Software Requirements Specification (SRS)

Gaza Cars Mobile Application

Version: 2.0 (Expanded)
Date: November 25, 2025
Prepared for: Client Review

---

1. Introduction

1.1 Purpose

The purpose of this document is to provide a comprehensive, detailed description of the **Gaza Cars** mobile application. It details the functional and non-functional requirements, system architecture, extensive UML diagrams, and the roadmap for future development. This document serves as the primary reference for the development team, stakeholders, and quality assurance.

1.2 Scope

Gaza Cars is a specialized mobile marketplace for the automotive sector in Gaza. It connects buyers and sellers through a secure, real-time platform. The system leverages **Google Firebase** for a serverless, scalable backend.

1.3 Definitions & Acronyms

- **SRS**: Software Requirements Specification
- **Bloc**: Business Logic Component (State Management Pattern)
- **FCM**: Firebase Cloud Messaging
- **DI**: Dependency Injection (using `get_it` and `injectable`)
- **Clean Architecture**: The software design philosophy used (Domain, Data, Presentation layers).

---

2. Overall Description

2.1 Product Perspective

The application functions as a client-server system where the mobile app (Client) communicates directly with Firebase (Serverless Backend).

2.2 User Classes

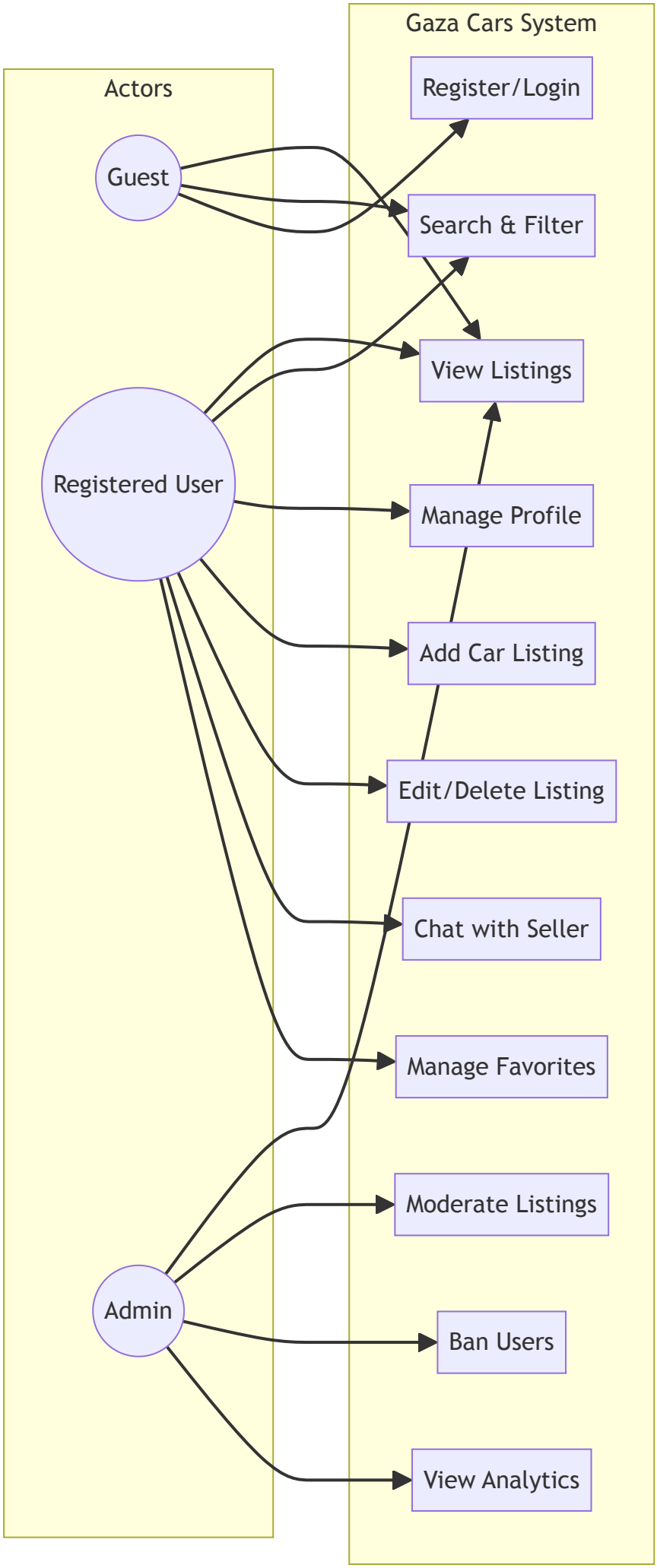
User Class	Description	Access Level
Guest	Unregistered user.	Read-only access to public listings.
User (Buyer)	Registered individual.	Can chat, favorite cars, and view seller contact info.
User (Seller)	Registered individual.	Can list cars, manage listings, and chat with buyers.
Admin	Platform moderator.	Full access to dashboard, user management, and content moderation.

---

3. System Diagrams (UML)

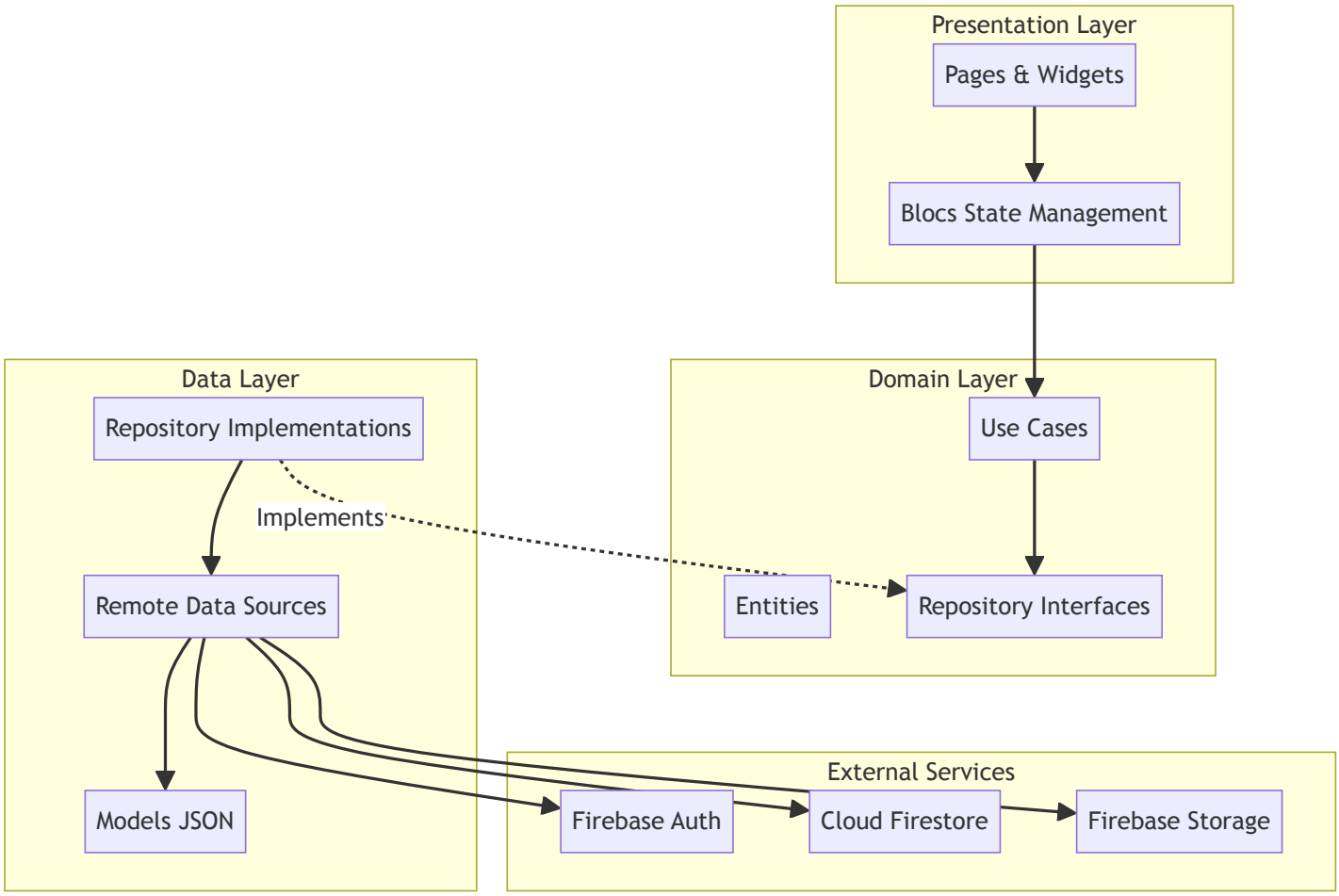
3.1 Use Case Diagram

High-level view of actor interactions.


Gaza Cars System
Actors
Register/Login
Guest
Search & Filter
View Listings
Registered User
Manage Profile
Add Car Listing
Edit/Delete Listing
Chat with Seller
Manage Favorites
Moderate Listings
Admin
Ban Users
View Analytics

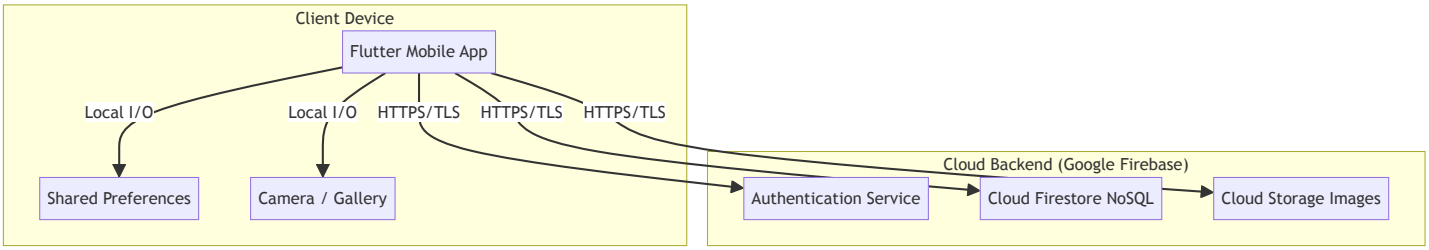
3.2 System Architecture (Component Diagram)

Shows the modular structure of the application following Clean Architecture.



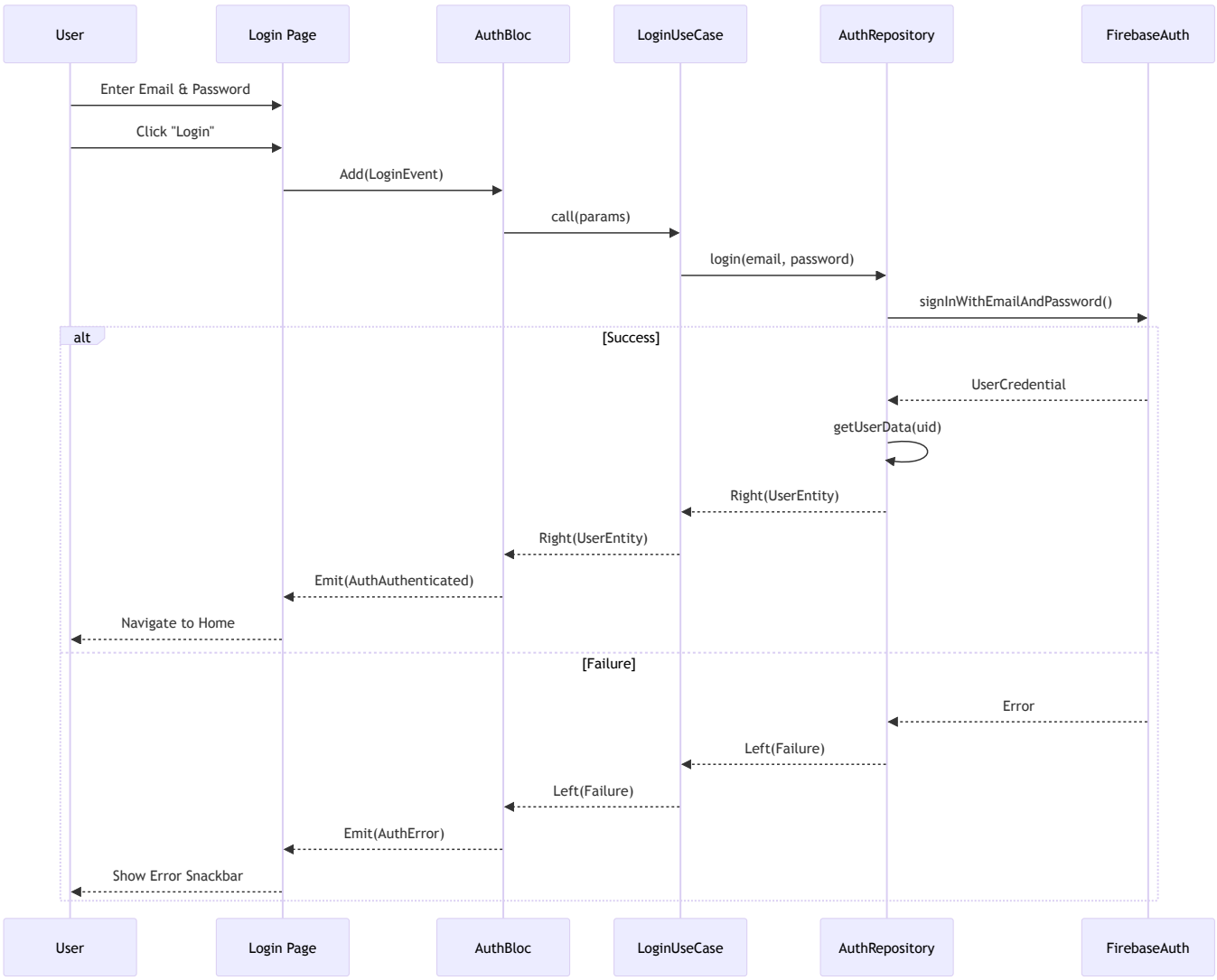
3.3 Deployment Diagram

Physical deployment of artifacts.



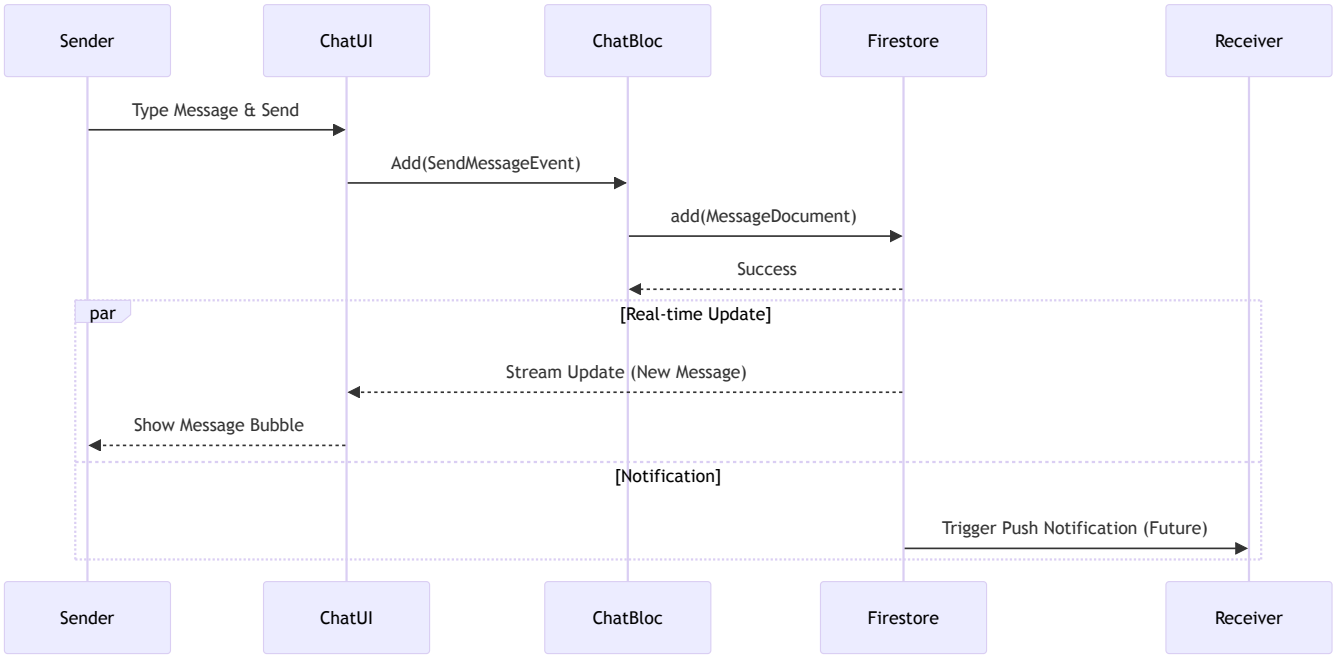
3.4 Sequence Diagram: User Login

Detailed flow of the authentication process.



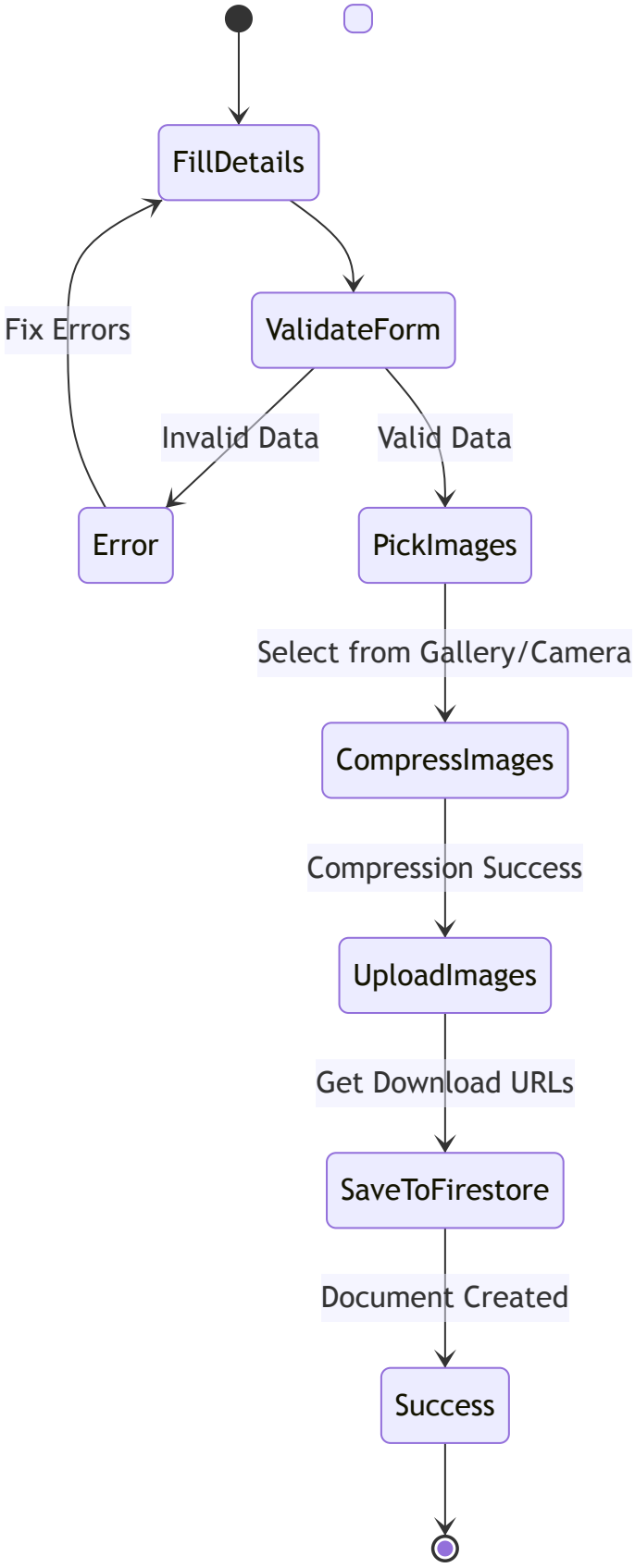
3.5 Sequence Diagram: Sending a Message

Real-time chat interaction flow.



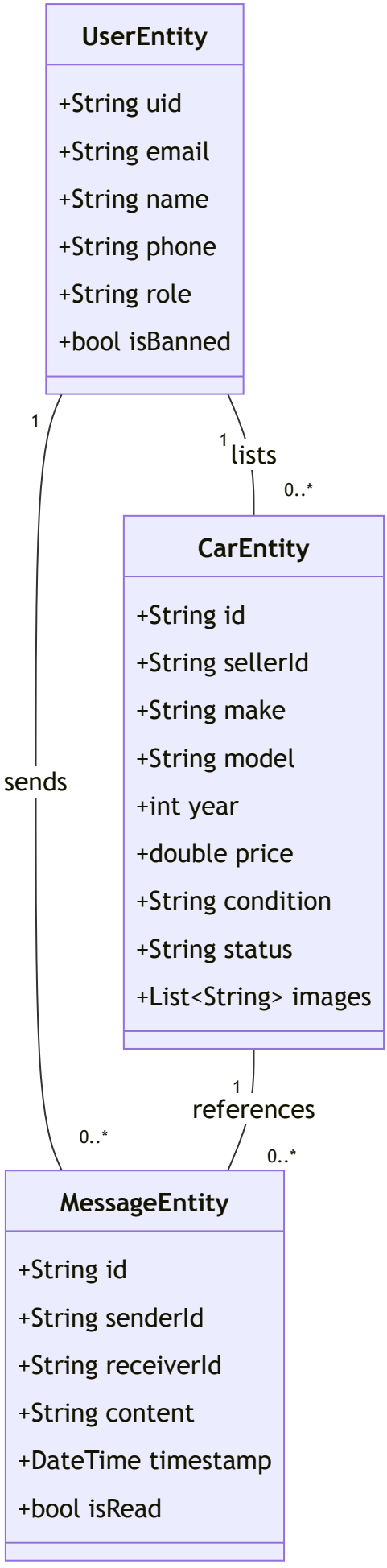
3.6 Activity Diagram: Adding a Car

Workflow for listing a vehicle.



3.7 Class Diagram (Domain Entities)

Core data structures.



4. Functional Requirements (Detailed)

4.1 Authentication Module

- **FR-AUTH-01**: System shall allow users to register with Email, Password, Name, and Phone.
- **FR-AUTH-02**: System shall validate email format and password strength (min 6 chars).
- **FR-AUTH-03**: System shall persist user session using secure token storage.
- **FR-AUTH-04**: System shall allow users to update their profile photo (avatar).

4.2 Car Management Module

- **FR-CAR-01**: Users shall be able to upload up to 10 images per car.
- **FR-CAR-02**: System shall automatically compress images to max 1080p resolution to optimize bandwidth.
- **FR-CAR-03**: Users must select a "Location" from a predefined list (Gaza City, Rafah, etc.).
- **FR-CAR-04**: Sellers can mark their cars as "Sold", removing them from search results.

4.3 Search & Filter Module

- **FR-SRCH-01**: Users can filter cars by Price Range (Min/Max).
- **FR-SRCH-02**: Users can filter by Year Range.
- **FR-SRCH-03**: Search results shall be paginated (lazy loaded) for performance.

4.4 Chat Module

- **FR-CHAT-01**: Chat shall be initiated from the "Car Details" page.
- **FR-CHAT-02**: Messages shall be synced in real-time across devices.
- **FR-CHAT-03**: Users shall see a list of all active conversations in the "Inbox" tab.

4.5 Admin Module

- **FR-ADM-01**: Admins shall see a "Dashboard" with key metrics (Total Users, Total Cars).
- **FR-ADM-02**: Admins can "Approve" or "Reject" pending car listings.
- **FR-ADM-03**: Admins can "Ban" users, preventing them from logging in.
- **FR-ADM-04**: Banned users shall see a specific error message upon login attempt.

---

5. Non-Functional Requirements

5.1 Performance

- **Response Time**: API calls should complete within 500ms on 4G networks.
- **Image Upload**: Image compression should take < 1s per image on average devices.

5.2 Reliability

- **Availability**: 99.9% uptime provided by Firebase SLA.
- **Data Integrity**: Firestore transactions used for critical updates (e.g., status changes).

5.3 Security

- **Encryption**: All data in transit is encrypted via SSL/TLS.
- **Access Control**: Firestore Security Rules enforce ownership (only owners can edit their cars).

---

6. Future Roadmap

Phase 2: Engagement (Month 2)

- Push Notifications (FCM).
- Advanced Filters (Saved Searches).

Phase 3: Monetization (Month 3)

- Premium Listings (Stripe Integration).
- Trader Verified Accounts.

Phase 4: Expansion (Month 6)

- Web Application (Flutter Web).
- AI Price Prediction.