

Functional Requirements (FR)

1. User Registration & Authentication

- FR1.1: Users must be able to register as **guest** or **host**.
- FR1.2: The system must allow login/logout with secure password handling.
- FR1.3: Hosts must be able to verify their properties (upload info, photos).

2. Property Management (Hosts)

- FR2.1: Hosts must be able to create, update, and delete property listings.
- FR2.2: Hosts must manage availability calendars for their properties.
- FR2.3: Hosts must be able to view bookings and revenue history.

3. Property Discovery (Guests)

- FR3.1: Guests must be able to search properties on a map by location.
- FR3.2: Guests must filter results by price range, amenities, and availability.
- FR3.3: Guests must be able to view property details, reviews, and host profile.

4. Booking & Reservations

- FR4.1: Guests must be able to book available properties for selected dates.
- FR4.2: The system must prevent double bookings for the same property/date.
- FR4.3: Both guests and hosts must receive booking confirmations.

5. Payments

- FR5.1: Guests must be able to pay for bookings using a payment gateway.
- FR5.2: Hosts must receive payouts after bookings are completed.
- FR5.3: The system must keep a transaction history.

6. Reviews & Ratings

- FR6.1: Guests must be able to leave reviews and ratings after a stay.
- FR6.2: Hosts must be able to respond to reviews.
- FR6.3: Reviews must be linked to verified bookings only.

7. Admin Functions

- FR7.1: Admins must manage users (ban, verify, reset).
- FR7.2: Admins must manage reported properties/reviews.
- FR7.3: Admins must access analytics on platform usage.

Non-Functional Requirements (NFR)

1. Performance

- NFR1.1: The system must return search results within **2 seconds** for 95% of queries.
- NFR1.2: Booking transactions must be processed in **real-time (<3 seconds)**.

2. Scalability

- NFR2.1: The system must support at least **1,000 concurrent users** without degradation.
- NFR2.2: The database must handle growth up to **1 million property records**.

3. Availability

- NFR3.1: The system must be available **99.5% of the time** during the semester.
- NFR3.2: Maintenance windows must be scheduled and notified in advance.

4. Security

- NFR4.1: Passwords must be stored securely (hashed + salted).
- NFR4.2: All communications must use **HTTPS/TLS**.

- NFR4.3: The system must comply with basic KYC checks for hosts.

5. **Data Integrity & Consistency**

- NFR5.1: Booking data must follow **ACID transactions** to avoid double-booking.
- NFR5.2: Payment records must be immutable (append-only).

6. **Usability**

- NFR6.1: The UI must be responsive (desktop & mobile web).
- NFR6.2: Guests must be able to complete a booking in **<5 clicks** from search.

7. **Maintainability**

- NFR7.1: The codebase must follow modular architecture.
- NFR7.2: Documentation must be provided for database schema and APIs.