Technical Documentation: Fort Hays State Movie Theaters

CSCI 441

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Github - https://github.com/SrgtKillerSpark/fhsumovietheaterwebsite
YouTrack - https://fhsmt.youtrack.cloud/dashboard?id=169-0

System Overview

A web-based movie ticketing platform designed for customers and theater administrators. Customers can browse, select, and purchase movie tickets online, while staff manage showtimes and pricing via an admin dashboard.

Architecture

The system follows a three-layered client-server architecture with presentation, business logic, and data layers. Implemented using React for frontend, Spring Boot for backend, and MySQL for data storage.

Subsystems and Components

Major subsystems include Customer Interface, Admin Interface, Backend Services, and Database Subsystem. These components communicate over HTTP/HTTPS protocols.

Data Model

Relational schema includes tables for movies, showtimes, tickets, customers, payments, and reports. Persistent storage ensures all records survive program execution.

System Operation Contracts

Operations include createAccount, authenticate, searchMovies, selectSeats, placeOrder, cancelOrder, and generateReport. Each operation defines preconditions and postconditions to ensure data integrity.

Algorithms and Data Structures

Uses arrays, hash maps, and queues. Algorithms include seat reservation with timeout management, order processing, and refund workflows.

Testing Design

Uses white-box unit testing and black-box integration testing. Covers typical user workflows such as login, purchase, and refund processes.

References

https://eceweb1.rutgers.edu/~marsic/books/SE/book-SE_marsic.pdf - textbook