CEBU INSTITUTE OF TECHNOLOGY
UNIVERSITY

IT342-Section
SYSTEMS INTEGRATION AND ARCHITECTURE 1

FUNCTIONAL REQUIREMENTS SPECIFICATION (FRS)

Project Title: User Registration and Authentication

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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

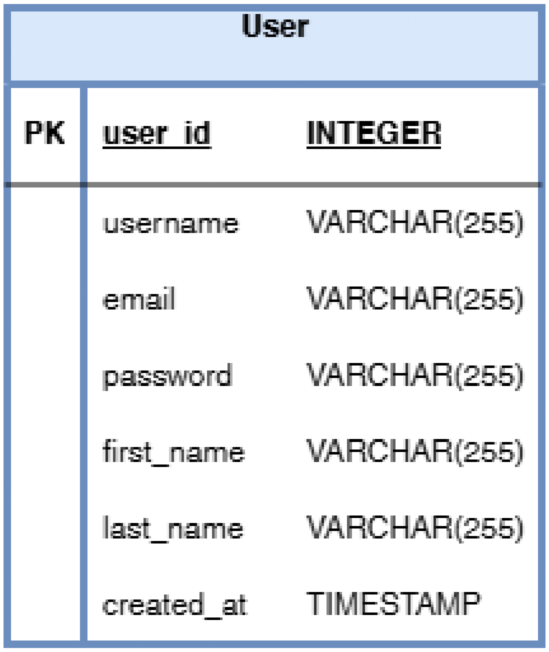
- The system should prevent data corruption in case of a failed transaction.

Usability

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

5. System Models (Diagrams)

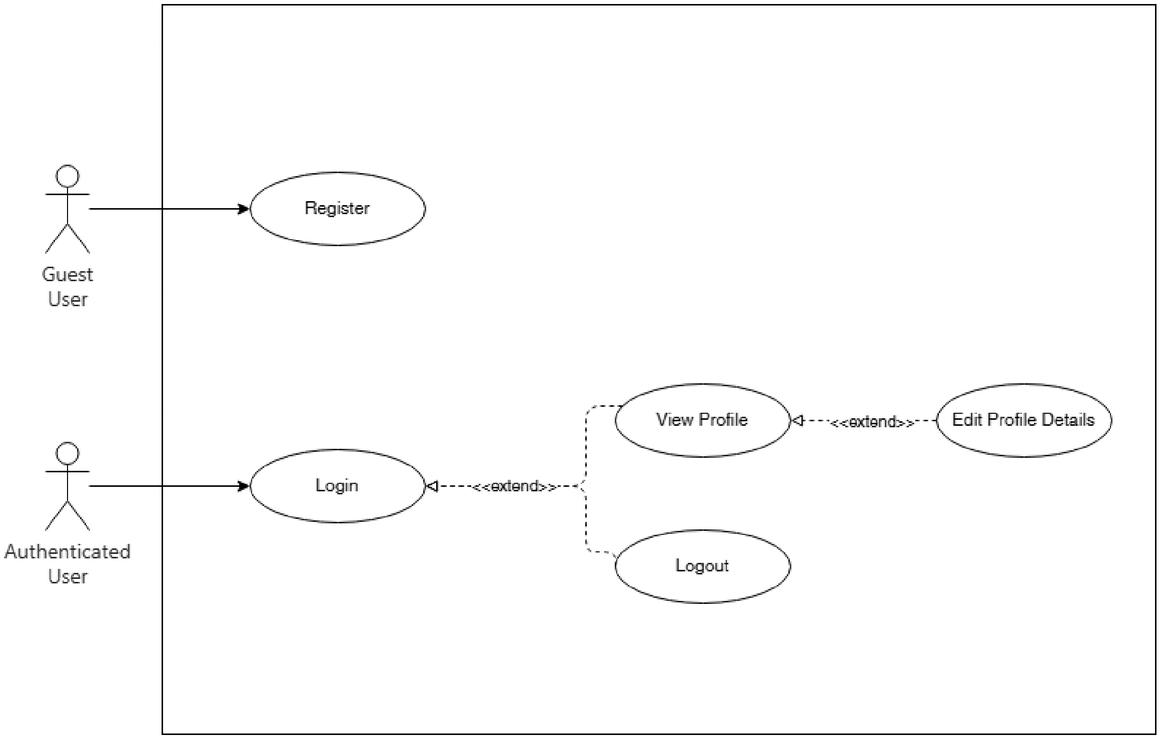
5.1. ERD



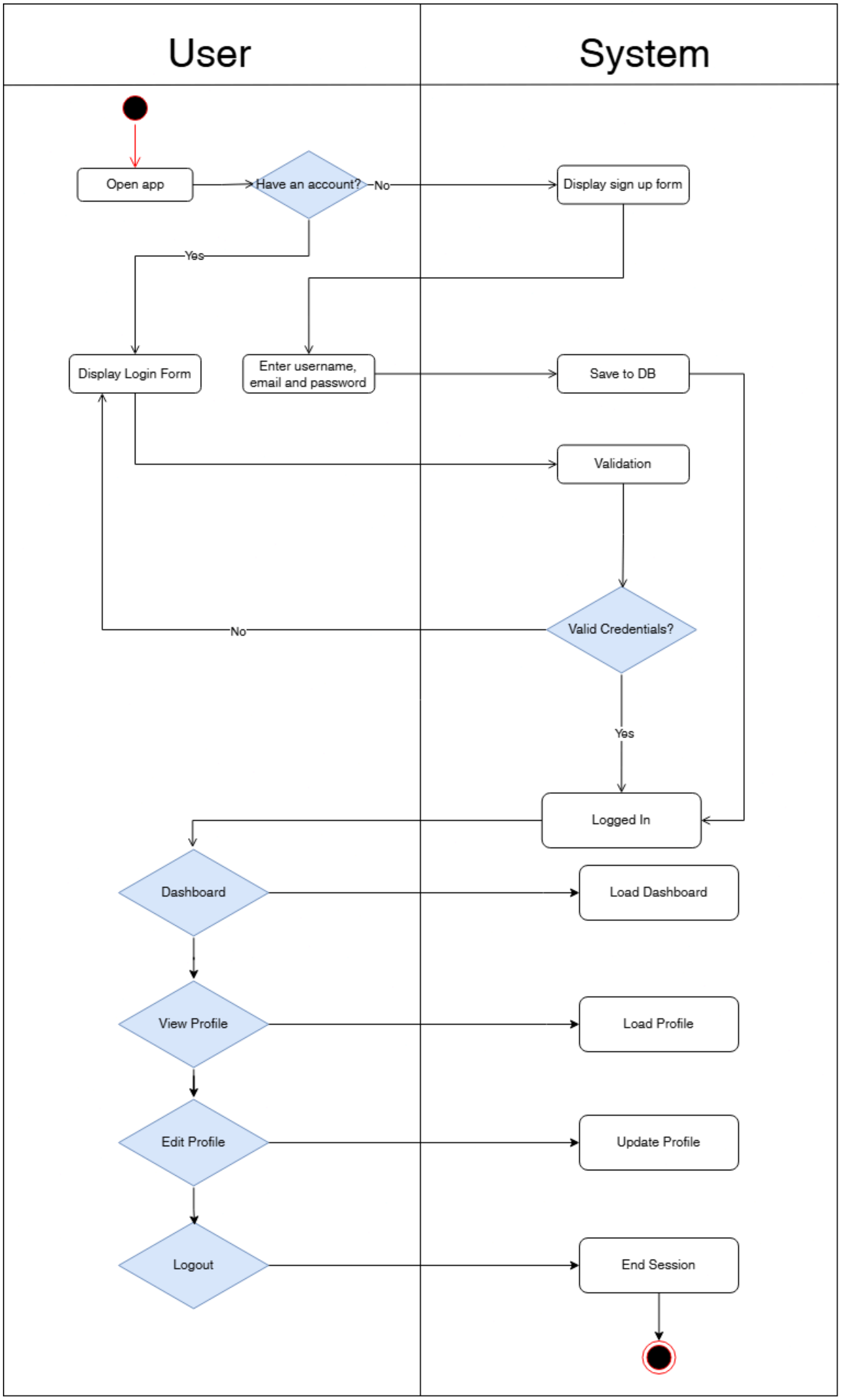
User

PK	user_id	INTEGER
	username	VARCHAR(255)
	email	VARCHAR(255)
	password	VARCHAR(255)
	first_name	VARCHAR(255)
	last_name	VARCHAR(255)
	created_at	TIMESTAMP

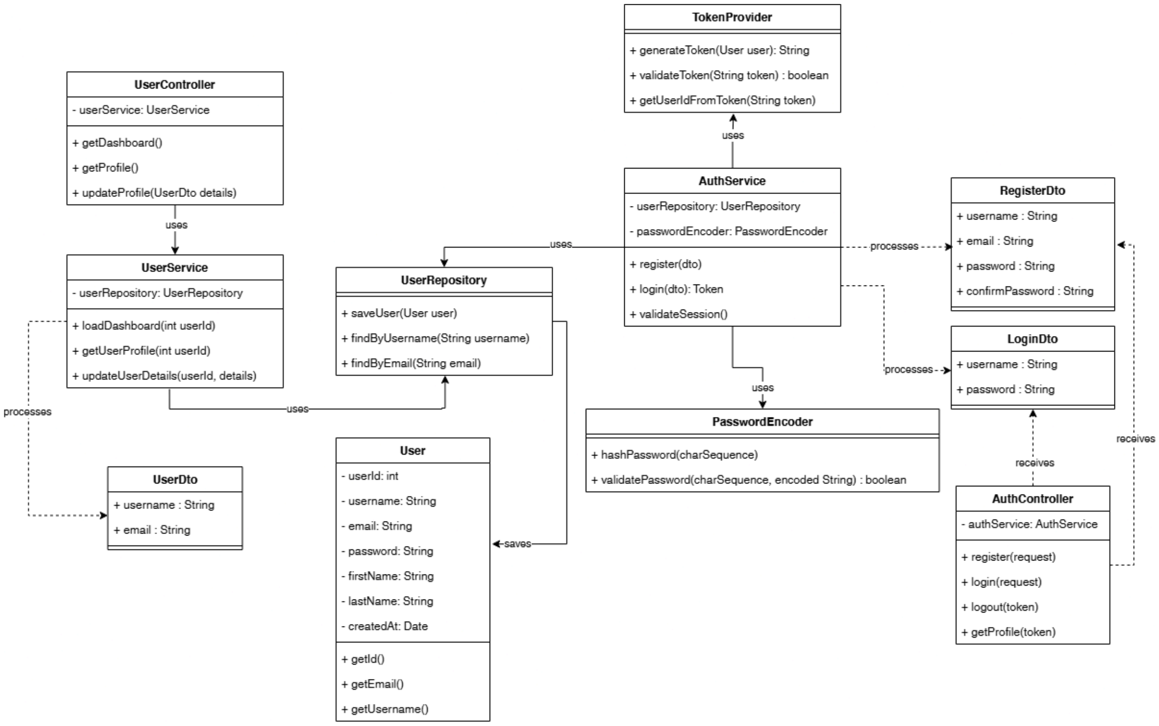
5.2. Use Case Diagram



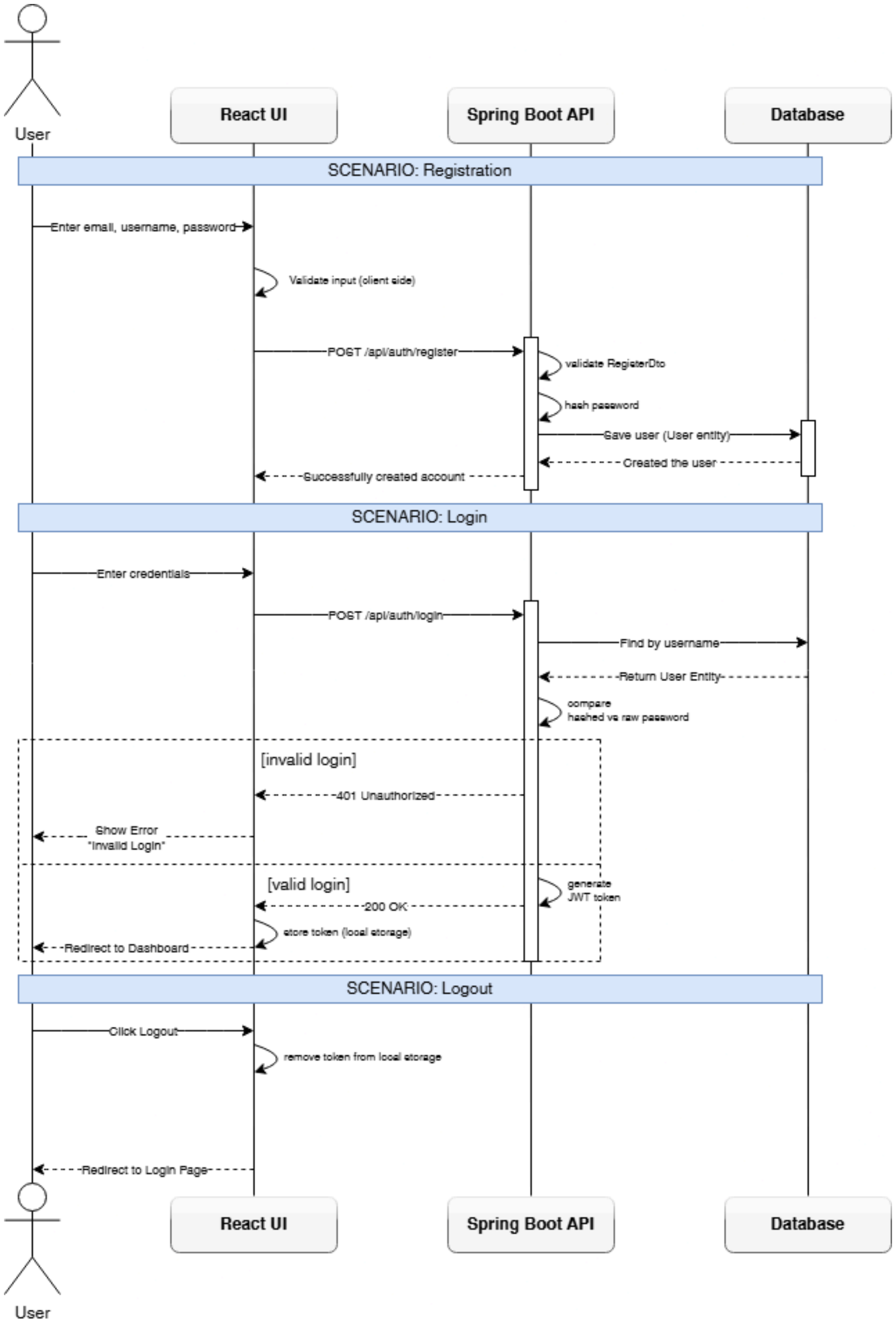
5.3. Activity Diagram



5.4. Class Diagram



5.5. Sequence Diagram



6. 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/