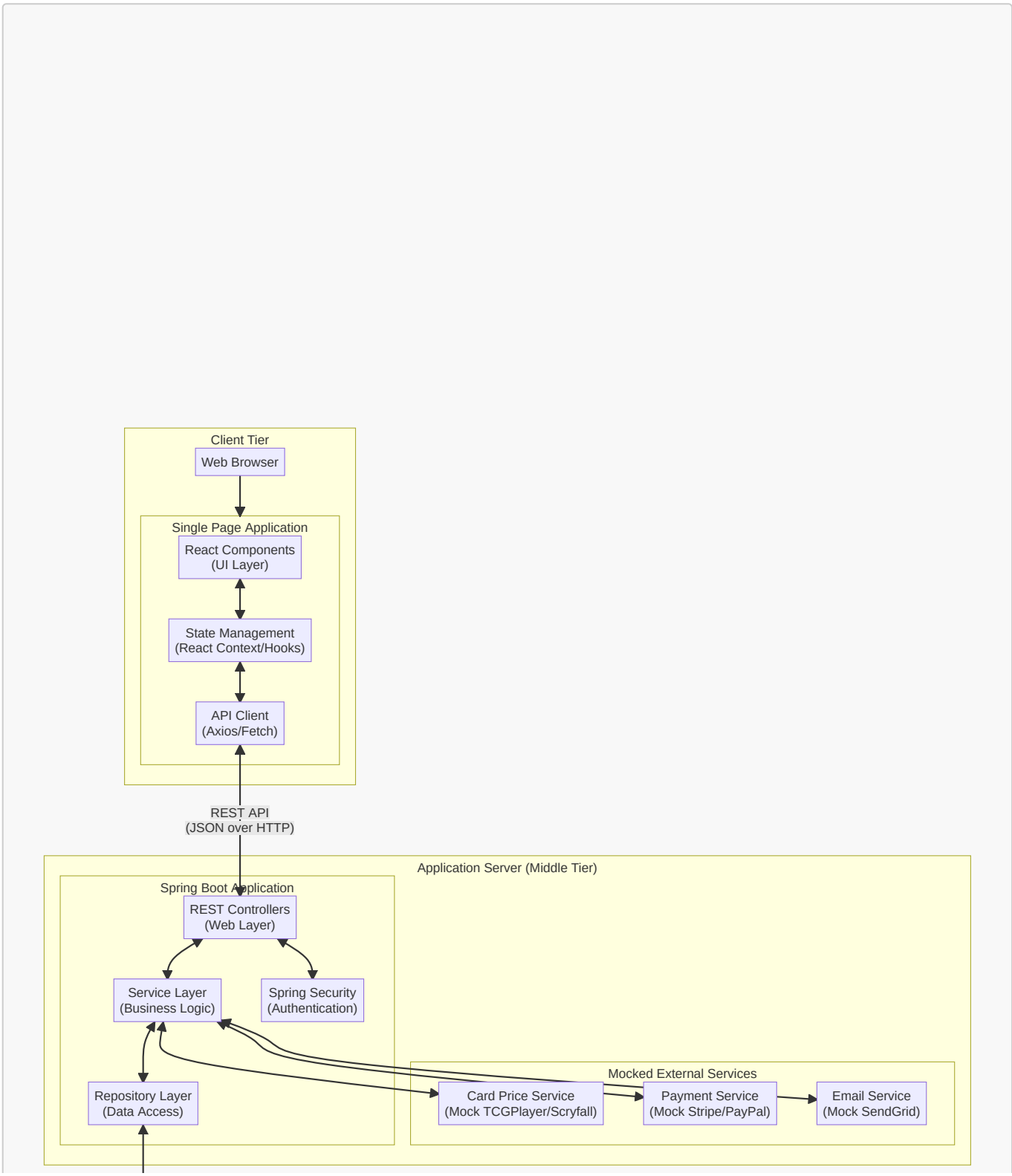
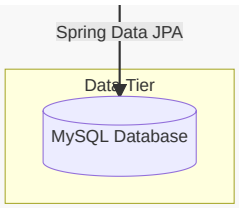
CardHub System Architecture

Overview

This document describes the high-level system architecture for CardHub, a playing card store application. The architecture follows a **3-tier design** that separates the client, application server, and data storage concerns.

Architecture Diagram





Physical Tiers

Tier	Description	Technology
Client Tier	User's web browser running the frontend application	Any modern web browser
Middle Tier	Application server hosting business logic and APIs	Java Spring Boot on application server
Data Tier	Database server storing all application data	MySQL database server

Logical Layers

Client Tier Layers

Layer	Purpose	Technology
UI Layer	Displays pages and handles user interactions	React Components, HTML, CSS
State Management	Manages application state and data flow	React Context, Hooks
API Client	Sends requests to backend and handles responses	Axios or Fetch API

Middle Tier Layers

Layer	Purpose	Technology

Layer	Purpose	Technology
Web Layer	Handles HTTP requests and routes them to services	Spring Boot REST
Security Layer	Manages authentication and authorization	Spring Security
Service Layer	External services and data	Serialized as POJOs
Repository Layer	Database operations	Spring JPA

External Services (Mocked)

Service	Purpose	Mock Implementation
Card Price Service	Fetches card prices from external sources	Might use https://docs.tcgplayer.com for this if I have time
Payment Service	Processes customer payments	Simulates payments
Email Service	Sends notifications to users	Will just log to console

Key Design Decisions

Why 3-Tier Architecture?

- **Separation of concerns**: Each tier has a clear responsibility
- **Scalability**: Tiers can be scaled independently
- **Security**: Business logic is protected on the server
- **Familiarity**: I have the most experience with it

Why Mock External Services?

- This is an educational project, no need for real services
- Allows testing without external dependencies
- Can be replaced with real services later