**Project Design phase-||**

**Solution Requirements(Functional and Non-Functional)**

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| **Date** | **27 june** |
| **Team ID** | **LTVIP2025TMID53139** |
| **Project Name** | **House Hunt: Finding your Perfect Rental Home** |
| **Maximum Marks** | **2 marks** |

**Solution Requirements**

Solution requirements articulate the high-level business needs and objectives that the House-Hunt application aims to address. They define *what* the business wants to achieve.

* **Property Discovery & Search:** Enable users to efficiently discover available properties (for rent or sale) based on various criteria.
* **User Engagement & Personalization:** Provide features for users to save properties, manage preferences, and engage with listings.
* **Efficient Listing Management:** Offer a robust system for property owners/agents or administrators to add, update, and manage property listings.
* **Scalability for Growth:** Ensure the platform can accommodate a growing number of users and property listings without significant performance degradation.
* **High Availability:** The application must be accessible and operational for users with minimal downtime.
* **Security & Data Privacy:** Protect user data and sensitive property information from unauthorized access and ensure compliance with relevant data protection regulations.
* **User-Friendly Experience:** Provide an intuitive and responsive interface across different devices (web and mobile).
* **Future Extensibility:** Design the system to easily integrate new features such as virtual tours, AI recommendations, or payment gateways in subsequent phases.

**2. Functional Requirements (FRs)**

Functional requirements specify *what the system must do*. These are specific features and behaviors.

| FR ID | Feature Area | Description | User Role | Priority |
| --- | --- | --- | --- | --- |
| FR001 | User Authentication | The system shall allow users to register a new account (email/password). | Registered User | High |
| FR002 | User Authentication | The system shall allow registered users to log in securely. | Registered User | High |
| FR003 | User Authentication | The system shall allow users to reset their password. | Registered User | High |
| FR004 | User Profile | The system shall allow registered users to view and update their profile details. | Registered User | Medium |
| FR005 | Property Search | The system shall allow users to search properties by location (city, area). | All Users | High |
| FR006 | Property Search | The system shall allow users to filter properties by price range. | All Users | High |
| FR007 | Property Search | The system shall allow users to filter properties by property type (e.g., house, apartment). | All Users | High |
| FR008 | Property Search | The system shall allow users to filter properties by number of bedrooms and bathrooms. | All Users | High |
| FR009 | Property Display | The system shall display a list of properties with key information (image, price, beds, baths, location). | All Users | High |
| FR010 | Property Details | The system shall display a detailed page for each property, including descriptions, multiple images, and amenities. | All Users | High |
| FR011 | Property Details | The system shall display the property's location on a map. | All Users | Medium |
| FR012 | Favorites | The system shall allow registered users to mark properties as "favorites". | Registered User | High |
| FR013 | Favorites | The system shall allow registered users to view their list of favorited properties. | Registered User | High |
| FR014 | Property Inquiry | The system shall allow users to submit inquiries (contact form) for specific properties. | All Users | High |
| FR015 | Admin Listing Mgmt. | The system shall allow administrators to securely log in to an admin dashboard. | Admin | High |
| FR016 | Admin Listing Mgmt. | The system shall allow administrators to add new property listings with all details. | Admin | High |
| FR017 | Admin Listing Mgmt. | The system shall allow administrators to edit existing property listings. | Admin | High |
| FR018 | Admin Listing Mgmt. | The system shall allow administrators to delete property listings. | Admin | High |
| FR019 | Admin Inquiry View | The system shall allow administrators to view all submitted property inquiries. | Admin | Medium |

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**3. Non-Functional Requirements (NFRs)**

Non-functional requirements specify *how well the system must perform* and its quality attributes.

| NFR ID | Category | Description | Metric/Standard | Priority |
| --- | --- | --- | --- | --- |
| NFR001 | Performance | Search results shall be displayed within **2 seconds** for 95% of queries. | Average response time < 2s; 95th percentile < 2.5s | High |
| NFR002 | Performance | Page load times shall not exceed **3 seconds** for 90% of user interactions. | Average page load time < 3s; 90th percentile < 3.5s | High |
| NFR03 | Scalability | The system shall support **1,000 concurrent active users** without degradation. | Load testing to simulate 1,000 concurrent users | High |
| NFR004 | Scalability | The system shall accommodate **100,000 property listings** efficiently. | Database capacity planning, indexing efficiency | High |
| NFR005 | Security | All user authentication shall use **HTTPS/SSL**. | HTTPS enforced for all communication | High |
| NFR006 | Security | User passwords shall be stored as **salted and hashed** values. | Industry-standard hashing algorithms (e.g., bcrypt) | High |
| NFR007 | Security | The application shall be protected against common web vulnerabilities (**OWASP Top 10**). | Regular security audits, penetration testing | High |
| NFR008 | Reliability | The application shall have an uptime of **99.9%**. | Monitoring tools, incident response plan | High |
| NFR009 | Usability | The user interface shall be intuitive and easy to navigate for first-time users. | Usability testing, user feedback surveys (score > 4/5) | Medium |
| NFR010 | Usability | The application shall be **fully responsive** and optimized for mobile devices. | Cross-browser and device compatibility testing | High |
| NFR011 | Maintainability | The codebase shall adhere to coding standards and be well-documented. | Code reviews, documentation guidelines | Medium |
| NFR012 | Maintainability | The system shall allow for independent deployment of microservices. | Microservices architecture, containerization | High |
| NFR013 | Integrability | The system shall provide well-documented APIs for future integrations. | OpenAPI/Swagger documentation | Medium |
| NFR014 | Data Retention | Property listing data shall be retained for 1 year after deactivation. | Data retention policy, database backups | Medium |
| NFR015 | Compliance | The system shall comply with relevant data privacy regulations (e.g., GDPR principles for global reach). | Legal review, data privacy impact assessment | High |