CEBU INSTITUTE OF TECHNOLOGY
UNIVERSITY

IT342-Section SYSTEMS INTEGRATION AND ARCHITECTURE 1

FUNCTIONAL REQUIREMENTS SPECIFICATION (FRS)

Project Title: TradeOff

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Date of Submission: February 11, 2026

Version: 1.0

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1. Introduction

1.1. Purpose

TradeOff is a web and mobile application designed to make trading and selling preloved items easier, safer, and more accessible. The system allows users to list second-hand products, browse available items, communicate with other users, and complete transactions through a structured platform. TradeOff aims to promote sustainability by encouraging item reuse while providing a convenient marketplace experience.

1.2. Scope

TradeOff will provide an online platform where users can sell preloved items by posting listings, trade items with other users through trade offers, browse and search items by category, location, or condition, can sort items by date posted and price, chat with other users for negotiation and arrangements, manage accounts, listings, and transaction history. The system boundaries include only digital marketplace features. Delivery logistics and payment processing may rely on third-party services and are not directly handled by the platform.

1.3. Definitions, Acronyms, and Abbreviations

- Preloved Items – second-hand or previously owned goods
- Listing – A product post created by a seller/trader
- Trade Offer – A proposal to exchange one item for another
- User – Any registered person using the platform
- Admin – System manager responsible for moderation

2. Overall Description

2.1. System Perspective

TradeOff operates as an online marketplace system accessible through both web and mobile platforms. It serves as an intermediary between users who want to trade or sell items. The system includes interfaces for item posting, searching, messaing, and transaction management. It may integrate external services such as email verification, location services, or notification APIs.

2.2. User Classes and Characteristics

- Buyers
    - Browse items and purchase preloved goods
    - Can negotiate prices through chat
- Sellers/Traders
    - Post item listings for sale or trade
    - Manage offers and respond to inquiries
- Administrators
    - Monitor listings and user activity
    - Remove inappropriate content and manage reports

2.3. Operating Environment

TradeOff will operate under the following environments:

- Mobile Platform: Android application developed using Kotlin
- Web Platform: React-based frontend
- Backend: Java Spring Boot server
- Database: MySQL
- Hosting:
- Supported Devices: Android smartphones and modern web browsers

2.4. Assumptions and Dependencies

- Users must have stable internet access
- The system depends on third-party APIs for notifications or maps
- Users are responsible for meeting in person or arranging delivery
- The platform assumes users will provide item details.

3. System Features and Functional Requirements

Describe each major feature of the system and its functional requirements.

3.1. Feature 1: User Registration and Authentication

Description: The system shall users to create accounts, log in securely, and manage their profiles.
Functional Requirements:
- The system shall allow new users to register using email and password.
- The system shall authenticate users before granting access.
- The system shall allow users to update profile information.

3.2. Feature 2: Item Listing Management

Description: Users can post preloved items for selling or trading.
Functional Requirements:
- The system shall allow users to create item listings with images and descriptions.
- The system shall allow users to edit or delete their listings.
- The system shall display item condition, category, and price/trade preference.

3.3. Feature 3: Trading and Offer System

Description: TradeOff supports item-toitem exchanges through trade offers.
- The system shall allow users to send trade offers to other users.
- The system shall notify users when offers are received.
- The system shall allow users to accept or reject trade offers.

3.4. Feature 4: Search and Browse

Description: Users can browse and search items efficiently.
Functional Requirements:
- The system shall provide a searchable catalog of listings.

- The System shall allow filtering by category, location, and item condition.
- The system shall display detailed item information when selected.

3.5. Feature 5: Messaging and Communication

Description: Users can communicate through in-app negotiations.

Functional Requirements:

- The system shall allow buyers and sellers to send messages.
- The system shall store conversation history securely.
- The system shall prevent messaging between unregistered users.

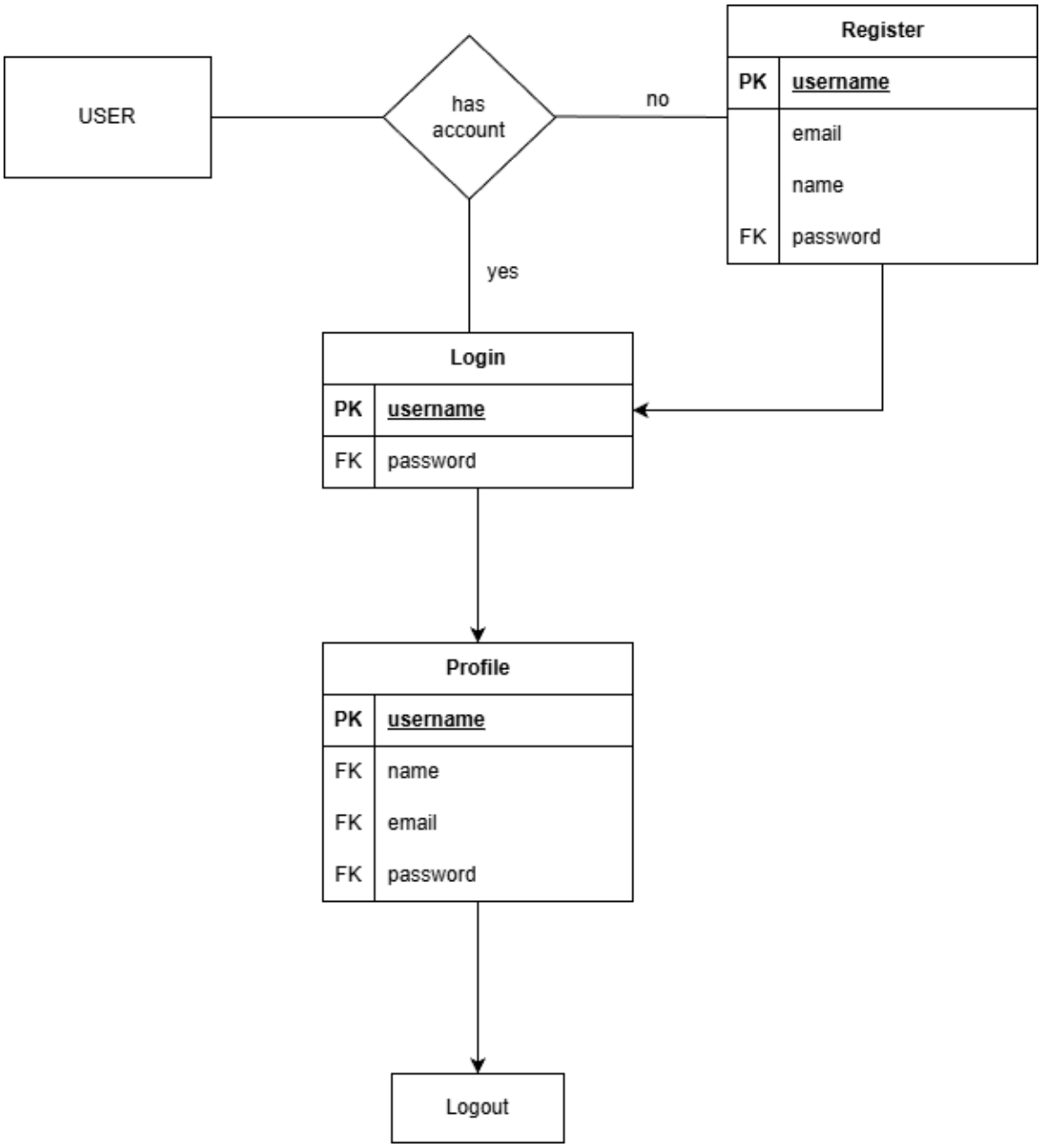
4. Non-Functional Requirements

- **Performance:** The system shall load item listings within 3 seconds under normal network conditions.
- **Security:** User data and passwords shall be encrypted and securely stored.
- **Usability:** The interface shall be simple and user-friendly for students and general users.
- **Reliability:** The system shall have at least 95% uptime during operation.
- **Scalability:** The system shall support increasing numbers of users and listings without major performance loss.
- **Maintainability:** The codebase shall follow modular design for easier updates and debugging.

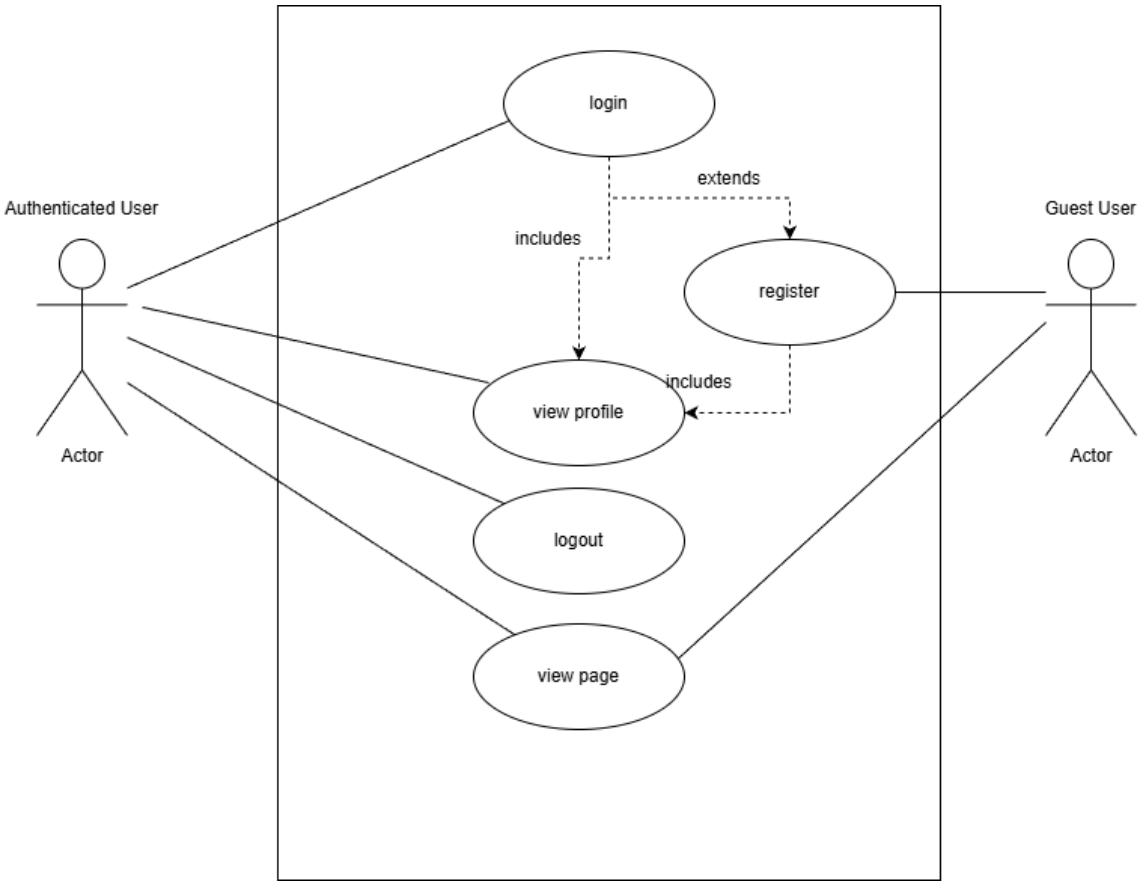
5. System Models (Diagrams)

Insert the necessary diagrams for the system:

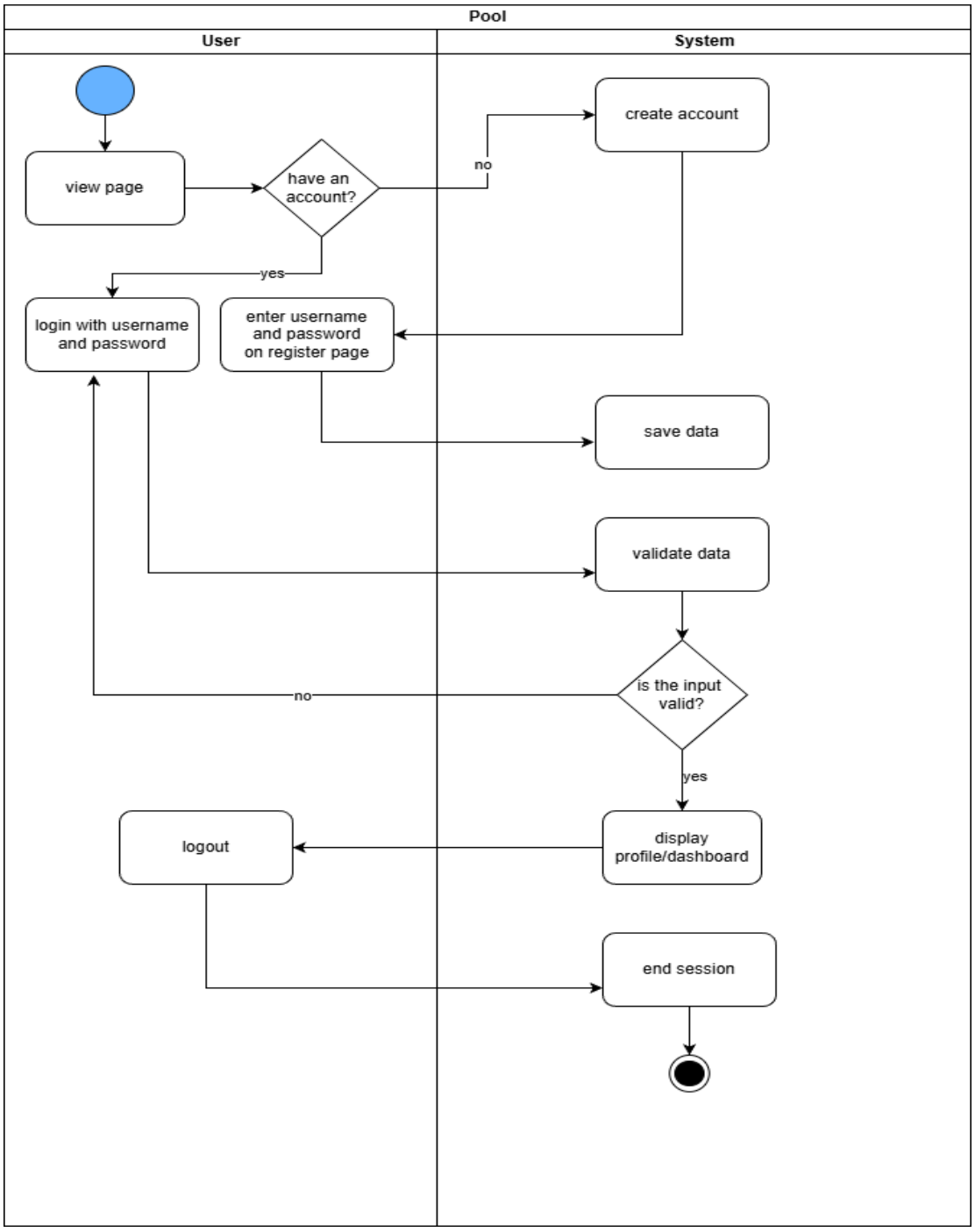
5.1. ERD


USER
has account
no
yes
Register
PK username
email
name
FK password
Login
PK username
FK password
Profile
PK username
FK name
FK email
FK password
Logout

5.2. Use Case Diagram



5.3. Activity Diagram



5.4. Class Diagram

Insert ERD here

5.5. Sequence Diagram

Insert ERD here

6. Appendices

Include any additional information, references, or support materials.