

# Project Design Phase

## Problem - Solution Fit Template

Date	17 April 2025
Team ID	SWTID1743955267
Project Title:	RideEase
Maximum Marks	2 Marks

### Solution Architecture

#### Key Objectives:

- Secure user authentication and role-based access (Admin, Driver, Rider)
- Scalable database with rides, bookings, users, and payment information
- Personalized experience through ride history, favorite locations, and preferred drivers

#### Core Components:

- **Frontend:** React.js – handles UI, dynamic rendering based on user role, responsive design for mobile users
- **Authentication:** JWT with bcrypt – manages login/signup and role-based authorization
- **Backend API:** Node.js + Express – processes business logic, routing, and real-time ride tracking
- **Database:** MongoDB Atlas – stores all data (users, rides, bookings, payments, etc.)
- **Location Services:** Integration with Google Maps API for route planning and fare estimation
- **Notifications System:** Real-time updates for ride status and driver proximity
- **Payment Gateway:** Secure payment processing with multiple options

Solution Architecture Diagram:

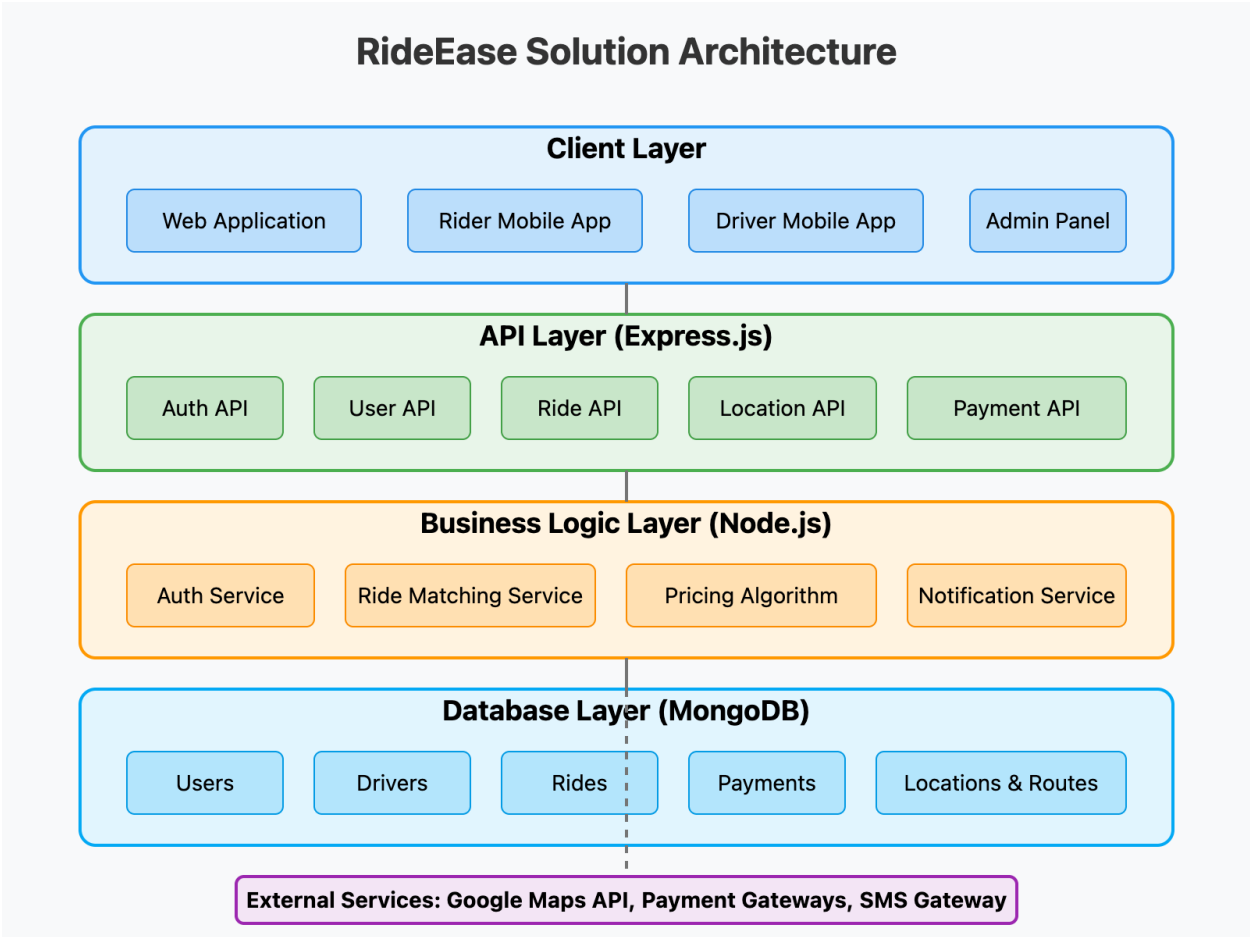


Figure 1: Architecture and data flow of the RideEase