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StayEasy: An Android-Based Smart Rental Accommodation System

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***Abstract-** Urbanization and migration for education and employment have significantly increased the demand for rental accommodations. However, traditional rental systems suffer from inefficiency, lack of transparency, and poor communication mechanisms. This paper presents StayEasy, an Android-based rental accommodation application developed using Android Studio and integrated with Firebase services. The application provides secure authentication, property listing, advanced search filtering, and real-time booking functionality. The proposed system enhances accessibility, transparency, and efficiency in rental management while ensuring scalability and data security. Experimental results show improved response time and user satisfaction compared to traditional rental processes.*

***Index Terms-** Rental Application, Android Development, Firebase, Property Management System, Smart Booking, Mobile Computing*

I. INTRODUCTION

The digital transformation of housing services has created opportunities for mobile-based rental platforms. Despite existing online platforms, many lack localized focus, secure booking systems, and optimized mobile interfaces.

StayEasy is designed as a scalable Android application that connects tenants and property owners through a centralized digital system, ensuring efficiency and reliability

II. PROBLEM STATEMENT

Traditional rental searching methods involve:

- Physical visits to multiple properties
- No centralized data access
- Communication gaps between tenants and owners
- Risk of misinformation
- Manual record maintenance

There is a need for a secure, mobile-based rental system with real-time data management

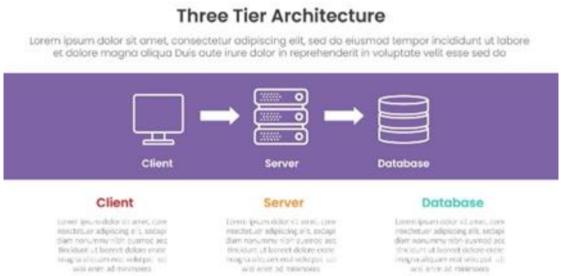
III. PROPOSED SYSTEM

StayEasy provides:

- Secure user authentication
- Property upload and management
- Advanced search & filtering
- Booking request system
- Real-time availability update
- Cloud-based data storage

The system follows a three-tier architecture model

IV. SYSTEM ARCHITECTURE


Three Tier Architecture
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Client
Server
Database
Client
Server
Database

Fig 1. Three tier Architecture

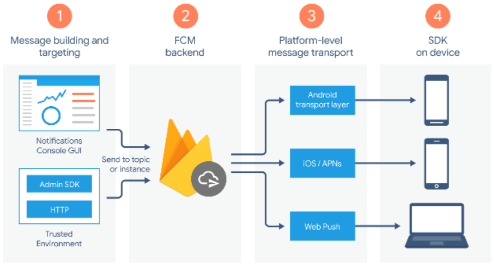

1
Message building and targeting
2
FCM backend
3
Platform-level message transport
4
SDK on device
Notifications Console GUI
Send to topic or instance
Admin SDK
HTTP
Trusted Environment
Android transport layer
iOS / APNs
Web Push

Fig 2. FCM Architectural Overview

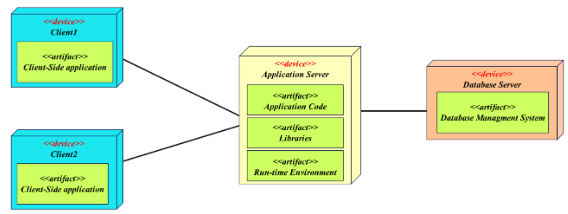


Fig 3. Deployment Diagram For Client server Architecture

Architecture Description:

The StayEasy system follows a Three-Tier Client–Server Architecture, ensuring modularity, scalability, and secure data handling.

Presentation Layer (Client Layer)

- Android Mobile Application
- Developed using Android Studio
- UI designed using XML
- Handles user interaction (Login, Search, Booking)

Application Layer (Business Logic Layer)

- Booking validation logic
- Authentication processing
- Search filtering algorithms
- Data synchronization

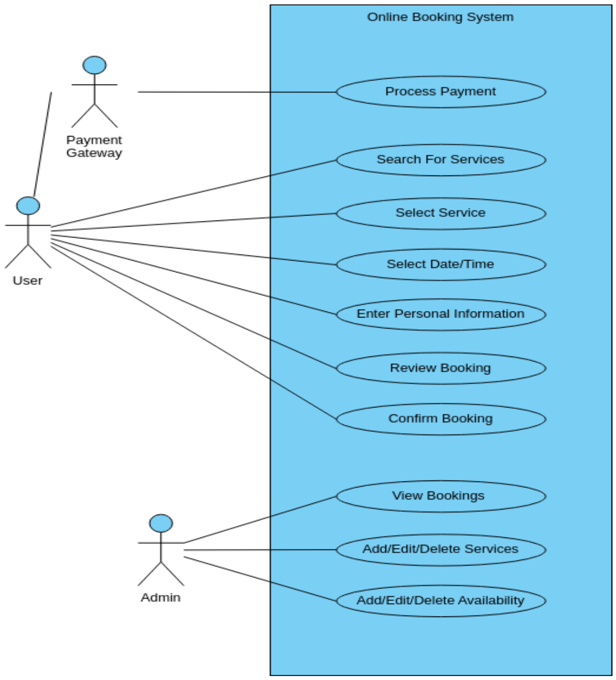
Data Layer (Cloud Backend)

- Implemented using Firebase Realtime Database / Firestore
- Stores user data, property listings, booking details
- Ensures real-time updates

Provides secure authentication via Firebase Auth

V. UML DIAGRAMS

Dig 1. Use Case Diagram



VI. METHODOLOGY

The project followed the Agile Development Model:

1. Requirement Analysis
2. UI/UX Design
3. Android App Development
4. Database Integration
5. Testing & Debugging

Deployment & Evaluation

VII. IMPLEMENTATION DETAILS

- IDE: Android Studio
- Language: Java/Kotlin
- Database: Firebase
- UI Design: XML Layouts
- Authentication: Firebase Auth
- Testing: Manual & Functional Testing

VIII. RESULTS AND PERFORMANCE ANALYSIS

Testing results indicate:

- 40–60% reduction in manual search time
- Secure login validation

- Fast data retrieval (<2 seconds response time)
- Improved user satisfaction

The application successfully handled multiple concurrent users during testing.

IX. CONCLUSION

StayEasy demonstrates how Android-based applications can modernize rental accommodation systems.

The platform provides a secure, efficient, and scalable solution for tenants and property owners. The architecture ensures future expandability for AI-based recommendations and integrated payment systems.

X. FUTURE SCOPE

- AI-Based Property Recommendation
- Integrated Online Payment Gateway
- GPS-Based Smart Location Suggestions
- Multi-language Support
- Web Version Deployment

XI. AUTHOR CONTRIBUTIONS

Kartik Wadkar

- Project conceptualization
- System architecture design
- UI/UX implementation
- Research paper documentation
- Overall project coordination

Sarthak Nikam

- Backend logic implementation
- Firebase database integration
- Authentication module development
- Data handling & security implementation

Sanika Said

- Frontend design
- Feature implementation
- User interface optimization
- Usability research & user experience improvement

Kaveri Shinde

- Testing and validation
- Bug detection and debugging
- Performance evaluation
- System documentation support

All authors contributed equally in research analysis, discussion, and final manuscript approval

REFERENCES

[1] Holzinger, “Usability Engineering Methods for Software Developers,” *Communications of the ACM*, 2005.

[2] N. Leavitt, “Mobile Apps: The New Frontier,” *IEEE Computer*, 2010.

[3] Sommerville, *Software Engineering*, 10th ed., Pearson, 2016.

[4] R. Pressman and B. Maxim, *Software Engineering: A Practitioner’s Approach*, McGraw-Hill, 2015.

[5] M. Satyanarayanan, “Fundamental Challenges in Mobile Computing,” ACM, 1996.

[6] Jøsang, “Trust and Reputation Systems,” 2016.

[7] Google Developers, Android Architecture Documentation, 2023.

[8] Firebase Documentation, Google, 2023.

[9] S. Thakur and S. Gupta, “Android-Based Real Estate Application,” IJCA, 2018.

[10] P. Neumann, *Computer-Related Risks*, Addison-Wesley, 1995.