the database.
- The system shall hash the user's password before saving to the database.
- The system shall create a User entity upon successful validation.

3.2. Feature 2:

Description: Allows a registered user to gain access to the system by verifying their identity.

Functional Requirements:

- The system shall accept a LoginDto containing username and password.
- The system shall verify the provided password against the stored password hash.
- If credentials are valid, the system shall generate a signed JWT token. Otherwise, the system returns an Unauthorized error message.

3.3. Feature 3:

Description: Allows a logged-in users to view and update their personal information

Functional Requirements:

- The system shall require a valid JWT token in the HTTP Authorization header to access profile data.
- The system shall allow users to view their username and email.
- The system shall allow users to update their profile details and save change.

3.4. Feature 4:

Description: Securely terminates the user's session

Functional Requirements:

- The Client shall remove the JWT token from local storage upon clicking "Logout".
- The Client shall redirect the user to the Login page immediately after logging out.
- The system shall prohibit access to protected routes (Dashboard) once the token is removed.

4. Non-Functional Requirements

Security

- All passwords must be encrypted.
- JWT tokens must expire after a set duration (e.g., 24 hours).

Performance

- Login and Registration requests should be processed in under **200ms**.
- The system should support concurrent login requests without degradation.

Reliability

- The system should prevent data corruption in case of a failed transaction.

Usability

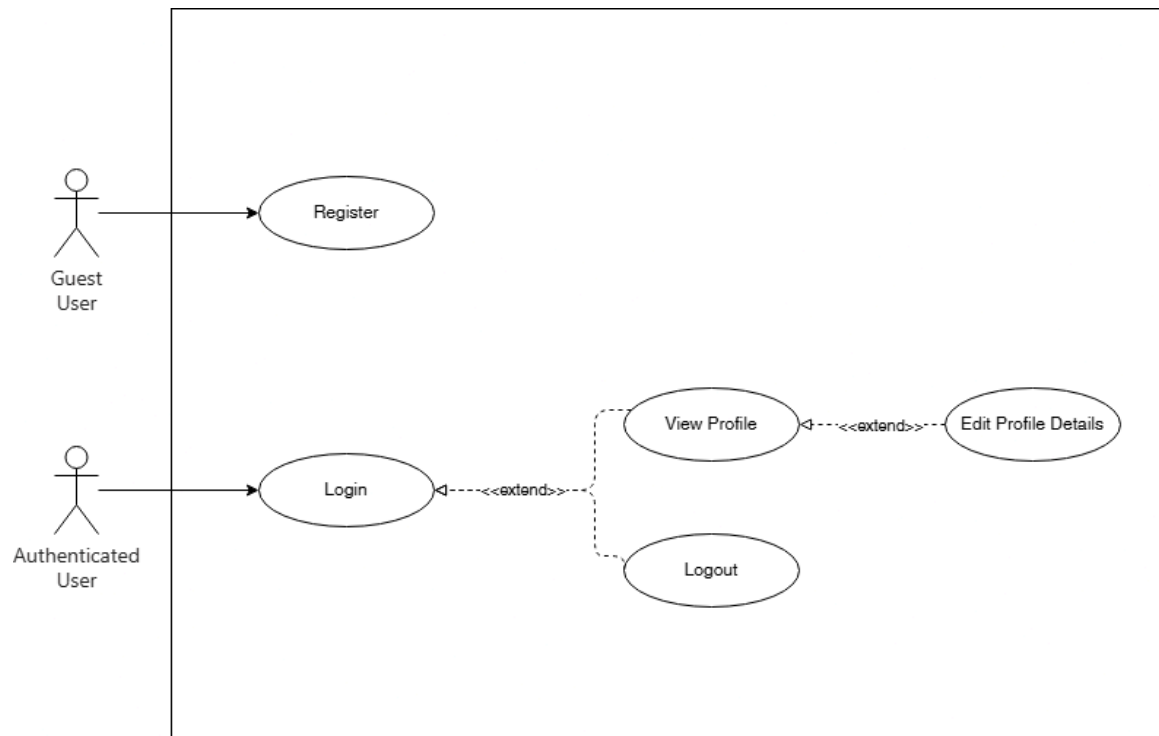
- The UI must provide clear error messages (e.g., "Incorrect Password", "Email already in use") to the user.

5. System Models (Diagrams)

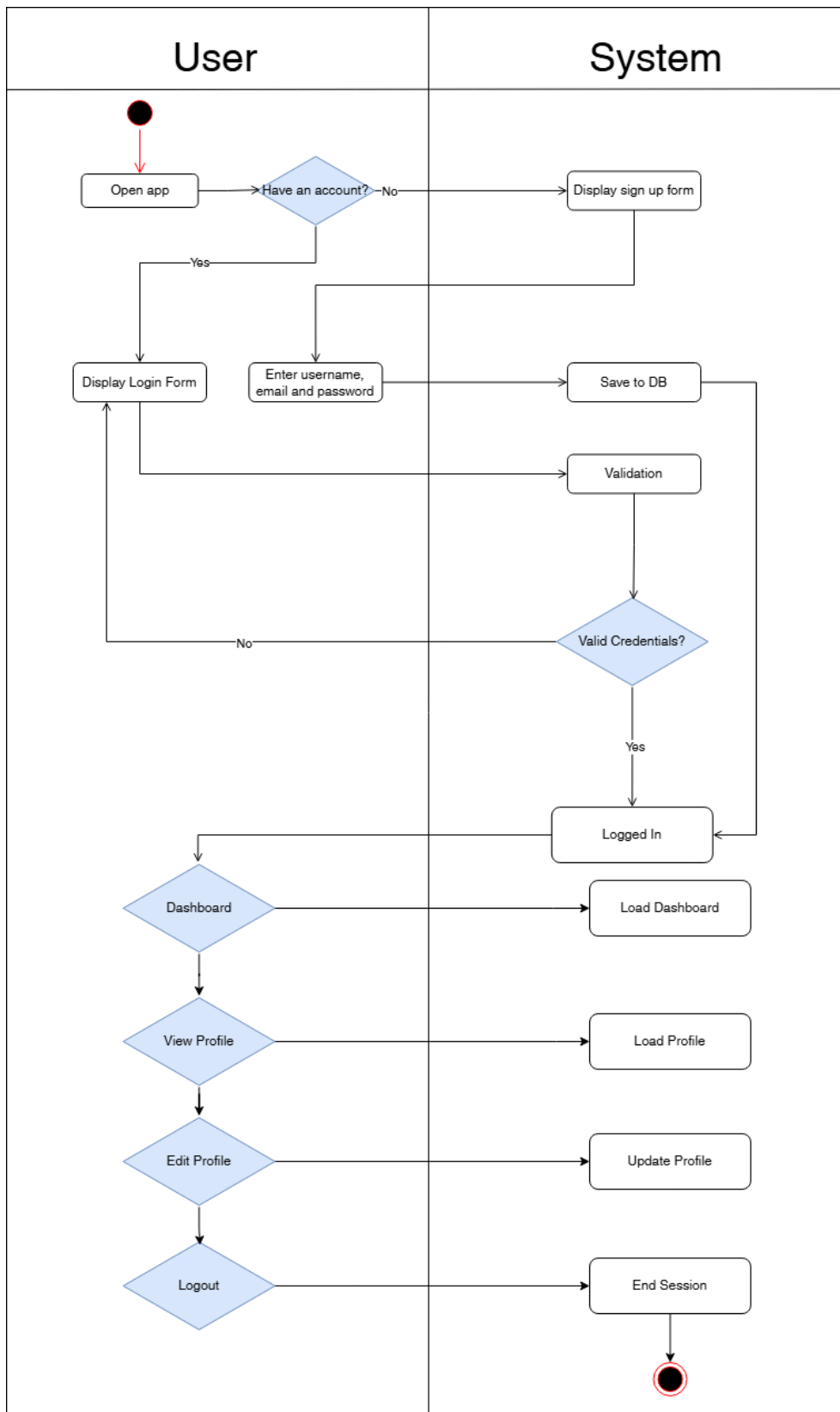
5.1. ERD

User		
PK	<u>user_id</u>	<u>INTEGER</u>
	username	VARCHAR(255)
	email	VARCHAR(255)
	password	VARCHAR(255)
	first_name	VARCHAR(255)
	last_name	VARCHAR(255)
	created_at	TIMESTAMP

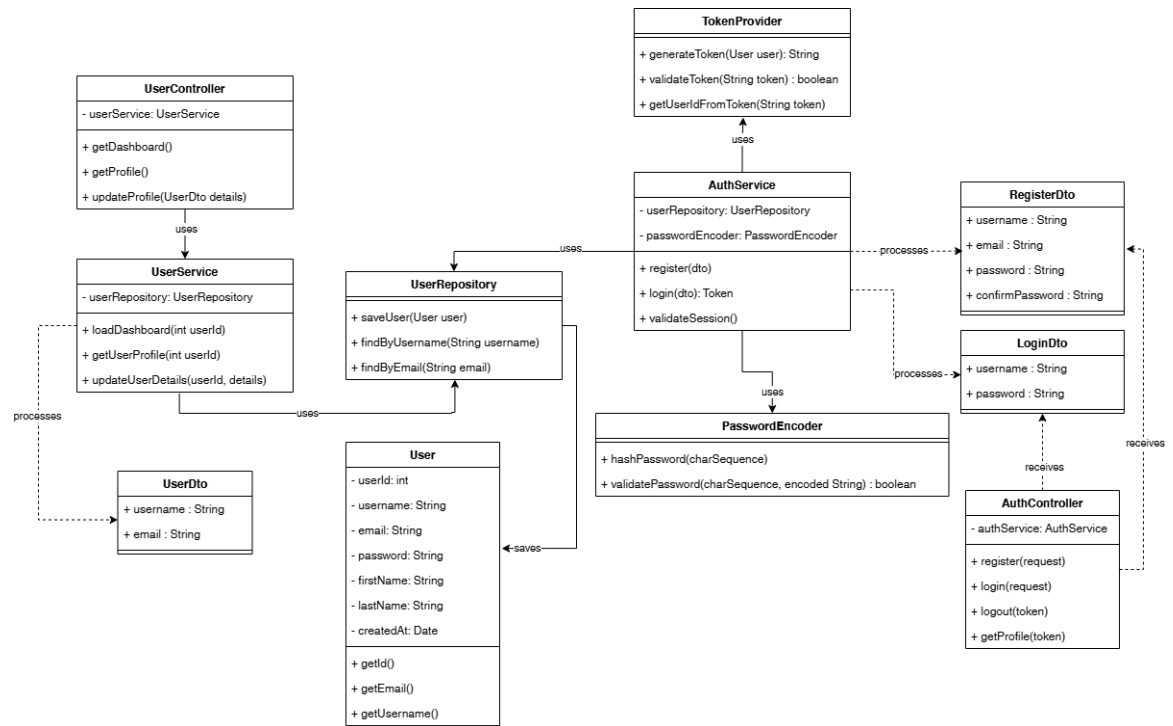
5.2. Use Case Diagram



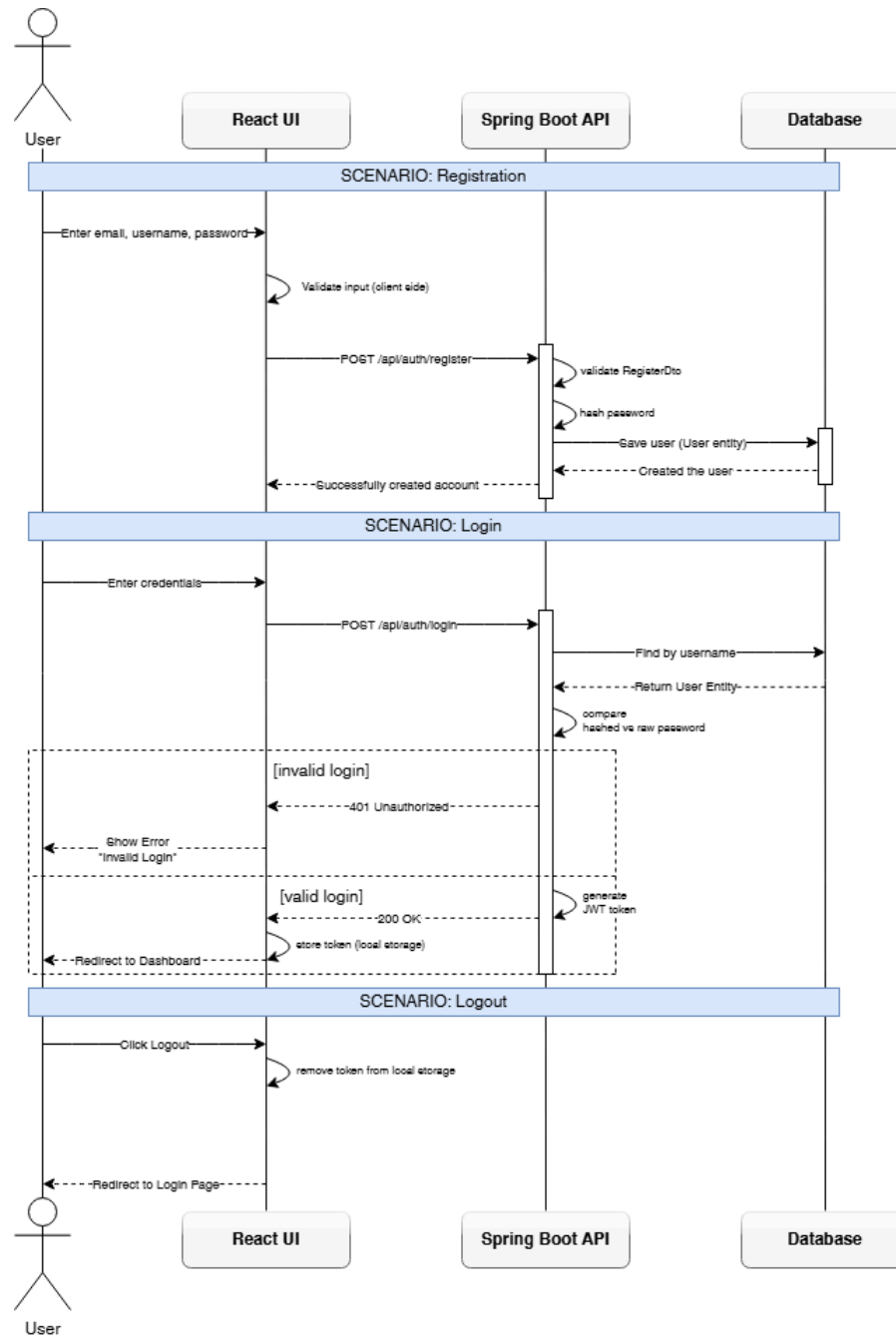
5.3. Activity Diagram



5.4. Class Diagram

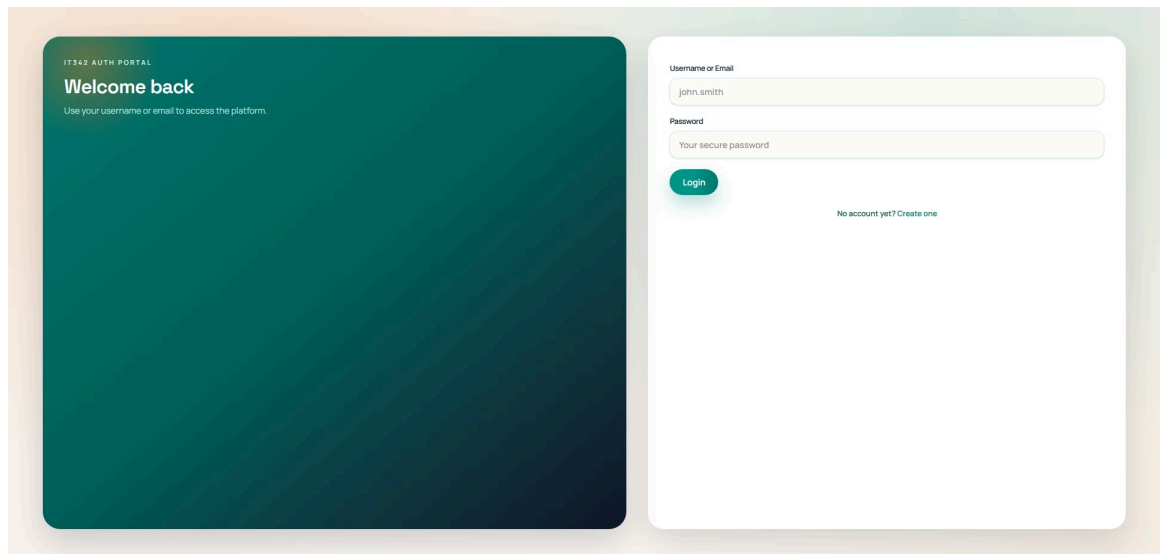


5.5. Sequence Diagram



6. ReactJS Web UI

6.1. Login Page



The login page features a dark teal gradient sidebar on the left with the text "IT342 AUTH PORTAL" and "Welcome back". Below this, it says "Use your username or email to access the platform." The main content area is white and contains a "Username or Email" input field with "john.smith" entered, a "Password" input field with "Your secure password" entered, and a green "Login" button. Below the button is a link that says "No account yet? Create one".

IT342 AUTH PORTAL

Welcome back

Use your username or email to access the platform.

Username or Email

john.smith

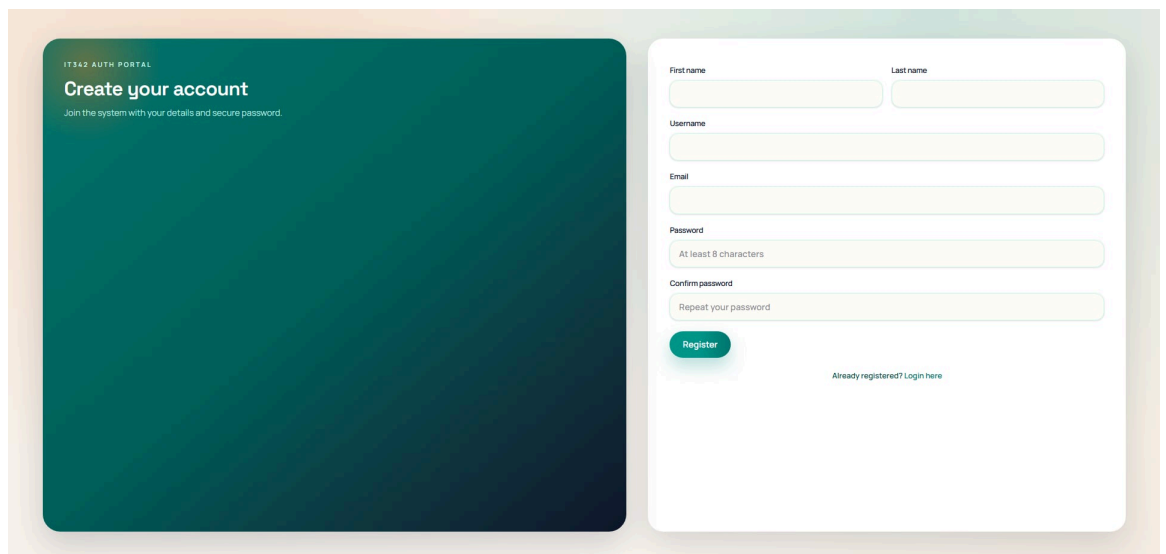
Password

Your secure password

Login

No account yet? Create one

6.2. Register Page



The register page features a dark teal gradient sidebar on the left with the text "IT342 AUTH PORTAL" and "Create your account". Below this, it says "Join the system with your details and secure password." The main content area is white and contains a "First name" input field, a "Last name" input field, a "Username" input field, an "Email" input field, a "Password" input field with a hint "At least 8 characters", and a "Confirm password" input field with a hint "Repeat your password". There is a green "Register" button and a link that says "Already registered? Login here".

IT342 AUTH PORTAL

Create your account

Join the system with your details and secure password.

First name

Last name

Username

Email

Password

At least 8 characters

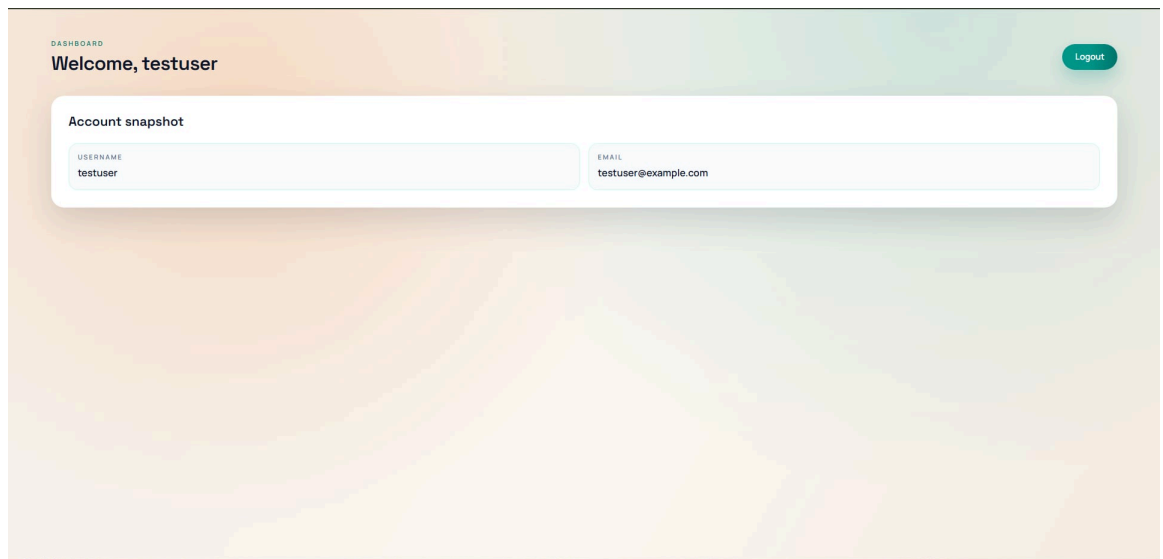
Confirm password

Repeat your password

Register

Already registered? Login here

6.3. Dashboard



7. Appendices

Diagrams created using <https://www.drawio.com/>

Additional guides:

<https://www.visual-paradigm.com/guide/uml-unified-modeling-language/what-is-sequence-diagram/>

<https://venngage.com/blog/class-diagram/>