**Final Report - RentAPlace**

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# 1. Problem Definition and Objectives

Problem Statement: RentAPlace is an online platform for renting homes for short and long-term durations. The application serves two types of users: regular users (renters) and owners. Users can search for properties, while owners can manage their listings.

Objectives:  
• Provide authentication and authorization for Owners and Renters.  
• Allow property registration, image uploads, and management.  
• Enable renters to search, filter, and book properties.  
• Provide messaging between renter and owner.  
• Include notifications for reservations and updates.

# 2. Frontend & Backend Architecture

Frontend: Angular 20  
Backend: ASP.NET Core Web API  
Database: SQL Server

System Design Diagram: [Insert UML/Architecture Diagram here]

# 3. Component Breakdown & API Design

Frontend Components:  
• Authentication (Register/Login)  
• Property Management (Owner Dashboard)  
• Property Listing (Search, Filter, Details)  
• Reservations (Booking, Owner Approval)  
• Messaging (Renter ↔ Owner)

API Design:  
• AuthController: Register, Login  
• PropertiesController: CRUD + Image Upload  
• ReservationsController: Book, Approve/Reject  
• MessagesController: Send, Conversation

# 4. Database Design & Storage Optimization

|  |
| --- |
| Entities: • Users(UserId, Name, Email, PasswordHash, Role) • Properties(PropertyId, OwnerId, Title, Description, ...) • PropertyImages(ImageId, PropertyId, ImageUrl) • Reservations(ReservationId, PropertyId, UserId, Status, Dates) • Messages(MessageId, SenderId, ReceiverId, PropertyId, MessageText) |

Optimization:  
• Indexes on foreign keys for fast joins.  
• Lazy loading disabled, using eager loading via Include().

# 5. Demonstration & Conclusion

The project demonstrates a complete property rental platform with Owner and Renter workflows.  
Key Features:  
• Role-based authentication  
• Property CRUD with image uploads  
• Reservation workflow with approval system  
• Real-time messaging