YogiTrack Studio Management System

Part 1 Project Report

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GitHub Repository: `https://github.com/rghamilton3/yogitrack-prototype`

Live Application: `https://yogitrack-prototype-a1daf9b97aac.herokuapp.com/`

1 Project Overview

YogiTrack is a MERN stack application designed for yoga studio management. The system enables administrators to manage instructors, customers, and classes with automated conflict detection and notification systems.

2 Implemented Use Cases

2.1 Use Case 1: Add Instructor

Allows adding new yoga instructors with duplicate name validation and automatic confirmation messaging to management.

2.2 Use Case 2: Add Class

Enables class creation with intelligent schedule conflict detection, alternative time slot suggestions, and instructor notifications.

2.3 Use Case 4: Add Customer

Facilitates customer registration with senior status tracking and comprehensive profile management.

3 Architecture & Design Decisions

3.1 Technology Stack

- **Frontend:** React 19 with functional components and hooks
- **Backend:** Express.js 5 with RESTful API design
- **Database:** MongoDB with Mongoose ODM
- **Build Tool:** Webpack with Babel transpilation
- **Deployment:** Heroku with GitHub Actions CI/CD

3.2 Key Design Patterns

- Reusable EntityForm component eliminating code duplication
- Centralized API service layer with error handling
- Embedded document schemas for complex schedule management
- Conflict detection algorithms with alternative suggestions

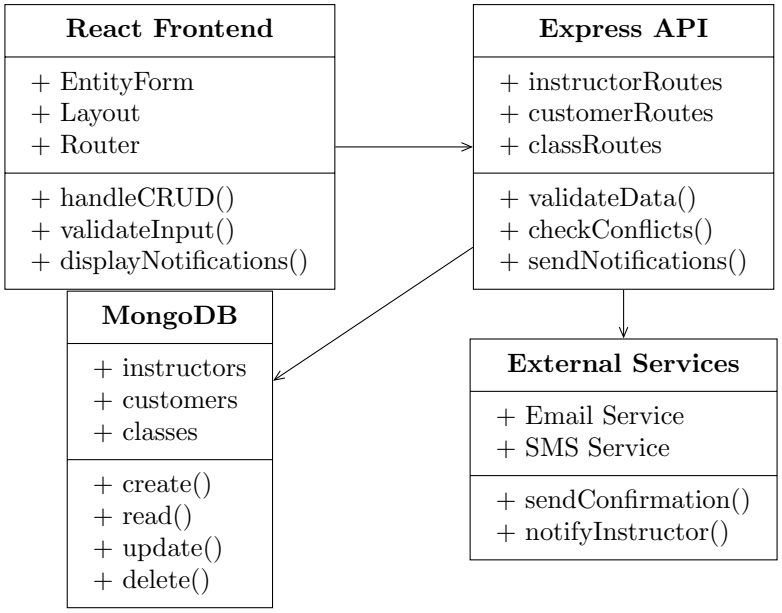

Figure 1: High-Level System Architecture

4 System Architecture

5 Database Schema

6 Key Implementation Features

6.1 Schedule Conflict Detection

Implemented intelligent algorithm that checks for time overlaps and provides alternative scheduling suggestions when conflicts are detected.

6.2 Automated Notifications

Integrated confirmation messaging system that notifies managers and instructors upon successful operations.

6.3 Responsive UI Components

Created reusable React components with consistent styling and error handling across all entity management interfaces.

6.4 CI/CD Pipeline

Established automated deployment workflow using GitHub Actions with Heroku integration for continuous delivery.

7 Conclusion

The YogiTrack system successfully implements core studio management functionality with robust conflict detection, automated notifications, and a scalable MERN architecture. The reusable component design and comprehensive API layer provide a solid foundation for future feature expansion.

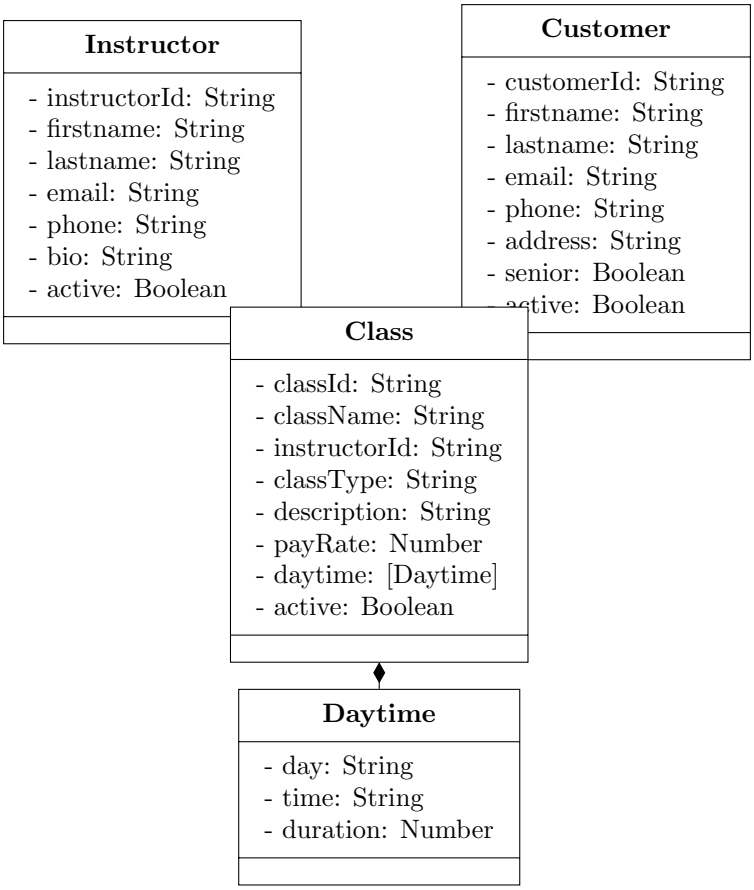

Figure 2: Database Entity Relationship Diagram