



Property Rental Management System

SWE 202– Software Modeling & Design

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Property Rental Management System Requirements Specification

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This document serves as the official Requirements Specification for the Property Rental Management System. It defines both functional and non-functional requirements, along with their priorities and approval statuses. The document is structured to align with the project's needs, including an overview, product context, and key system features.

The format and organization of the requirements are tailored to best support the project, ensuring clarity and usability. This document will be continuously updated as necessary to reflect changes, enhancements, and progress. Each version shows the progress.

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1. Executive Summary

1.1 Project Overview

Our group has chosen the Rental Management System topic for our project. We will ensure the creation of a proper model encompassing all the steps necessary to fulfill its role as a design worthy of simplifying the work of the software engineers to turn the theoretical aspect into a practical one. Our duty in this project is for all the lessons of the SWE 202 course to be incorporated into our project, for example: Requirements Engineering, different Modelings, Design Patterns, etc.

Everything will be posted on our Github Repository:

https://github.com/martinvila22/SoftwareModelingAndDesign_Project.git

2. Product/Service Description

The Rental Management System is a multipurpose software, designed to ensure the needs of all types of users. Our System will create a safe, interactive environment for the verified landlords to post their legally and physically verified product which might be: an apartment, a mansion, a land, any other type of real estate.

This safe environment will also benefit a verified customer, the interested party on renting a property. It is also in the scope of the purpose of our system to ensure an easily understandable multifunctional search mechanism for all customers to search a property in a certain area, city, street and with certain filtering options decided by him such as: type of property, surface area, rooms, budget, etc.

There would be ofcourse a need for contact between these two parts of a deal, so we will also integrate an inner chat between the customer and the landlord. Since the developers of a Rental Management System should have thorough knowledge on the properties and the property rental market, the system will give feedback to the customer about the best aspects of the property and if the price is below or above average (in trying not to undermine the benefits of the property). In the scope of our System is also a smooth payment transaction between the two sides of the deal either by cash or direct payment through our system. In either case the System will give both parts a pdf verifying being a third party.

2.1 Product Context

Our System will be an independent one, with no relation to other products similar to this one. Even so, we plan to implement an inner chat between the customer and the landlord. This will be an inside the System chat, designed to function within our System. To create the front-end we will use Angular for a dynamic user interface, for the back-end we will

use Java and MySQL for the database part. Microsoft Azure as a Cloud Service for Hosting. PayPal will be our to-go method for payments, even though we might consider other options to be added later.

2.2 User Characteristics

1. Tenant (Client)

Purpose: A person renting a property who interacts with the system to find, lease, and maintain their rental.

Functionalities:

- Apply for rental properties – View available listings and submit rental applications
 - Sign lease agreements – Review and digitally sign lease contracts.
 - Pay rent online and view payment history – Make payments through an integrated system and track past transactions.
 - Submit maintenance requests – Report issues (e.g., plumbing, electrical, heating) and monitor progress.
 - Receive notifications – Get reminders for rent due dates, lease renewals, and maintenance updates.
-

2. Landlord (Property Owner)

Purpose: Owns and rents out properties while managing tenants and overseeing property performance.

Functionalities:

- List properties for rent – Upload property details, set rental prices, and manage availability.
 - Approve or reject tenant applications – Review applications, conduct background checks, and finalize leases.
 - Monitor rental income and payments – Track payment status and outstanding balances.
 - Approve or deny lease renewals – Decide whether to extend or terminate tenant leases.
 - Review and manage maintenance requests – Oversee maintenance operations and approve repair costs.
-

3. Property Manager

Purpose: Manages daily operations for rental properties on behalf of landlords.

Functionalities:

- Oversee property listings and tenant applications – Manage rental postings and screen applicants.
 - Handle maintenance requests and coordinate with vendors – Assign work orders to maintenance teams and track progress.
 - Track rental income and expenses – Maintain financial records for property-related income and costs.
 - Communicate with tenants and landlords – Address tenant concerns and report to landlords.
 - Manage lease renewals and terminations – Facilitate lease extensions or legal processes for tenant removal.
-

4. Support Staff (Customer Service)

Purpose: Assists tenants, landlords, and property managers with inquiries, complaints, and troubleshooting issues.

Functionalities:

- Assist tenants with account, payment, and maintenance issues – Help tenants reset passwords, process payments, and report problems.
 - Handle tenant and landlord inquiries – Answer questions about property listings, lease terms, and rent payments.
 - Resolve disputes and complaints – Mediate issues between tenants and landlords or escalate to higher authorities.
 - Manage customer service tickets – Track and resolve technical or service-related problems.
-

5. Administrator (System Admin)

Purpose: Manages the platform's infrastructure, security, and user roles to ensure smooth system operations.

Functionalities:

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- Manages user accounts – Modifies accounts for tenants, landlords, and property managers, in case of disputes or violations.
 - Oversee system security, settings, and backups – Ensure data protection, perform system updates, and prevent security breaches.
 - Generate system reports for performance and security – Monitor system usage and generate analytics.
 - Assign roles and permissions to users – Control access to different system functionalities based on user roles.
-

6. Legal Advisor/s

Purpose: Ensures compliance with property laws, handles disputes, and advises on legal matters.

Functionalities:

- Review and approve lease agreements – Ensures rental contracts comply with legal regulations.
 - Advise landlords and property managers on legal matters – Provides guidance on evictions, tenant disputes, and property laws.
 - Draft and modify contracts – Updates lease terms to align with local regulations and prevent legal conflicts.
 - Oversee legal processes related to property disputes – Represents landlords in legal actions if necessary.
 - Review Identification documents from users- Ensures the Identification forms provided by the users are correct and gives approval for the account creation.
-

7. Finance Officer

Purpose: Manages all financial aspects of the rental business, including transactions, reports, and budgeting.

Functionalities:

- Generate financial reports – Track rental income, operational expenses, and profit margins.
 - Handle rent payment processing – Ensure smooth payment transactions, including deposits and overdue payments.
 - Track tenant deposits, refunds, and financial records – Manage security deposits and process refunds.
-

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- Assist with financial forecasting and budgeting – Plan for maintenance costs and future financial needs.

2.3 Assumptions

1. Users should access our System on Android with an Android 12 or higher or an IOS 16 or higher. Failing to comply with this assumption will make the System unresponsive to the User and not available.
2. We presume that the use of our System will be available only on Portrait Mode and not on Landscape mode.
3. The System will be supported with periodical updates, for the maintenance and bug fixes.
4. Users have two forms of payments: cash or paypal. Other forms will not be accepted by our System.

3. Requirements

3.1 Functional Requirements

Req#	Requirement	Comments	Priori ty	Date Rvwd	SME Reviewed / Approved
BR_01	The system shall allow tenants, landlords, property managers, support staff, administrators, legal advisors, and finance officers to securely log in and restrict unauthorized users.	Ensures secure access control.	1	10/03/25	Evina Tershalla
BR_02	The system shall enforce role-based access control (RBAC) so that users can only access features and data relevant to their roles for the purpose of ensuring data integrity and security.	Ensures that each user has access only to their designated areas based on their role.	1	10/03/25	Evina Tershalla
BR_03	The system shall provide Two-Factor Authentication (2FA) for all user logins.	Enhances security.	2	10/03/25	Evina Tershalla

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Req#	Requirement	Comments	Priori ty	Date Rvwd	SME Reviewed / Approved
BR_04	The system shall lock accounts after five failed login attempts and notify the user via email with recovery options.	Prevents unauthorized access.	1	10/03/25	Evina Tershalla
BR_05	The system shall be able to verify property managers before they can be assigned management rights by landlords because this ensures that only trusted and authenticated individuals can oversee rental properties on behalf of landlords.	Enhances security and prevents unauthorized individuals from managing rental listings, ensuring trust and reliability in the system.	1	10/03/25	Ema Kuka
BR_06	Administrators shall be able to suspend or deactivate user accounts that violate platform policies because this helps maintain security and compliance.	Ensures platform integrity by preventing misuse, enhancing security, and enforcing compliance with policies.	1	10/03/25	Ema Kuka
BR_07	The legal office shall be able to verify new landlord accounts by reviewing submitted ownership and identity documents before approval because this prevents fraudulent property listings and ensures authenticity.	This feature enhances platform security by ensuring that only legitimate landlords can list properties, reducing fraud and maintaining trust.	1	10/03/25	Ema Kuka
BR_08	Users can review an audit trail and activity log that tracks their actions within the system, including changes made to properties, user logins, and application status updates.	Admins can access these logs for compliance and security monitoring.	1	10/03/25	Mikael Xhangolli

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Req#	Requirement	Comments	Priorty	Date Rvwd	SME Reviewed / Approved
BR_09	Landlords shall be able to list, update, or remove rental properties with photos, descriptions, rent prices, and amenities.	Ensures updated and accurate listings.	2	10/03/25	Evina Tershalla
BR_10	Tenants shall be able to search for properties using filters (e.g., price range, location, number of rooms, amenities).	Improves search efficiency.	1	10/03/25	Evina Tershalla
BR_11	The system shall provide real-time updates on property availability.	Prevents outdated listings.	1	10/03/25	Evina Tershalla
BR_12	Landlords shall be able to request maintenance or repairs for their properties to property managers through the system because this helps maintain property quality and tenant satisfaction.	Ensures that landlords can efficiently address property maintenance issues, improving tenant experience and preserving property value	2	10/03/25	Ema Kuka
BR_13	Landlords shall be able to schedule property viewings and manage appointment slots through the system because this allows potential tenants to visit properties at convenient times, improving the rental process.	Streamlines property visits, ensuring efficient coordination between landlords and tenants.	2	10/03/25	Ema Kuka

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Req#	Requirement	Comments	Priori ty	Date Rvwd	SME Reviewed / Approved
BR_14	Property managers shall be able to schedule and manage property viewings on behalf of the landlord, if permitted because this allows landlords to delegate property management tasks while maintaining an organized scheduling process.	Ensures that property managers can handle operational aspects efficiently, supporting landlords when needed.	2	10/03/25	Ema Kuka
BR_15	Landlords shall be able to assign a property manager to oversee property-related operations and tenant interactions because this allows landlords to delegate responsibilities while maintaining oversight.	Handling day-to-day tasks improves operational efficiency.	2	10/03/25	Ema Kuka
BR_16	Tenants can search for rental properties using various filters such as price range, location, number of rooms, and amenities, allowing them to efficiently find suitable properties that meet their specific needs.	Makes choices easier and more customized.	1	10/03/25	Mikael Xhangolli
BR_17	Tenants shall be able to submit a rental application for a property by providing necessary documents and personal information because this streamlines the rental process and ensures their eligibility can be assessed.	Allows prospective tenants to apply for properties in a standardized format.	1	10/03/25	Ema Kuka

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Req#	Requirement	Comments	Priorty	Date Rvwd	SME Reviewed / Approved
BR_18	Landlords shall be able to review, approve, or reject rental applications submitted by tenants because this enables them to select qualified tenants based on relevant information.	Landlords have control over tenant selection, ensuring suitability and compliance.	1	10/03/25	Ema Kuka
BR_19	Landlords shall be able to delegate the right to review, approve, or reject rental applications to a property manager because this allows landlords to outsource tenant screening while maintaining final authority.	Provides flexibility for landlords who prefer external management of their properties.	2	10/03/25	Ema Kuka
BR_20	Property managers shall be able to review and evaluate tenant applications if given permission by the landlord because this helps streamline the rental process on behalf of the landlord.	Property managers can assist with tenant selection, but only if authorized by the landlord.	2	10/03/25	Ema Kuka
BR_21	The system shall allow tenants to view a rental history report, including past properties rented, payment records, and feedback from landlords.	Helps tenants provide credibility when applying for new rentals.	2	10/03/25	Evina Tershalla
BR_22	The system shall notify tenants when their lease application is approved or rejected because timely updates help tenants take necessary actions.	Improves communication and transparency.	2	10/03/25	Evina Tershalla

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Req#	Requirement	Comments	Priorty	Date Rvwd	SME Reviewed / Approved
BR_23	The system shall allow landlords to set custom lease terms and conditions for each rental property, including pet policies, security deposit amounts, and maintenance responsibilities. Tenants must acknowledge and agree to these terms before submitting a rental application.	Improves lease management.	1	10/03/25	Evina Tershalla
BR_24	The system shall securely process tenant payments and generate electronic receipts upon successful payment.	Prevents fraud and ensures safe processing of rent payments and generates receipts.	1	10/03/25	Evina Tershalla
BR_25	The system shall allow landlords to set automatic late fee penalties for overdue rent payments and notify tenants accordingly.	Helps automate the enforcement of rental policies and improves financial accountability.	2	10/03/25	Evina Tershalla
BR_26	Administrators shall be able to generate detailed reports on platform activity, including user logins, security logs, and system performance metrics because this helps monitor platform stability and detect anomalies.	Provides insights into platform usage, helps identify trends, and ensures early detection of irregular activities for better decision-making.	2	10/03/25	Ema Kuka
BR_27	Tenants can receive automated payment reminders regarding upcoming rent due dates, and they can access their payment history, including transaction details and payment methods.	This feature aids in tracking finances and promotes financial responsibility.	1	10/03/25	Mikael Xhangolli

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Req#	Requirement	Comments	Priorty	Date Rvwd	SME Reviewed / Approved
BR_28	The finance office shall have access to a detailed payment management interface that allows them to validate and approve tenant payments. This includes the ability to view payment details, tenant information, and payment status, and to approve or reject payments if necessary. When a payment is confirmed, the system will automatically update the payment status. Finance Officers have access to all the confirmed or non confirmed payments in their interface.	This is an interface for the finance office which will include the information about tenants payment history and also will have the power to approve payments made by tenants.	1	10/03/25	Mikael Xhangolli
BR_29	The system shall allow users (tenants, landlords, etc.) to report any security incidents (e.g., hacking attempts, data breaches) directly to the administrator, ensuring prompt action and investigation.	Helps keep the parties safe.	1	10/03/25	Evina Tershalla
BR_30	The system shall provide a platform-wide notification system for users, including tenants, landlords, property managers, and administrators, to receive alerts about upcoming system maintenance, feature updates, or critical issues that may affect platform functionality.	This ensures users are informed in advance about system changes or downtime, improving transparency and reducing disruptions.	3	10/03/25	Evina Tershalla

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Req#	Requirement	Comments	Priori ty	Date Rvwd	SME Reviewed / Approved
BR_31	The system shall include an AI-powered chatbot that provides instant responses to frequently asked questions, assists with common rental-related inquiries, and escalates complex issues to human support staff when needed.	Provides support.	1	10/03/25	Evina Tershalla
BR_32	The system shall provide tenants with a secure messaging feature to communicate directly with landlords or property managers, improving communication regarding maintenance, lease terms, and other property-related issues.	Ensures the communication between parties,	2	10/03/25	Evina Tershalla
BR_33	The system shall allow landlords to create and manage promotional offers or discounts on rental properties, such as reduced rent for the first month or referral bonuses, to attract potential tenants.	Marketing for landlords.	2	10/03/25	Evina Tershalla
BR_34	Tenants can provide feedback and rate their experience with landlords and property managers, including comments on maintenance responsiveness, property condition, and overall satisfaction.	Admins can view and manage this feedback to ensure quality assurance.	2	10/03/25	Mikael Xhangolli

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Req#	Requirement	Comments	Priori ty	Date Rvwd	SME Reviewed / Approved
BR_35	Users can select their preferred language for the interface and notifications, with options available in major regional languages. This feature enhances inclusivity for users from different demographics.	This feature promotes inclusivity and improves user experience across different demographics.	2	10/03/25	Mikael Xhangolli
BR_36	New users can complete an onboarding process that includes guided tutorials and tips on using various features when they first log in.	Users can revisit these tutorials at any time from the help section to enhance their familiarity with the platform.	2	10/03/25	Mikael Xhangolli
BR_37	The system shall include a frequently asked questions (FAQ) section where users can find quick answers to common inquiries about the rental process, payment methods, and system usage.	Provides the finance office with necessary information to validate and confirm tenant payments efficiently.	2	10/03/25	Mikael Xhangolli
BR_38	The system shall be able to analyze rental prices and provide feedback to tenants on whether a property's price is below, above, or at the market average because this helps tenants make informed financial decisions.	Enhances transparency in the rental market and ensures that tenants have insights into fair pricing before making a commitment.	2	10/03/25	Ema Kuka

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Req#	Requirement	Comments	Priori ty	Date Rvwd	SME Reviewed / Approved
BR_39	Landlords and property managers shall be able to generate detailed financial reports because tracking income and expenses is essential for managing property finances.	Ensures financial transparency and easy tracking of income and costs.	1	10/03/25	Evina Tershalla
BR_40	Support staff shall be able to track and resolve technical support requests submitted to them by tenants and landlords and approved by property manager because this ensures a smooth user experience.	Enhances user satisfaction by ensuring that technical issues are promptly identified and resolved, minimizing disruptions.	2	10/03/25	Ema Kuka
BR_41	Administrators shall be able to remove policy-violating content, including property listings and tenant reviews, after receiving reports or detecting violations because this helps maintain platform integrity and security.	Helps maintain content accuracy and trustworthiness within the platform.	1	10/03/25	Ema Kuka
BR_42	Administrators shall be able to set up and manage platform-wide announcements, such as system updates, scheduled maintenance, and new feature releases because this keeps users informed and reduces unexpected disruptions.	Keeping users updated about changes improves communication and reduces confusion.	3	10/03/25	Ema Kuka

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Req#	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
BR_43	Users can update their profile information, including contact details, preferences, and profile pictures.	Changes will be saved and reflected in their accounts, allowing for user customization and maintaining accurate information.	1	10/03/25	Mikael Xhangolli
BR_44	Legal advisors can mediate conflicts between landlords and tenants, providing suggested legal actions, mediation procedures, and potential settlements through the system.	This feature ensures and makes the software more trustworthy.	1	10/03/25	Mikael Xhangolli

3.2 Non-Functional Requirements

3.2.1 Product Requirements

Requirements which specify that the delivered product must behave in a particular way e.g. execution speed, reliability, etc.

3.2.1.1 Usability Requirements

- The system shall have an intuitive and user-friendly interface to accommodate users with varying technical expertise.
- The interface shall follow Material Design principles to ensure consistency, clarity, and ease of use.
- The system shall support responsive design, ensuring compatibility with mobile and tablet devices.
- The onboarding process for new users shall not exceed 5 minutes to facilitate quick adoption.
- Online documentation and a user manual shall be provided for assistance, ensuring learnability.
- System navigation shall require no more than three clicks to reach any key functionality.
- The map interface shall support zooming, panning and property selection within minimal lag across all devices.
- Users should be able to see a summary of the key points from review the system has made before clicking to read or see the full post.

3.2.1.2 Performance Requirements

- The system shall support a minimum of 1,000 concurrent users without performance degradation.
- 95% of transactions shall be processed within 2 seconds, ensuring smooth user experience.
- System response time for database queries shall not exceed 300ms under normal load conditions.
- The system shall handle at least 10,000 property listings and 50,000 registered users efficiently.
- Peak load performance shall be tested to ensure the system can scale dynamically.
- The map should display up to 1000 listings without noticeable lag, ensuring property markers load within 5 seconds.
- Users should be able to see a review within 5 seconds ensuring no lag or delay.

3.2.1.3 Availability & Security

- The system shall maintain 99.9% uptime, ensuring that the platform is accessible 24/7 for property searches, bookings, payments, and other activities and also *it* must be able to handle peak traffic periods, such as weekends, holidays, and seasonal spikes, without performance degradation.
- The system must support at least 500 concurrent users for booking, payment, and search activities, without delays or system lag.
- The system must automatically update property availability when a property is booked or its price changes, ensuring that users see real-time updates.
- The system should allow users to set alerts for specific property types or location preferences, sending notifications for new listings as they become available.
- Users should receive real-time notifications via email, SMS, or mobile push notifications for property updates, such as booking confirmations, cancellations.
- If something goes wrong and the booking process is interrupted like during a network failure, system crash, or power outage users will be able to pick up right where they left off without losing any of their progress. All details will remain intact, except for sensitive information like credit card details, which are never saved for security reasons.
- The system must use two-factor authentication (2FA) for users when logging in. This means users will need to enter both their password and a one-time passcode (OTP) sent via email or -SMS.
- Passwords must be securely stored using strong encryption methods. Passwords must be at least 8 characters long, not contain personal information (such as name or surname), must contain a capital letter and must allow special characters.
- The system must limit login attempts to 5 failed tries within 30 minutes. After this, the system should temporarily lock the account for a predetermined period. Email

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notifications or phone messages should be sent to the user with the failed attempts and a link to regain access.

- The system must track user activity and extend the session only if there is continuous interaction. After 30 minutes of inactivity, users will be automatically logged out and prompted to re authenticate. A warning message should appear 5 minutes before logout, allowing users to stay logged in if needed.
- The system must employ automated spam filters to detect and block inappropriate or irrelevant content submitted in reviews. Any review flagged by the system or users must be reviewed by a moderator within 24 hours to ensure compliance with content standards and guidelines.
- The system must ensure that sensitive data (user payment details, personal information) is only accessible to authorized personnel with the correct role permissions.
- All sensitive data, including payment information and user details, must be encrypted both in transit and at rest to protect it from unauthorized access.
- The system must log the IP address of users during login attempts and other sensitive actions (password changes, account settings modifications).

3.2.1.5 Reliability and Fault Tolerance

The system shall be designed to ensure **high availability, fault tolerance, and reliability**, minimizing service disruptions and data loss.

Reliability Measures:

- **Uptime Guarantee:** The system shall maintain **99.9% uptime**, ensuring uninterrupted access for users.
- **Redundant Infrastructure:** Critical components such as databases, servers, and storage shall be **replicated** across multiple locations to prevent data loss and downtime.
- **Data Integrity Checks:** The system shall implement periodic **data consistency checks** and **automatic error correction mechanisms** to prevent corruption.

Fault Tolerance Mechanisms:

- **Automatic Failover:** In case of server failure, traffic shall be redirected to **backup servers** to ensure continuous operation.
- **Graceful Degradation:** If certain features (e.g., payment processing) become unavailable, the system shall ensure that core functionalities (e.g., property browsing, messaging) remain operational.

Error Detection and Recovery:

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- The system shall **log and classify errors** based on severity and trigger automated responses for minor issues.
- For **critical failures**, an alert shall be sent to system administrators for immediate intervention.
- **Load Balancing**: The system shall distribute traffic evenly across multiple servers to prevent overloading and maintain response times.

Testing for Reliability:

- The system shall undergo **stress testing, failover testing, and disaster recovery testing** before deployment.
- It shall be capable of handling **peak traffic loads** without performance degradation.

3.2.1.6 System Maintenance

The system shall follow a structured **maintenance strategy** to ensure security, performance, and feature updates without disrupting user experience.

Maintenance Types:

1. Scheduled Maintenance

- Updates, security patches, and performance optimizations shall be applied **outside peak hours** to minimize downtime.
- Users shall receive **advance notifications** via email, SMS, and in-app messages.
- A **maintenance mode** shall be activated, displaying a message to users during system updates.

2. Unscheduled Maintenance (Emergency Fixes)

- In case of **security threats, major system failures, or critical bugs**, emergency patches shall be deployed **immediately**.
- Users shall be notified about the estimated resolution time and impact on functionality.

3. Automated Monitoring and Self-Healing

- The system shall include **real-time monitoring** to detect performance issues, slow queries, or high server loads.
- Automated scripts shall **restart failed services** without manual intervention.

4. Backup and Disaster Recovery

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- **Daily automatic backups** of databases and configurations shall be performed.
- A **disaster recovery plan** shall ensure that the system can be restored within **30 minutes** in case of data loss.
- Backups shall be stored in **multiple geographically distributed data centers** for redundancy.

5. Software Updates and Version Control

- The system shall follow a **CI/CD (Continuous Integration/Continuous Deployment)** approach for smooth rollouts.
- A **rollback mechanism** shall be in place to revert updates if critical issues arise.

System Maintenance Reports:

- Detailed logs of maintenance activities shall be stored for **compliance and auditing purposes**.
- Performance reports shall be generated **monthly** to track system efficiency and identify areas for improvement.

3.2.1.7 Logging

- The system must log all login attempts, including successful and failed attempts, with details like timestamp, user ID, IP address, device type, and location. Failed attempts must also include the reason for failure (incorrect password).
- If an account is locked due to multiple failed login attempts, the system must log the event with details such as user ID, number of failed attempts, IP address, and timestamp.
- The system must log all user session activities, including the start time, end time, and actions performed during the session. It should also log instances where users are logged out due to inactivity or manual action.
- Whenever a review is flagged by the spam filter, the system must log the event, including review content, reason for flagging, and the timestamp.
- Any changes made to user roles (assigning admin privileges or changing user permissions) must be logged, including who performed the action, what change was made, and the timestamp.
- Any changes to access control settings (permission modifications, new role creations) should be logged, including who made the change, what was changed, and when.

3.2.2 Organizational Requirements

- **Code Review and QA Process:** The system must undergo both automated and manual testing to verify its functionality and quality. Automated tests should cover critical workflows and edge cases, while manual testing should focus on scenarios that require human judgment. Peer reviews of the code should be conducted to ensure adherence to coding standards, identify potential bugs, and ensure the system operates as expected before deployment.
- **Regular Maintenance Schedule:** A regular maintenance schedule should be established to perform necessary updates, such as security patches, bug fixes, and feature updates. Prior communication with users is essential to minimize the impact of downtime and ensure they are aware of when to expect disruptions or changes.
- **Data Backup and Disaster Recovery:** Critical data, including user information, listings, and payment records, should be backed up daily. A robust disaster recovery plan should be in place to ensure business continuity in case of data loss or system failure. The plan should outline recovery procedures and timelines for restoring services.
- **Compliance with Internal Security Policies:** The system should comply with internal security policies, including secure user authentication methods, access control mechanisms, and the protection of sensitive data. This ensures the system is safeguarded against potential security threats and adheres to privacy and regulatory requirements.
- **System Documentation:** Detailed documentation of the system's architecture, database design, and APIs should be created and regularly updated. This documentation will serve as a reference for senior developers and help ensure the system is scalable and maintainable over time. It should be clear, organized, and comprehensive to facilitate future modifications and troubleshooting.
- **User roles and permissions:** The application should have predefined roles for tenants, landlords, property managers and administrators each with specific permissions.
- **Customer support and response time:** Support staff must respond to user inquiries within 24 hours.

3.2.3 External Requirements

3.2.3.3 Integration with External Systems

1. Payment Gateways

- **PayPal is supported in Albania**, but not all users have it. Therefore, the system shall also integrate with:
- **Bank Transfers** (Raiffeisen, Credins, BKT, OTP, Intesa Sanpaolo) via local banking APIs.
- **E-Wallets** (Easypay, Paysera) for users preferring digital payments.
- **Cash-on-Delivery (CoD):** Many Albanians still prefer cash transactions. The system shall generate **QR-code-based receipts** for easy verification.

2. Hosting & Compliance with Data Protection Laws

- **GDPR Compliance:** Since Albania is a candidate for **EU accession**, the system must ensure that data processing follows **European GDPR standards**. (EU general data protection regulations)

3. Property Listing Verification via Government Services

- The system shall integrate with **Albania's Property Registration Office (ZRPP)** to verify property ownership before allowing landlords to list properties.
- Integration with **e-Albania** for digital identity verification shall ensure that landlords and tenants use **real verified credentials**.

4. Communication & Notifications

- SMS notifications should use **local providers** (e.g., Vodafone, ALBtelecom, One Albania) to ensure cost-effective and reliable messaging but also offer support for international numbers
- **Multi-language support:** The system shall offer **Albanian (default)** and **English**, as many users (e.g., expatriates, foreign renters) may prefer English.

5. Legal Compliance & Identity Verification

- **Tenant Contracts Must Follow Albanian Law**
- The system shall ensure lease agreements comply with **Law No. 7850/1994** (Albanian Civil Code) regarding rental contracts.
- The system shall provide **contract templates** with terms aligned with Albanian rental laws.
- **Identity Verification** via National ID (Integrating with e-Albania) to prevent fraud.

External Requirements

- **Social Media Integration** -The platform should allow users to share listings or bookings on popular social media platforms such as Facebook, Instagram, or Twitter, using seamless integration through their APIs.
- **External Service Integration**- The system should integrate with external communication platforms (e.g., email services, SMS providers) to send notifications, confirmations, and updates to users. APIs like SendGrid or Twilio can be used for this integration.
- **Consumer Protection Laws** -The platform must ensure that booking policies, cancellation fees, and refund processes comply with consumer protection laws in different regions.

Property Rental Management System Requirements Specification

The system should allow for regional configuration to adhere to specific local regulations.

- Two-Factor Authentication (2FA)-The platform should support Two-Factor Authentication (2FA) for users accessing sensitive features, such as property management, payment processing, or personal account information. This provides an added layer of security.
- Multi-Language Support-The platform should offer multi-language support, enabling users from various regions to interact with the system in their preferred language. This should be configurable based on the user's region or preference.