Group 07

Cadger
Software Architecture Document

Version 3.0

Revision History

Date	Version	Description	Author
8/12/2022	1.0		Group 07
20/12/2022	2.0		Group 07
6/1/2023	3.0		Group 07

Table of Contents

Software Architecture Document

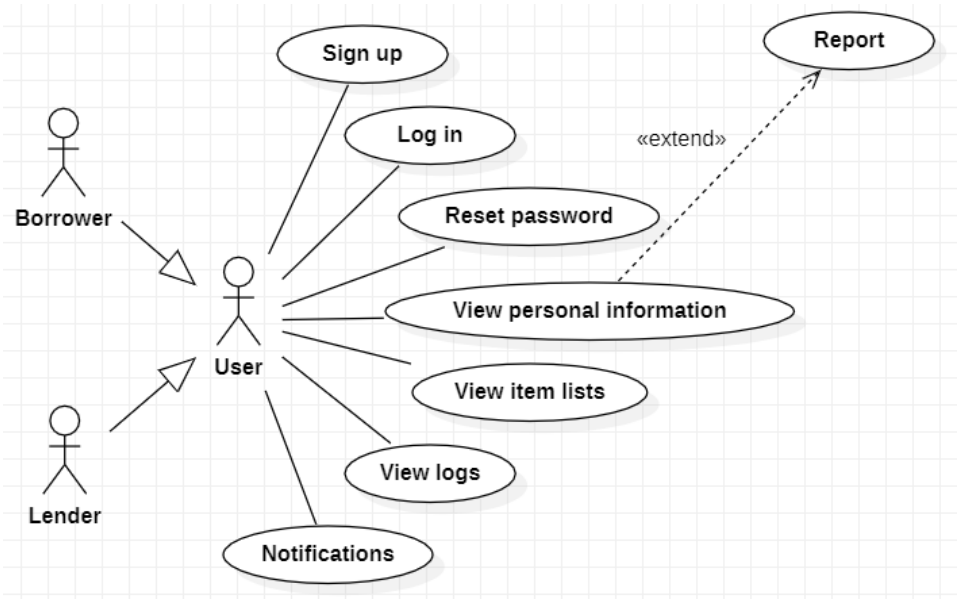
1. Introduction

This software architecture document provides an overview of the software architecture used in Cadger. It defines the program's subsystems (in the form of packages), interactions and relationships between its components, and the architecture pattern used for the system. In this document, we use Kruchten's 4 + 1 model to explain the architectural elements of Cadger. These views are presented using the Unified Modeling Language (UML).

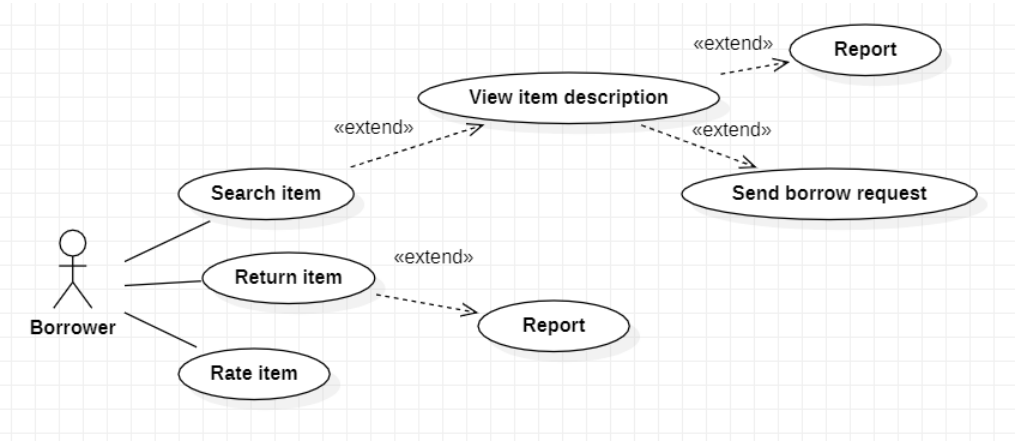
2. Architectural Goals and Constraints

- Encode all usernames and passwords
- The application works on Android
- Each page must load within 1 second

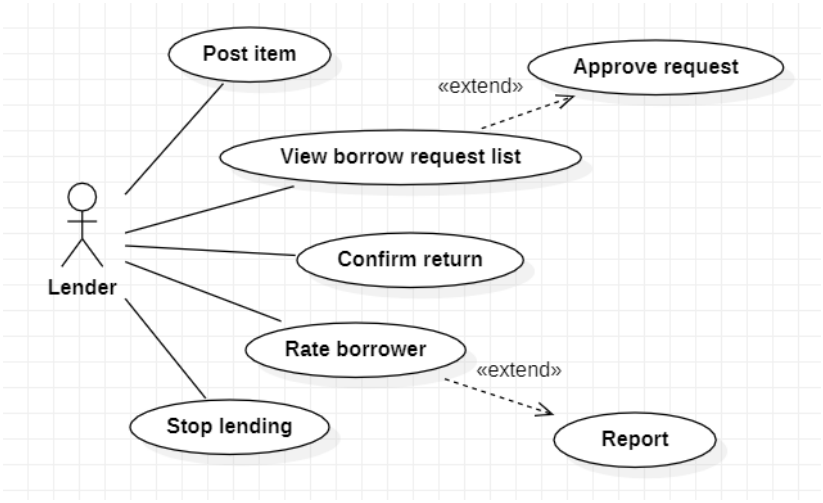
3. Use-Case Model



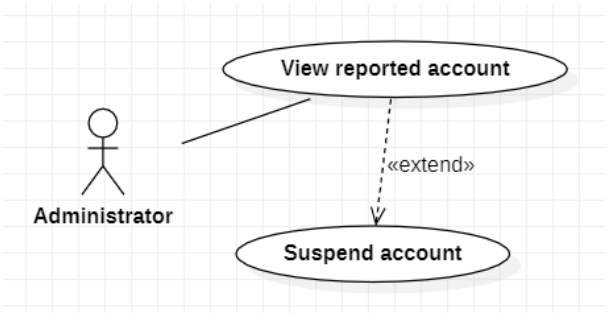
Basic functionalities of a user account



All use cases involve the Borrower

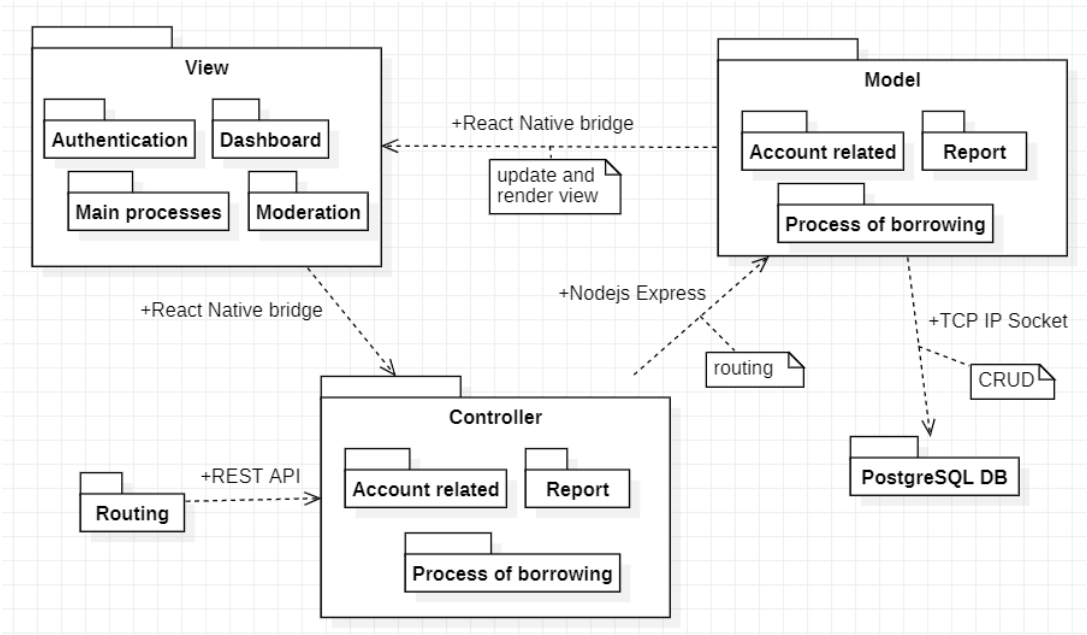


All use cases involve the Lender



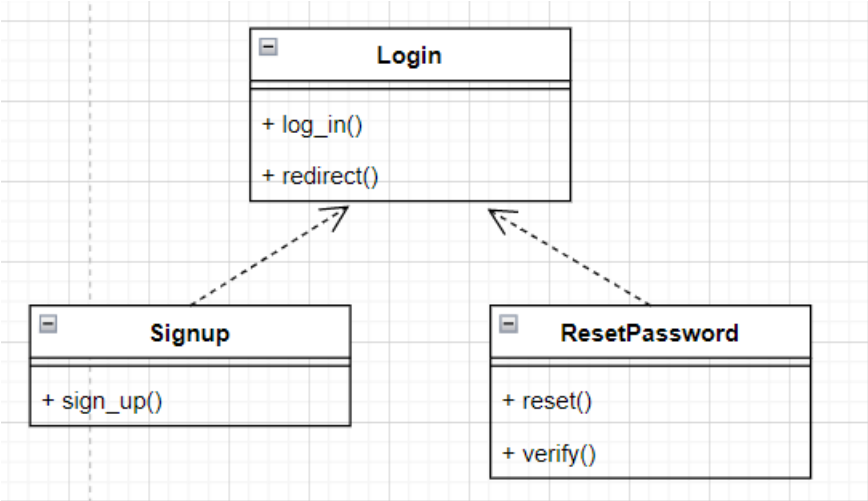
Use case for an Administrator account

4. Logical View



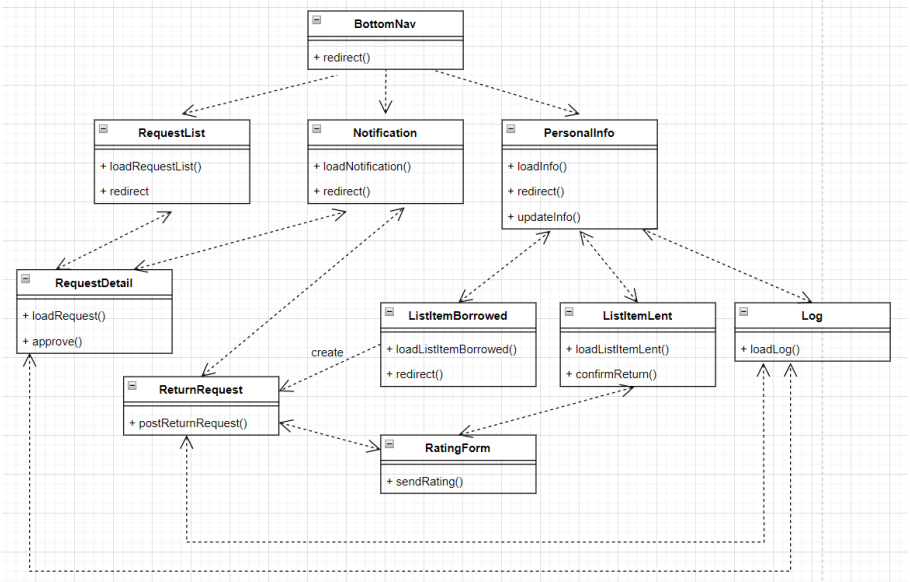
View

4.1 Component: Authentication



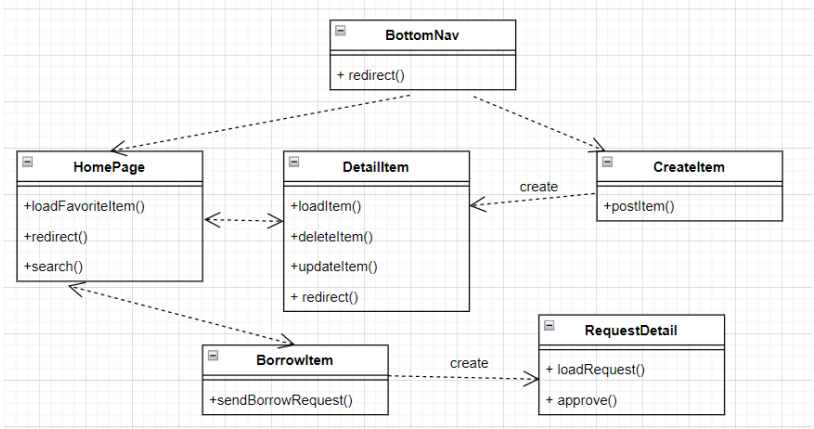
This component manages all GUIs of sign up, log in and reset password pages.

4.2 Component: Dashboard



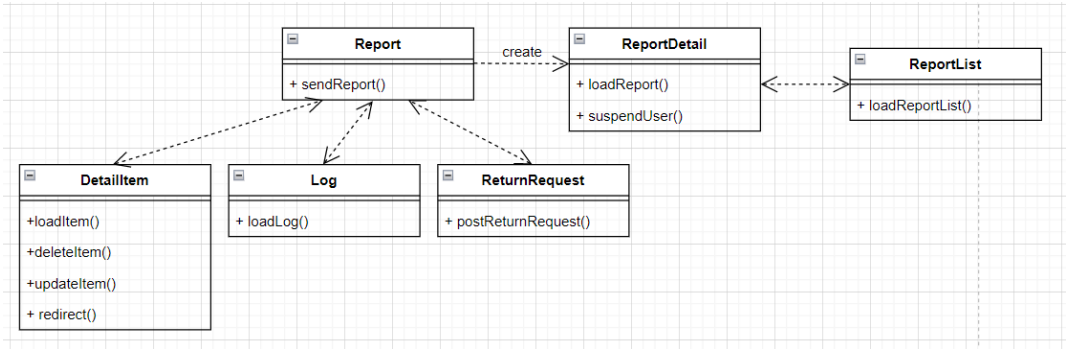
This component manages all GUIs for displaying personal information, activity logs, notifications, returning and rating features. It also handles all item lists and request lists involving the user.

4.3 Component: Main processes



This component manages all GUIs of lending and borrowing features.

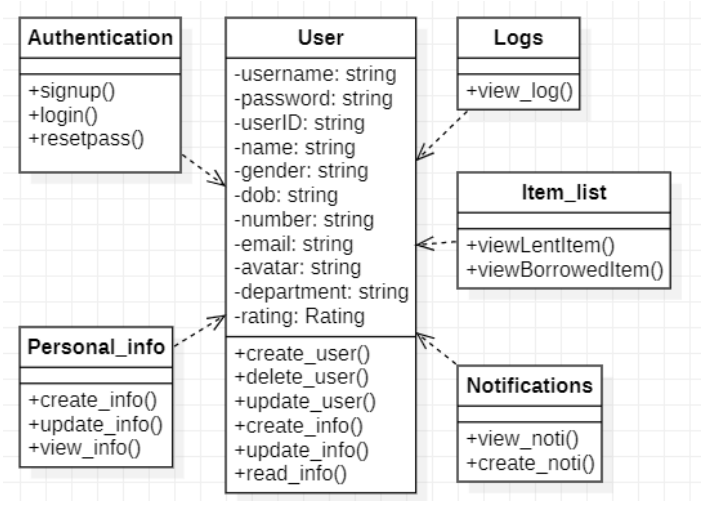
4.4 Component: Moderation



This component manages all GUIs used to create a report (from user's side), view and handle reports (from admin's side).

Controller

4.5 Component: Account-related



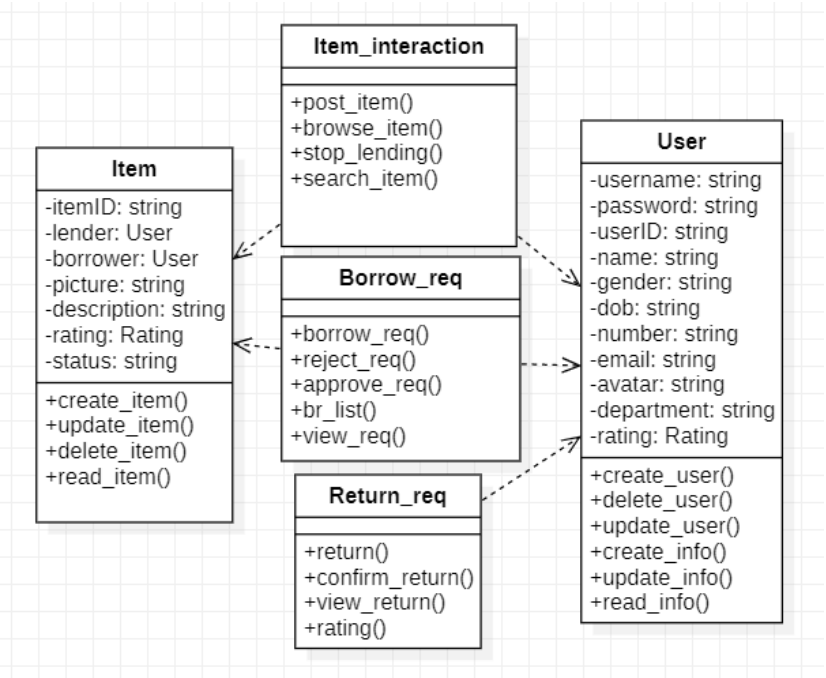
This component contains 4 main classes:

- Authentication: manage the signing up, logging in and resetting password processes. In signup() and

resetpass(), the input that user enters will be hashed and passed down to the Model package

- Personal_info: manage user's personal information page. The method create_info() is automatically called after the signup() finishes
- Log: manage user's history of borrowing and lending activities
- Item_list: manage user's lent and borrowed items
- Notification: manage user's notifications page. Users are notified whenever a borrow request or a return request is made to them

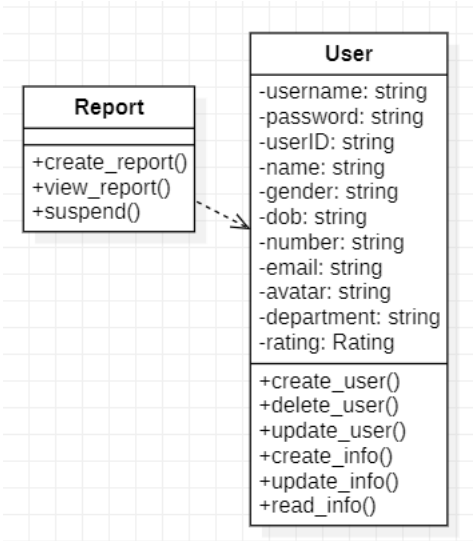
4.6 Component: Process of borrowing



This component contains 3 main classes:

- Item_interaction: manage 4 processes of posting an item to be lent, searching, browsing an item and making an item unavailable to be borrowed
- Borrow_req: manage borrower's borrow requests and all lender's interactions with those requests
- Return_req: manage user's return requests and user's ratings

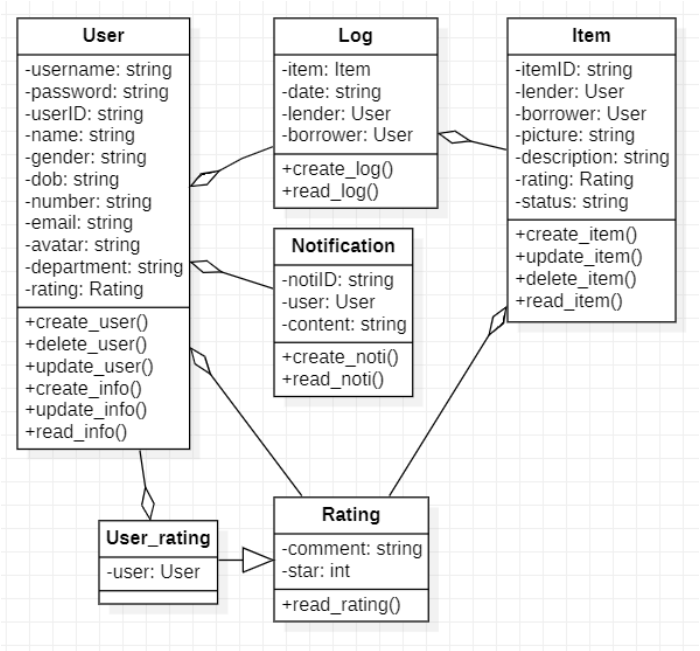
4.7 Component: Report



This component contains 1 class: Report. The method create_report() will be called when a user makes a report about another user. The method view_report() and suspend() can only be called by a client in a moderator account.

Model

4.8 Component: Account-related

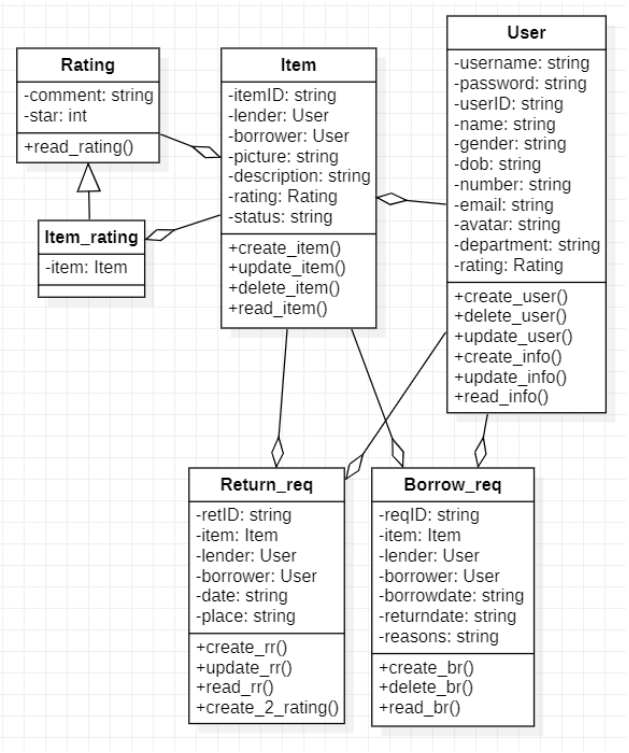


This component includes some classes related to setup users' profile and view their activities such as log, notification.

Class	Role
User	Allow the model to handle user's account information (username, password) and

	personal information. Operations are split into 2 respective parts
Rating	Act as a parent class of a “rating”
User_rating	Inherit all functionalities from the “Rating” class, and is used to manage borrower’s ratings provided by lenders
Notification	Create and display user’s notification.
Log	Create and display user’s logs.

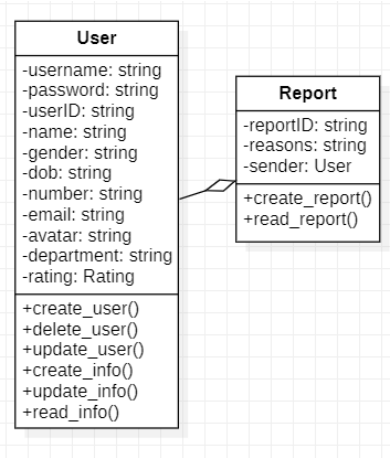
4.9 Component: Process of borrowing



This component includes some classes related to handle borrowing activity.

Class	**Explain**
Item	Allow the system interact with database to store item’s information
Item_rating	Inherit all functionalities from the “Rating” class, and is used to manage item ratings provided by borrowers
Borrow_req	Handle the borrowing request process
Return_req	Handle the returning request process and rating for both users

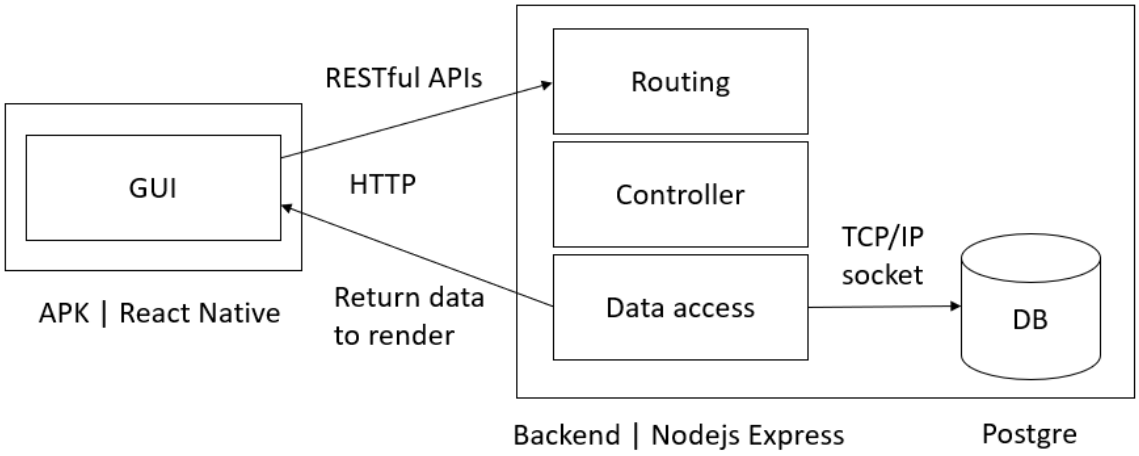
4.10 Component: Report



This component handles report activities. Users who are borrowers and lenders can create reports of another user. Moderators can read and process the report.

Class	**Explain**
Report	Allow the borrower and lender to report a suspicious account

5. Deployment



6. Implementation View