Design Document for Stock Market Teaching Sim

Group 4_rasel_1

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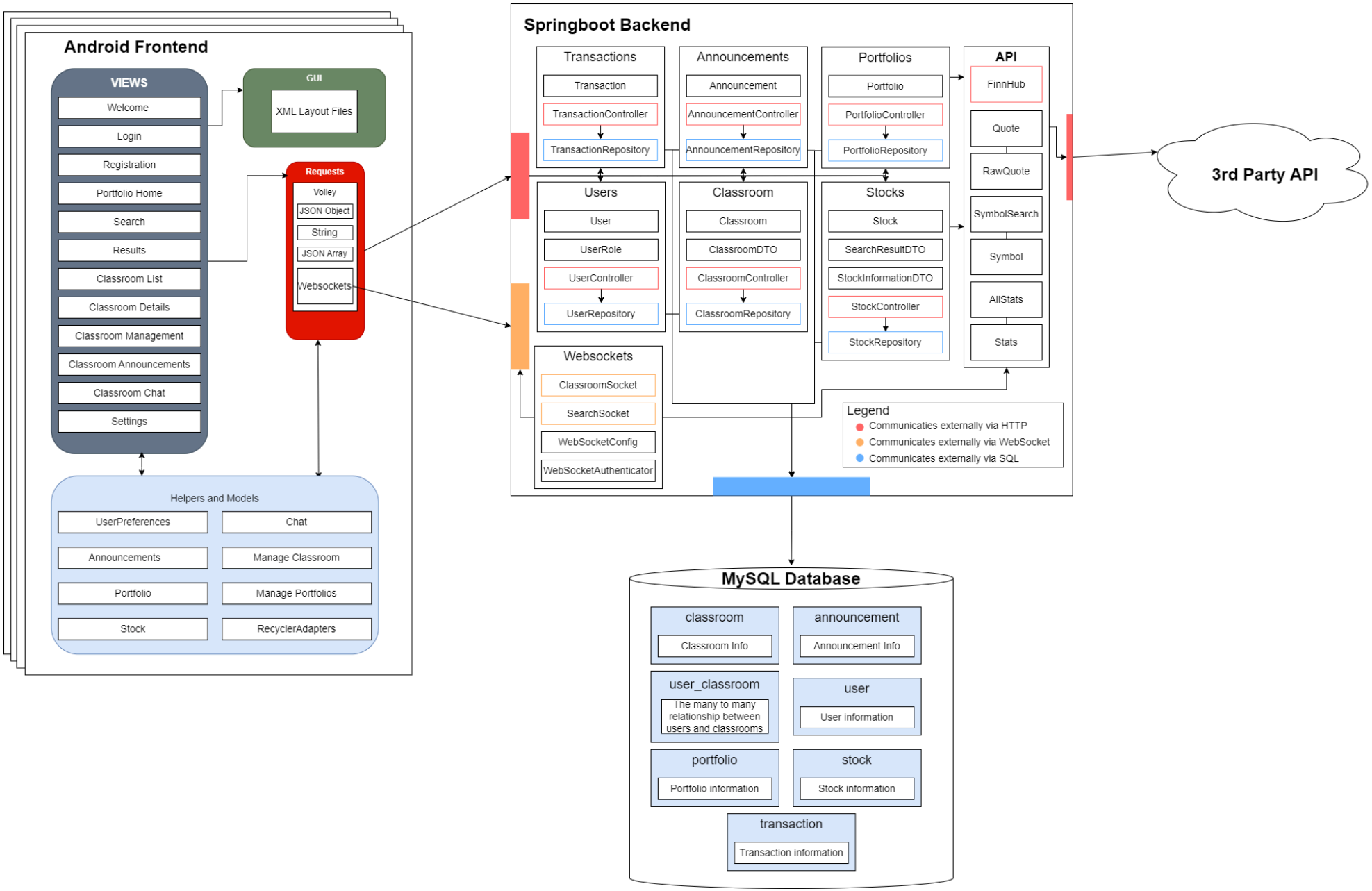

Android Frontend
VIEWS
Welcome
Login
Registration
Portfolio Home
Search
Results
Classroom List
Classroom Details
Classroom Management
Classroom Announcements
Classroom Chat
Settings
GUI
XML Layout Files
Requests
Volley
JSON Object
String
JSON Array
Websockets
Helpers and Models
UserPreferences
Chat
Announcements
Manage Classroom
Portfolio
Manage Portfolios
Stock
RecyclerAdapters
Springboot Backend
Transactions
Transaction
TransactionController
TransactionRepository
Announcements
Announcement
AnnouncementController
AnnouncementRepository
Portfolios
Portfolio
PortfolioController
PortfolioRepository
API
FinnHub
Quote
RawQuote
SymbolSearch
Symbol
AllStats
Stats
Users
User
UserRole
UserController
UserRepository
Classroom
Classroom
ClassroomDTO
ClassroomController
ClassroomRepository
Stocks
Stock
SearchResultDTO
StockInformationDTO
StockController
StockRepository
Websockets
ClassroomSocket
SearchSocket
WebSocketConfig
WebSocketAuthenticator
Legend
Communicaties externally via HTTP
Communicates externally via WebSocket
Communicates externally via SQL
3rd Party API
MySQL Database
classroom
Classroom Info
announcement
Announcement Info
user_classroom
The many to many relationship between users and classrooms
user
User information
portfolio
Portfolio information
stock
Stock information
transaction
Transaction information

Frontend

Classroom

- Classroom page after navigation using navigation bar that displays the list of classrooms for the user if the user has more than one classroom or the details of one classroom if the user only has one classroom
    - Uses a recycler to display classrooms or classroom details if only one classroom.
    - Clicking on the announcements button at the top takes the user to all of their announcements.
    - Clicking on a classroom within the list of classrooms takes the user to the classroom details page.
    - Clicking on the buttons in the top app bar lets the user add, remove, or manage a classroom depending on the number of classrooms they have and their user type.

Portfolio Home

- Home page upon logging into the application that displays all the currently owned portfolios.
    - Uses a recycler to scroll through the created portfolios.
    - Clicking on a portfolio opens the currently owned stocks of that portfolio.
    - Clicking on that stock from the portfolio navigates to the results page for that stock with the portfolio that you just navigated from being preselected.
    - Uses a menu bar at the top to allow you to navigate to a manager activity with the functionality changing between creating a new portfolio or editing the portfolio that is currently selected.

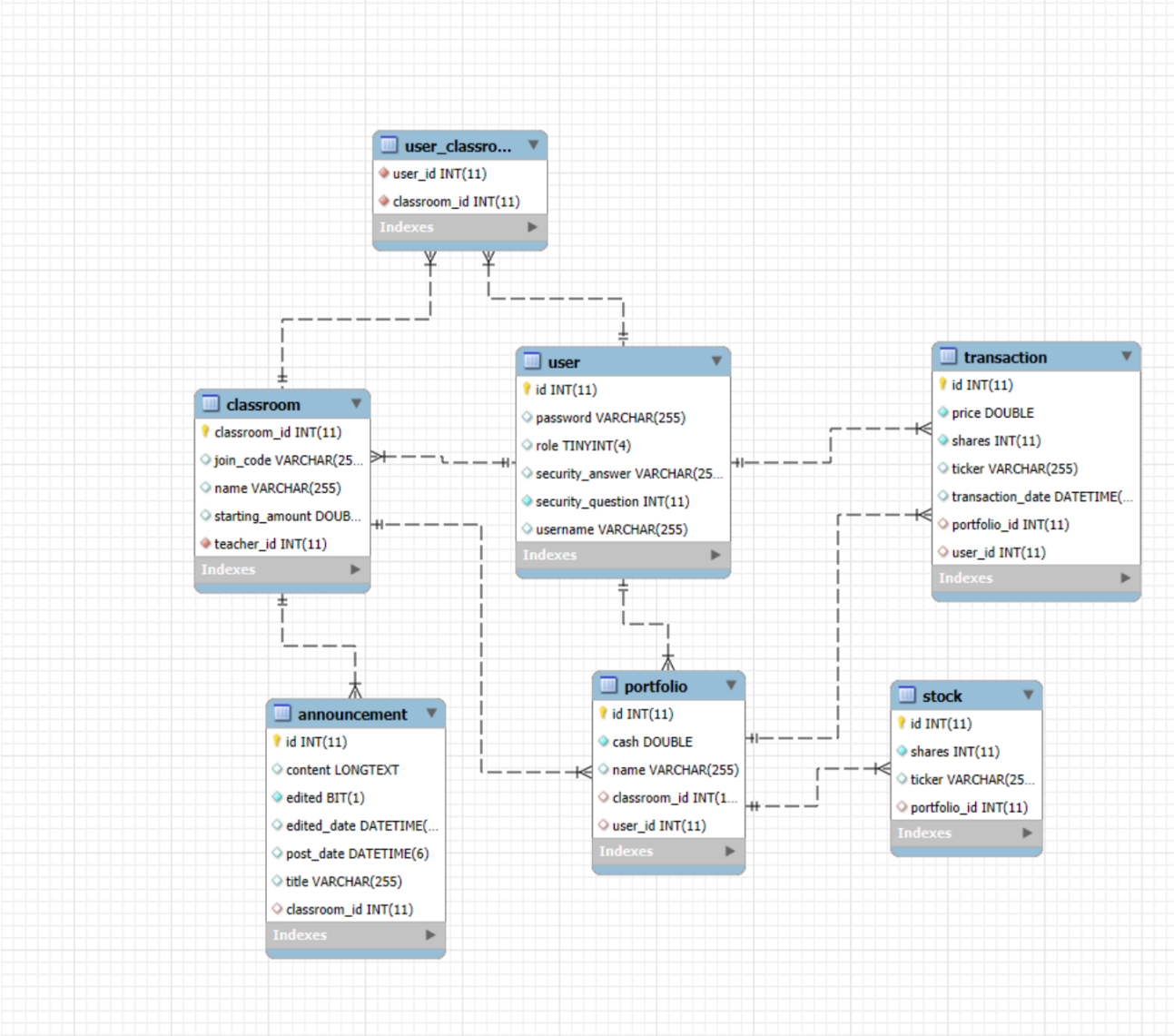
Backend

Third-party API

- The API package provides a simpler interface between the other packages and the third-party API for retrieving stock market data.
    - Any class desiring to access the API gets the singleton instance of the FinnHub class, which provides several methods for getting stock data
    - The FinnHub class makes the HTTP requests to the API, parses the JSON responses, filters out unwanted data, and maps the resulting JSON to Java objects
    - The calling classes can then use the returned objects in their methods or pass them on to the frontend

Portfolios

- A given user has one or more portfolios that they can manage. These are separate collections of owned stocks and cash
- Each portfolio has zero or more stocks associated with it. These are the stocks that the portfolio **currently** owns
- A portfolio can have zero or more transactions. Unlike stocks, these store what that portfolio has bought or sold at **any** time
- The value of a portfolio is calculated by looking up the current price of each stock in the portfolio, multiplying that price by the number of shares owned by the portfolio, and then adding the portfolio's cash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Indexes
classroom
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starting_amount DOUB...
teacher_id INT(11)
Indexes
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password VARCHAR(255)
role TINYINT(4)
security_answer VARCHAR(25...
security_question INT(11)
username VARCHAR(255)
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edited_date DATETIME(...
post_date DATETIME(6)
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Indexes
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name VARCHAR(255)
classroom_id INT(1...
user_id INT(11)
Indexes
stock
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shares INT(11)
ticker VARCHAR(25...
portfolio_id INT(11)
Indexes