

System Architecture Documentation

**Project: TheekKardo – Vehicle Assistance and
Maintenance Service**

Prepared by:

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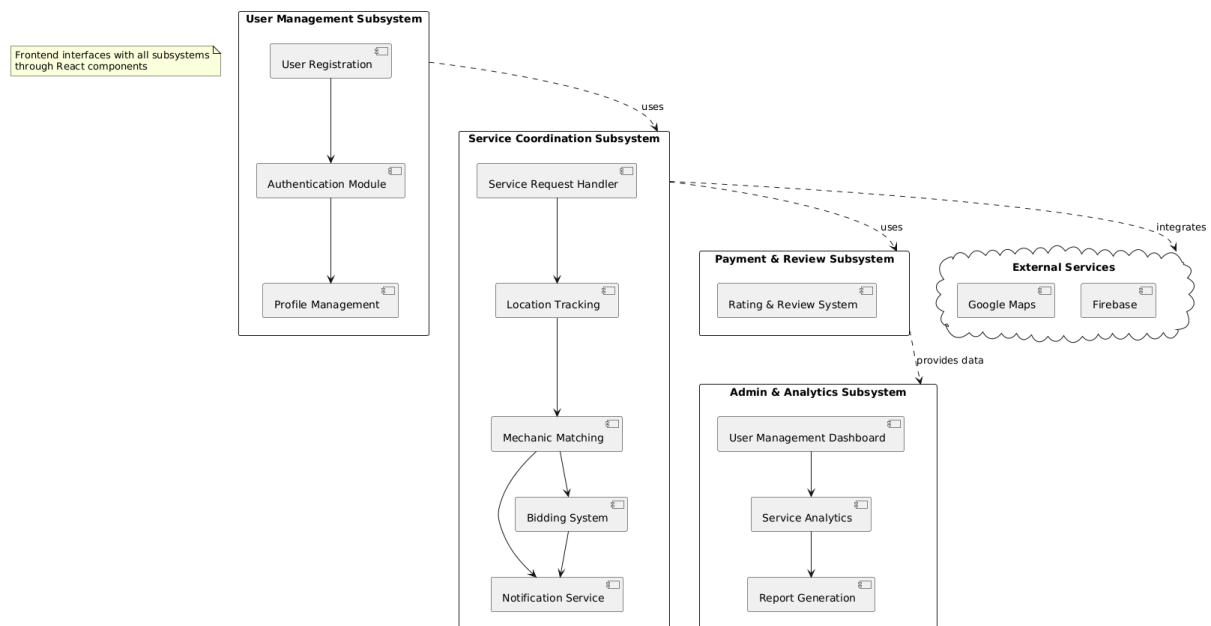
Tashfeen Hassan

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1. UML Package Diagram (Subsystems)

Diagram:



Subsystems:

- User Management
 - Handles registration, authentication, and profile updates.
 - Interfaces: Frontend (React), Database (MongoDB).
- Service Coordination
 - Manages service requests, Location tracking via Google Maps, and mechanic matching.
 - Interfaces: Google Maps API, notification service (firebase).
- Admin & Analytics
 - Monitors service quality, disputes, and generates reports.
 - Interfaces: Database, Frontend dashboard.

2. Architectural Styles

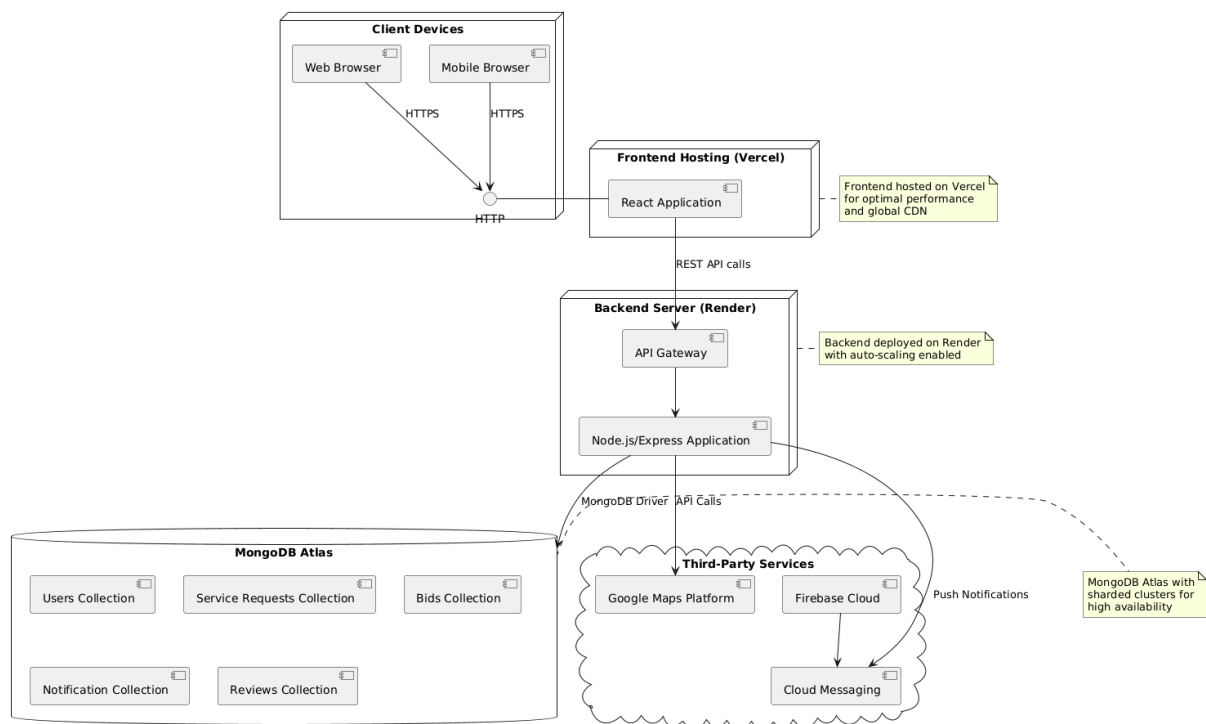
Layered Architecture

- Presentation Layer (Frontend): React.js for UI.
- Business Logic Layer (Backend): Node.js/Express for request handling.
- Data Layer: MongoDB for structured data storage.

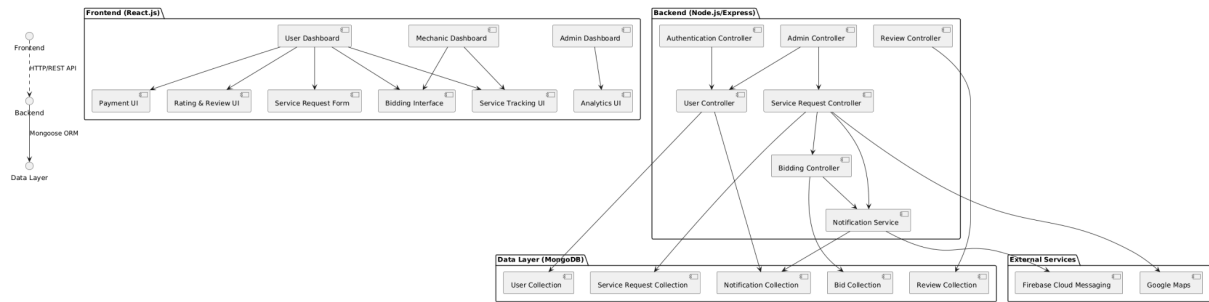
Justification:

- Maintainability: Layered separation simplifies updates (e.g., UI changes don't affect backend).
- Testability: Layered separation is also best suited for whitebox testing because components are isolated (Easy to test individual components).
- Separation of concerns.

3. Deployment Diagram



4. Component Diagram



Conclusion:

TheekKardo's architecture ensures modularity, scalability, and secure integrations. Layered structure optimizes maintainability, testability and future enhancements.