International Journal of Scientific Research and Engineering Development-– Volume 9 Issue 2, Mar-Apr 2026
Available at www.ijsred.com

RESEARCH ARTICLE OPEN ACCESS

EduStay: A Centralized Digital Platform for Student Housing and Nearby Facilities

Siddhi Salokhe[1], Rahi Patil[2], Arya Patil[3], Arpita Patil[4], Mrs. Archana Jadhav[5]

[1] (Computer Engineering, Dr. D. Y. Patil Polytechnic, Kolhapur, Maharashtra , siddhisalokhe18@gmail.com)

[2] (Computer Engineering, Dr. D. Y. Patil Polytechnic, Kolhapur, Maharashtra, rahi9p218@gmail.com)

[3] (Computer Engineering, Dr. D. Y. Patil Polytechnic, Kolhapur, Maharashtra, aryap202006@gmail.com)

[4] (Computer Engineering, Dr. D. Y. Patil Polytechnic, Kolhapur, Maharashtra, arpitapatil1811@gmail.com)

[5] (Computer Engineering, Dr. D.Y.Patil Polytechnic, Kolhapur, Maharashtra, archana.jadhav1719nba@gmail.com)

ABSTRACT

Students migrating to new cities for higher education frequently face challenges in finding safe, affordable, and reliable accommodation near their institutions. Traditional methods such as broker-based searching, physical visits, and personal references are inefficient, time-consuming, and often lack transparency. Additionally, students struggle with unverified information and limited awareness of nearby essential facilities required for daily living.

To address these challenges, this paper proposes EduStay, a centralized digital platform designed to simplify the accommodation search process. The system provides verified listings of rooms, hostels, and mess facilities, along with detailed information about nearby amenities such as banks, medical stores, and transportation services. The platform is implemented using an Android-based frontend, a Flask-based backend, and a MySQL database to ensure efficient data handling and seamless user interaction.

EduStay integrates multiple functional modules, including user management, property listing, booking system, facilities management, and administrative control. The system enhances transparency, reduces dependency on intermediaries, and improves decision-making by providing reliable and structured information. The results indicate that the proposed system significantly reduces search time, improves data accuracy, and enhances overall user experience, making it a practical and scalable solution for student accommodation management.

KEYWORDS

Student Accommodation, Hostel Management System, Mobile Application, Digital Housing Platform, Booking System, Nearby Facilities, Centralized System

I. INTRODUCTION

In recent years, the number of students migrating to different cities for higher education has increased significantly. This trend has created a growing demand for safe, affordable, and convenient accommodation near educational institutions. However, finding suitable housing remains a major challenge for students, especially those who are unfamiliar with the new city and its surroundings.

Traditional methods of searching for accommodation primarily depend on brokers, personal references, and physical visits to multiple locations. These approaches are not only time-consuming but also inefficient and unreliable. Students often face issues such as high brokerage costs, misleading information, and lack of transparency in pricing and facilities. Moreover, the absence of verified data increases the risk of choosing unsafe or unsuitable living conditions.

Another important challenge faced by students is the lack of information about nearby essential facilities such as banks, medical stores, transportation services, and food options. Access to such facilities plays a crucial role in daily life, yet traditional systems do not provide integrated information, forcing students to rely on guesswork or local inquiries.

With the advancement of mobile technology and digital platforms, there is a strong need to transform the traditional accommodation search process into a more efficient, transparent, and user-friendly system. A centralized digital solution can help in organizing accommodation data, verifying listings, and providing additional information required for better decision-making.

EduStay is proposed as a comprehensive solution to address these challenges. It is a mobile-based platform that offers verified accommodation listings along with detailed information about nearby facilities. The system aims to reduce dependency on brokers, minimize time and effort, and enhance transparency in the accommodation selection process.

By integrating multiple features into a single platform, EduStay not only simplifies the search process but also improves the overall experience for students relocating to new cities. The system is designed to be scalable, reliable, and adaptable to future enhancements, making it a practical solution for modern student housing needs.

II. LITERATURE SURVEY

With the continuous growth in higher education opportunities, a large number of students migrate to different cities every year. This increasing mobility has created a strong demand for efficient and reliable accommodation systems. However, traditional methods of searching for student housing—such as relying on brokers, manual inquiries, and physical visits—are time-consuming, costly, and often lack transparency. To overcome these limitations, researchers and developers have proposed various digital solutions aimed at automating hostel management and improving access to accommodation-related information.

A recent study by R. Patil et al. [1] introduces "EduStay: A Digital Platform for Student Housing and Nearby Facilities," which focuses on providing a centralized solution for accommodation search and management. The system integrates multiple modules including user authentication, property listing, booking management, and nearby facility tracking. Developed using Android, Flask, and MySQL technologies, the platform emphasizes transparency, ease of access, and reduced dependency on intermediaries. The study highlights the importance of combining accommodation services with nearby facility information, making it more practical and user-oriented. This work serves as a direct foundation for the proposed system.

Earlier research by T. A. Adeleke et al. [2] presented the design and implementation of a computerized hostel management system aimed at replacing manual record-keeping processes. Their system focuses on improving data accuracy, reducing paperwork, and enhancing administrative efficiency. The use of database management systems ensures better organization and retrieval of student and accommodation records.

The HOME project discussed by J. Smith et al. [3] explores the development of a digital infrastructure for student accommodation across European university cities. This study emphasizes the need for standardized housing services, improved transparency, and accessibility for international students. It also introduces the concept of quality assurance in accommodation services, which plays a key role in building user trust.

M. N. Awal and R. Islam [4] proposed an e-based hostel management system that automates various administrative tasks such as room allocation, student registration, and record maintenance. The system reduces manual workload and improves operational efficiency by digitizing traditional processes.

A web-based residential housing management system developed by A. K. Rai and D. Singh [5] focuses on providing an online platform for managing housing operations. Their system demonstrates how web technologies can be used to simplify data handling, reduce redundancy, and enhance system reliability.

K. Ahmad et al. [6] introduced an innovative approach by implementing blockchain technology in hostel booking systems. Their research highlights the benefits of decentralized systems in ensuring data security, transparency, and tamper-proof transactions. This approach addresses trust-related issues in accommodation management.

D. Patel and R. Kumar [7] developed a centralized portal for managing student accommodation and hostel services. Their system provides online access to housing data, enabling users to view available options and administrators to manage records efficiently.

L. Zhao et al. [8] designed a web-based dormitory management system that automates student data management, room allocation, and maintenance processes. The system improves workflow efficiency and ensures better coordination between students and administrators.

S. Ahmad [9] proposed an online hostel reservation system that allows users to search and book accommodation through a digital platform. The system includes features such as pricing categories, user interaction, and basic filtering options, enhancing user convenience.

P. Kumar and T. Verma [10] developed a hostel management system that focuses on automating accommodation-related tasks such as registration, allocation, and record management. The system reduces human errors and improves data consistency.

R. Singh and A. Gupta [11] introduced an Android-based hostel management application that enhances accessibility by allowing users to interact with the system through mobile devices. The study highlights the importance of mobile platforms in improving user experience.

S. Roy and M. Banerjee [12] proposed a web-based hostel management system that manages various operations such as room allocation, billing, complaints, and notifications. The system improves communication between users and administrators while reducing manual workload.

J. Doe and A. Khan [13] developed a web-based platform for hostel management that provides real-time data access and reporting features. The system supports better decision-making and efficient data handling.

N. Patel [14] focused on simplifying hostel management through an online system that automates room allocation and maintains structured records. The study emphasizes ease of use and reduction in system complexity.

A. O. Johnson and M. T. Olatunde [15] highlighted the growing need for digital solutions in managing student accommodation due to increasing demand. Their research emphasizes the limitations of manual systems and supports the adoption of computerized approaches.

From the above literature, it is evident that most existing systems focus primarily on automating hostel management and improving administrative efficiency. While these systems provide significant improvements over traditional methods, they often lack integration with nearby facility information and user-centric mobile accessibility. The EduStay system addresses this gap by offering a centralized platform that not only provides verified accommodation listings but also includes essential nearby facility details, thereby enhancing usability, transparency, and overall user experience.

III. PROBLEM STATEMENT

Students relocating to new cities for higher education face significant challenges in finding suitable accommodation near their institutions. The existing accommodation search process is largely manual and unorganized, which makes it inefficient and unreliable. Most students depend on brokers, personal contacts, or physical visits to identify available rooms, hostels, or paying guest facilities. This approach not only consumes considerable time and effort but also increases the overall cost due to brokerage charges.

One of the major issues in the current system is the lack of verified and structured information. Students often receive incomplete or misleading details about accommodation facilities, pricing, and availability. This creates confusion and increases the risk of selecting unsuitable or unsafe housing options. Additionally, there is no centralized platform where students can compare multiple options and make informed decisions.

Another critical problem is the absence of information about nearby essential facilities such as banks, medical stores, transportation services, and food outlets. These facilities are important for daily living, but students are required to search for them separately, which further complicates the process.

Furthermore, the existing system lacks transparency, accessibility, and efficiency. The manual nature of the process makes it difficult to manage data, track availability, and ensure consistency. This leads to delays, errors, and inconvenience for both students and accommodation providers.

Therefore, there is a need for a centralized digital solution that provides verified accommodation listings along with nearby facility information in a structured and accessible manner. The proposed EduStay system aims to address these issues by offering a reliable, transparent, and user-friendly platform that simplifies the accommodation search process and improves the overall experience for students.

IV. PROPOSED SYSTEM

The proposed system, **EduStay**, is designed as a centralized digital platform to address the limitations of traditional student accommodation search methods. The system aims to provide a reliable, efficient, and user-friendly solution that simplifies the process of finding suitable housing near educational institutions.

EduStay is developed as a mobile-based application that enables students to access verified accommodation information anytime and anywhere. The platform integrates multiple functionalities into a single system, allowing users to search, view, and select accommodation options based on their preferences. By digitalizing the entire process, the

system reduces dependency on brokers and minimizes manual effort.

The proposed system provides detailed information about rooms, hostels, and mess facilities, including pricing, location, and available amenities. In addition to accommodation details, the system also offers information about nearby essential facilities such as banks, medical stores, transportation services, and other points of interest. This integrated approach helps students make better and faster decisions.

EduStay ensures data reliability by maintaining verified listings, which improves trust and transparency in the system. The platform is designed to be accessible through mobile devices, making it convenient for users to interact with the system without geographical limitations. The centralized database allows efficient storage and retrieval of information, ensuring consistency and accuracy of data.

Compared to existing systems, the proposed solution significantly reduces time consumption, improves accessibility, and enhances user convenience. It also provides better transparency by offering structured and verified data, which is not available in traditional methods.

Overall, EduStay acts as a comprehensive solution that bridges the gap between students and accommodation providers by offering a centralized, digital, and efficient platform for managing student housing and related services.

V. METHODOLOGY

The development of the EduStay system follows a structured and systematic methodology to ensure efficiency, reliability, scalability, and ease of use. The methodology focuses on designing a centralized digital solution that integrates accommodation management with nearby facility information. A client–server architecture is adopted to enable smooth interaction between users and the system while ensuring secure data handling and efficient processing.

The system is designed to replace traditional accommodation search methods with a modern, technology-driven approach that minimizes manual effort and enhances transparency. The methodology includes system architecture design, modular development, workflow definition, API integration, database design, and testing.

A. System Architecture

EduStay is developed using a three-tier architecture model, which separates the system into frontend, backend, and database layers. This layered approach improves system maintainability, scalability, and performance.

- Frontend (Client Side):
  The frontend is developed as an Android application using Java. It provides an interactive, responsive, and user-friendly interface that allows users to access various system functionalities such as registration, login, browsing properties, viewing details, and sending booking requests. The design focuses on simplicity and ease of navigation to enhance user experience, especially for first-time users.

- Backend (Server Side):
  The backend is implemented using Python with the Flask framework. It is responsible for handling business logic, processing user requests, managing API calls, and ensuring secure communication between the frontend and the database. The backend also handles location-based processing to retrieve nearby facility information based on property location. This ensures that users receive accurate and relevant data related to surrounding services.

- Database Layer:
  A MySQL database is used to store structured data including user details, property listings, booking records, facilities, and transaction data. The database is designed with proper schema and relationships to maintain data integrity, avoid redundancy, and enable efficient data retrieval. The use of relational database management ensures consistency and reliability.

B. System Functional Design

The EduStay system is divided into multiple functional modules, each responsible for a specific task. This modular approach improves system organization, maintainability, and scalability.

- User Management Module: This module manages user registration, login, and authentication. It supports role-based access control, allowing different functionalities for students, providers, and administrators. It ensures secure access and protects user data.
- Property Management Module: This module allows accommodation providers to add, update, and manage property details such as location, rent, description, and availability. It ensures that all property data is properly structured and accessible to users.
- Facilities Management Module: This module stores and displays amenities associated with each property, such as Wi-Fi, parking, water supply, and security. It helps users filter and select accommodations based on their preferences.
- Nearby Location Module: This module provides detailed information about nearby essential services such as banks, hospitals, medical stores, restaurants, and transportation facilities. It uses location-based data to identify and display nearby points of interest. This feature enhances user decision-making by giving a complete understanding of the surrounding environment and reduces the need for external searches.
- Booking Module: This module allows students to send booking requests for selected properties. It also enables providers to view, accept, or reject booking requests. The system maintains booking records and updates status dynamically.
- Admin Module: The admin module provides full control over the system. It allows administrators to manage users, approve or reject property listings, and monitor system activities. This ensures proper functioning and system security.

C. Workflow of the System

The workflow of EduStay is designed to provide a logical and efficient sequence of operations for users:

1. Users register and create an account in the system.
2. Users log in using their credentials.
3. Students browse available accommodation options based on their requirements.
4. Users view detailed property information along with facilities and nearby location data.
5. Students select suitable accommodation and send booking requests.
6. Providers review booking requests and take appropriate actions (accept/reject).
7. The system updates booking status and stores all related information in the database.

This structured workflow ensures smooth interaction between system components and improves user experience.

D. API Development and Integration

EduStay uses RESTful APIs developed using Flask to enable communication between the frontend and backend. APIs act as an interface that allows data exchange and system interaction.

The APIs handle various operations including:

- User authentication and validation
- Property data retrieval and updates
- Booking request processing
- Facilities data access
- Retrieval of nearby location and facility information

API testing is conducted using tools such as Postman to verify correctness, response time, and error handling. Proper API integration ensures smooth system performance and reliability.

E. Database Design and Management

The database is designed using MySQL Workbench following normalization principles to eliminate redundancy and ensure efficient data storage. It includes multiple tables such as:

- Users
- Properties
- Bookings
- Facilities
- Transactions

Primary keys and foreign keys are used to establish relationships between tables. Constraints are applied to maintain data integrity. The database design supports fast data retrieval and ensures consistency across the system.

F. System Integration

After developing individual modules, the system components are integrated to form a complete working application. The Android frontend interacts with the Flask backend through APIs, and the backend communicates with the MySQL database.

This integration ensures smooth data flow, proper synchronization, and efficient system functionality. The combined operation of all modules provides a seamless user experience.

G. Testing and Validation

The EduStay system undergoes multiple levels of testing to ensure performance, reliability, and correctness:

- Functional Testing: Ensures each module works as expected
- API Testing: Verifies request-response communication
- User Interface Testing: Ensures usability and proper design
- Error Handling Testing: Checks system behavior under invalid inputs

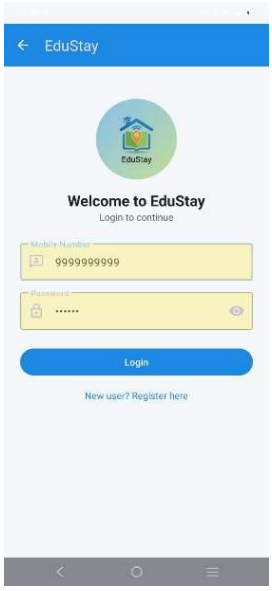
The system is validated based on accuracy, performance, and user interaction to confirm that it meets the defined objectives and provides a reliable solution.

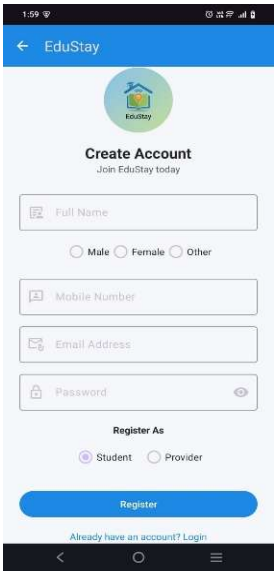
I. RESULTS AND DISCUSSION

The EduStay system was successfully developed and tested to evaluate its functionality, usability, and performance. The system integrates multiple modules into a centralized mobile platform, enabling efficient management of student accommodation and related services. The results demonstrate that the system provides a structured, reliable, and user-friendly solution compared to traditional methods.

A. User Authentication and Access Control

The system provides a secure authentication mechanism for users. Students, providers, and administrators can register and log in using valid credentials. Role-based access control ensures that each user can access only the relevant features of the system.





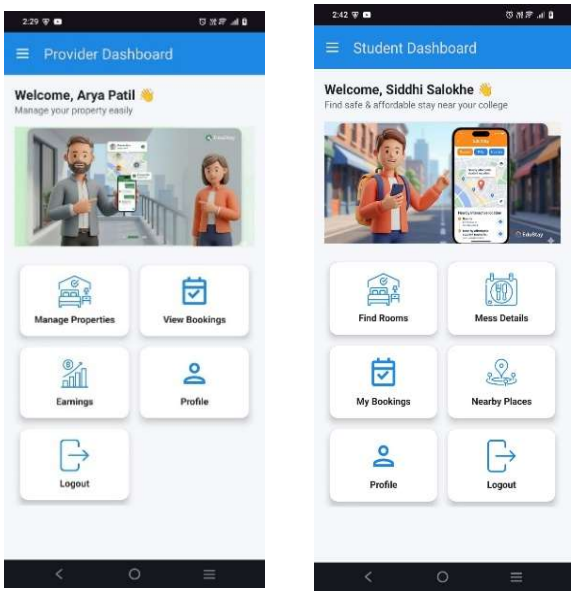


Fig . A

B. Property Listing and Viewing

The application allows users to browse available properties in a structured format. Each property includes details such as title, rent, location, and description. The use of a clean interface improves readability and navigation.

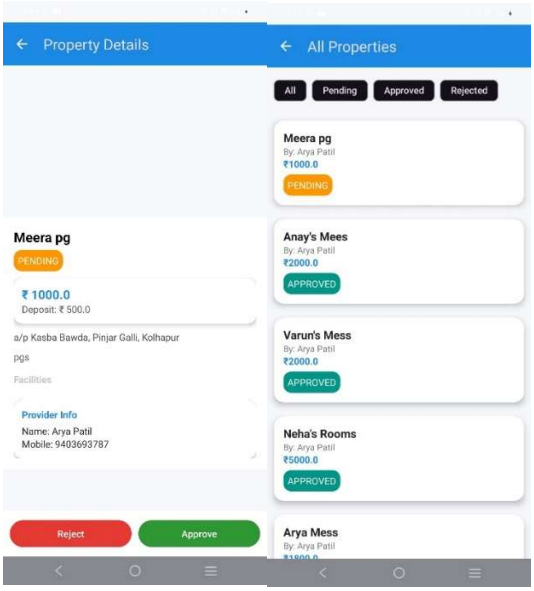


Fig. B

C. Property Management by Providers

Providers can add, update, and manage property details through the application. Features such as property status (Pending, Approved, Rejected) and delete functionality improve control and usability for providers.

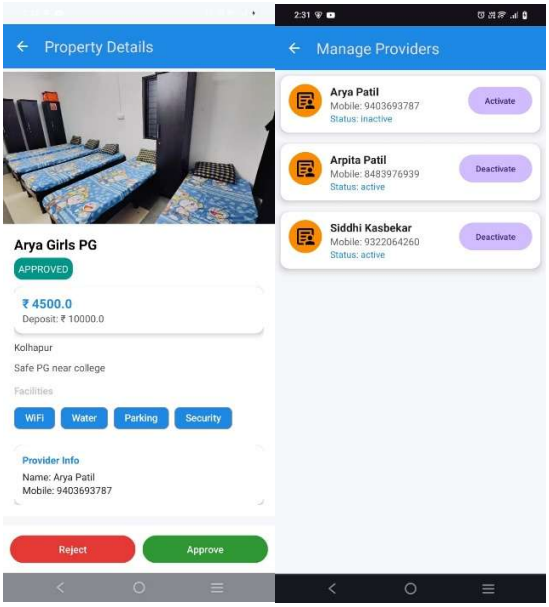
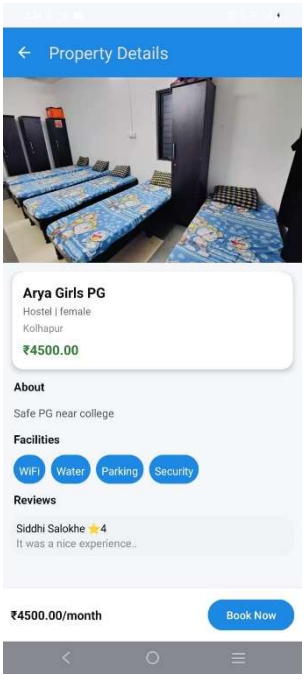


Fig. C

D. Image and Facilities Representation

The system supports uploading multiple images for each property, improving visual understanding. Additionally,

facilities such as Wi-Fi, parking, and security are displayed, helping users make better decisions.



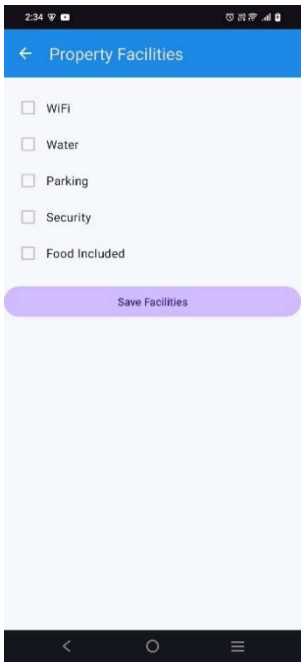


Fig. D

E. Booking System Functionality

Students can send booking requests for selected properties. The system stores booking details and provides confirmation messages. This reduces manual communication and simplifies the process.

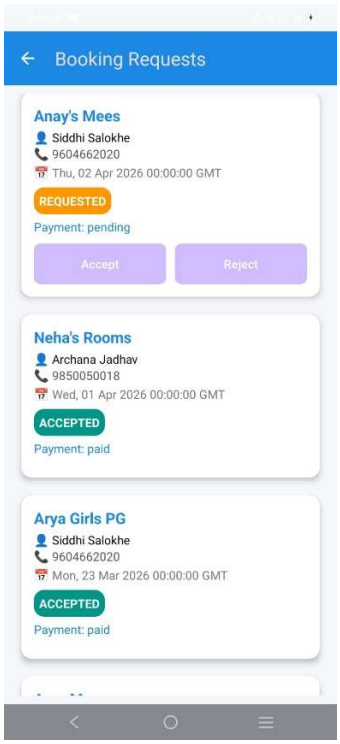


Fig. E

F. Booking Management by Providers

Providers can view booking requests and take actions such as accept or reject. The system updates booking status dynamically and ensures controlled sharing of user information.

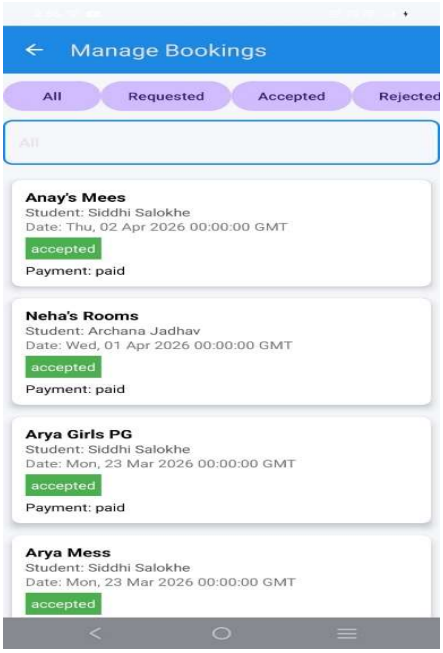
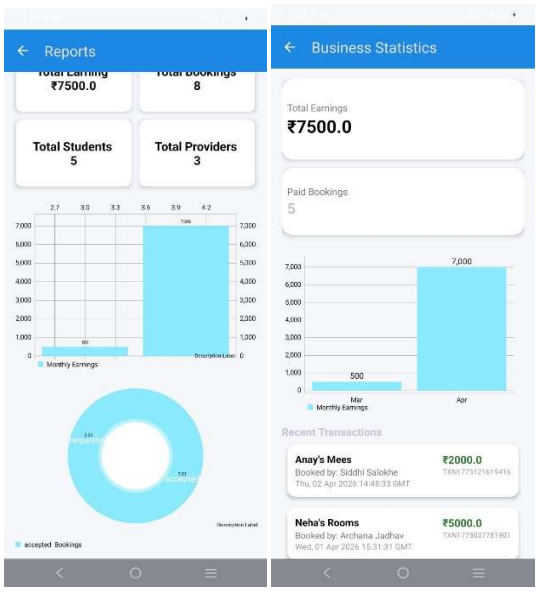


Fig. F

G. Earnings and Dashboard Analysis

The system includes an earnings module that displays total and monthly income for providers. Graphical representation and transaction history improve financial tracking.



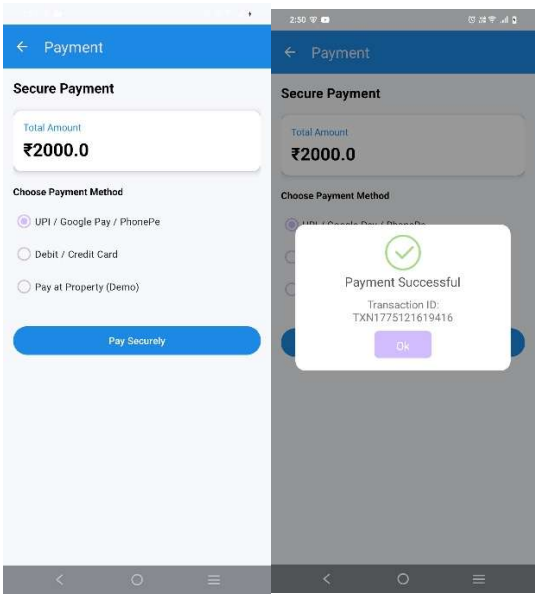


Fig. G

H. Admin Panel and System Control

The admin panel provides complete control over the system. Administrators can manage users, approve or reject properties, and monitor bookings. This ensures system integrity and proper functioning.

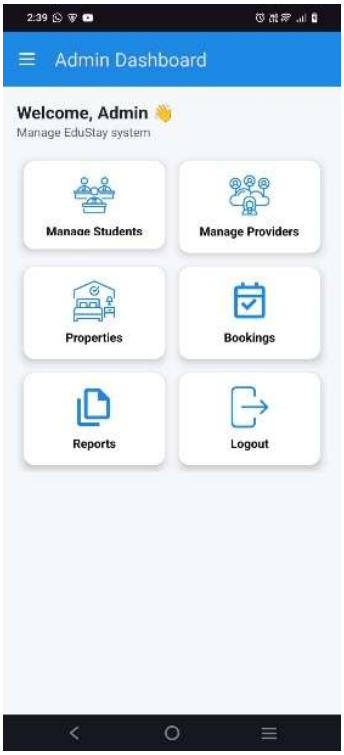


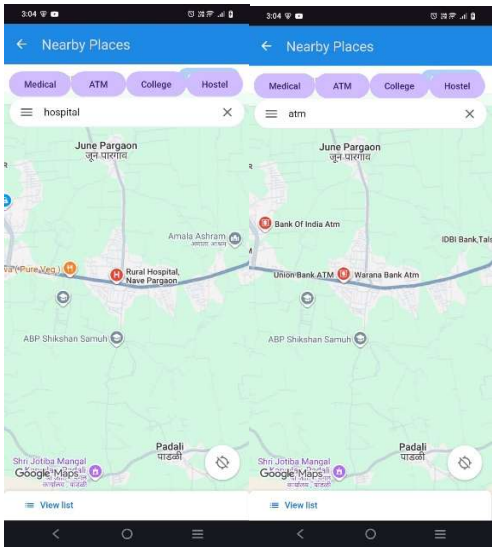
Fig. H

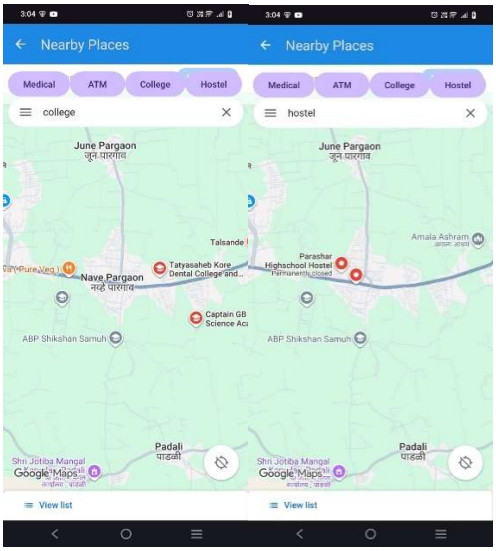
I. Nearby Location Feature

The EduStay system includes a nearby location feature that provides information about essential services available around the selected accommodation. These services include banks, medical stores, transportation facilities, restaurants, and other daily necessities.

This feature helps users understand the surrounding environment before selecting or booking a property. By integrating location-based information within the application, the system reduces the need for external searches and improves overall user convenience.

The nearby location data is displayed along with property details, allowing users to make better and more informed decisions. This functionality enhances the practicality and usability of the system, making it more effective compared to traditional accommodation search methods.





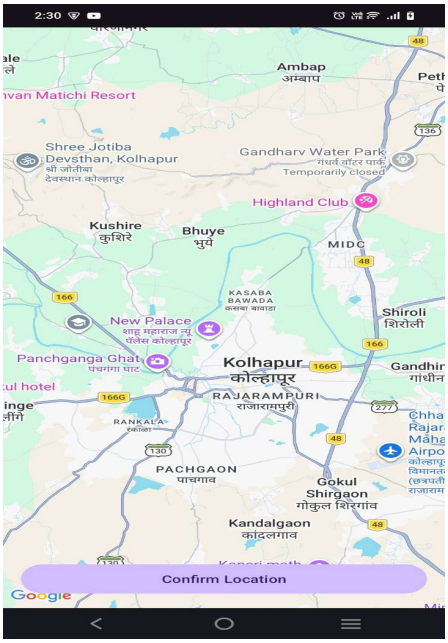


Fig. I

B. Discussion

The EduStay system effectively addresses the key challenges identified in the traditional accommodation search process. By replacing manual methods with a digital platform, the system reduces time consumption and eliminates dependency on brokers. The availability of structured and verified information improves transparency and builds trust among users.

The modular design of the system allows smooth integration of various functionalities such as property management, booking, and administrative control. The use of mobile technology enhances accessibility, enabling users to interact with the system from any location.

However, certain limitations were observed during implementation:

- Verification of accommodation listings is currently handled manually, which may require additional effort.
- Some advanced features such as automated rent reminders and payment integration are not included in the current version.
- The system depends on regular updates from administrators and providers to maintain data accuracy.

Despite these limitations, the overall performance of the system is satisfactory and meets the intended objectives. The results indicate that EduStay is an effective and practical solution for improving student accommodation management.

VII. FUTURE SCOPE

The EduStay system provides a strong foundation for digital student accommodation management; however, there is significant scope for further enhancement to improve functionality, automation, and user experience. Future developments can focus on incorporating advanced features and expanding the system to a larger scale.

One of the major improvements can be the implementation of an **automated rent payment and reminder system**, which will notify users about upcoming payments and due dates. This feature will help both students and providers manage financial transactions more efficiently.

Another important enhancement is the development of an **advanced verification mechanism** for accommodation providers and users. This can include document verification, identity validation, and rating systems to improve trust and reliability within the platform.

The system can also be expanded to support **multiple cities and educational institutions**, making it a large-scale solution for student accommodation across different regions. This scalability will increase the usability and reach of the platform.

Integration of **online payment gateways** can further simplify the booking and payment process, allowing users to complete transactions directly through the application. Additionally, implementing **AI-based recommendation systems** can help users find suitable accommodations based on their preferences, search history, and budget.

Further improvements may include:

- Real-time chat functionality between students and providers
- Advanced filtering and search options
- Notification system for updates and offers
- Enhanced data analytics for administrators

Overall, these future enhancements will make EduStay more efficient, secure, and user-friendly, transforming it into a comprehensive and intelligent accommodation management platform.

VIII. CONCLUSION

The EduStay system presents an effective and practical solution to the challenges faced by students in finding suitable accommodation in new cities. By introducing a centralized digital platform, the system successfully replaces traditional manual methods with a more efficient, transparent, and user-friendly approach.

The platform provides verified accommodation listings along with detailed information about nearby essential facilities, enabling students to make informed decisions. The integration of multiple modules such as user management, property listing, booking system, and administrative control ensures smooth operation and improved user experience.

The use of modern technologies, including an Android-based frontend, Flask backend, and MySQL database, ensures reliable performance, scalability, and efficient data management. The system significantly reduces the time and effort required for accommodation search while enhancing accessibility and data accuracy.

Although certain limitations exist, such as manual verification and limited automation in the current version,

the system meets its primary objectives and demonstrates strong potential for future enhancements. With further improvements, EduStay can evolve into a comprehensive and widely adopted solution for student housing management.

In conclusion, EduStay not only addresses a real-world problem but also contributes to the development of smart and digital solutions in the field of accommodation management, making it a valuable and socially beneficial system.

REFERENCES

[1] R. Patil, *et al.*, "EduStay: A Digital Platform for Student Housing and Nearby Facilities," *International Journal of Scientific Research and Engineering Development (IJSRED)*, 2025.

[2] T. A. Adeleke, A. O. Adekunle, and O. S. Soriyan, "Design and Implementation of Hostel Management System (HOMASY LASU as Case Study)," *International Journal of Computer Applications*, 2016. Available: https://www.researchgate.net/publication/326493698

[3] J. Smith, L. Müller, and P. Rossi, "Digital Infrastructure for Student Accommodation in European University Cities: The HOME Project," *European Research Journal*, 2018. Available: https://www.researchgate.net/publication/372019131

[4] M. N. Awal and R. Islam, "Development of an E-Based Hostel Management System," *Journal of Computer Applications*, 2019. Available: https://www.researchgate.net/publication/381783262

[5] A. K. Rai and D. Singh, "Online Residential Housing Management System," *International Journal of Computer Science and Information Technology*, 2020. Available: https://www.researchgate.net/publication/362334278

[6] K. Ahmad, S. Chowdhury, and F. Rahman, "Implementation of Blockchain-Based Technique to a Hostel Room Booking System: Practical Aspects," *Blockchain in Education Journal*, 2021. Available: https://www.researchgate.net/publication/351330735

[7] D. Patel and R. Kumar, "Hostel Administration and Student Accommodation Management Portal," *Engineering Research International Journal*, 2020. Available: https://www.researchgate.net/publication/390102646

[8] L. Zhao, H. Wang, and Y. Li, "Web-Based Management System for the Dormitory of University Students," *Journal of Web Engineering*, 2019. Available: https://www.researchgate.net/publication/376893405

[9] S. Ahmad, "Hostel Reservation / Accommodation Management System," University of Management and Technology, 2018. Available: https://escholar.umt.edu.pk/handle/123456789/9161

[10] P. Kumar and T. Verma, "Hostel Management System (HMS)," *International Journal of Research in Science, Engineering and Technology (IJRASET)*, 2021. Available: https://www.ijraset.com/research-paper/hostel-management-system-hms

[11] R. Singh and A. Gupta, "Hostel Management System," *International Journal of Scientific Research in Computer Science, Engineering and Information Technology (IJSRCSEIT)*, 2022. Available: https://ijsrcseit.com/CSEIT217280

[12] S. Roy and M. Banerjee, "Hostel Management System," *International Journal of Trend in Scientific Research and Development (IJTSRD)*, 2021. Available: https://www.ijtsrd.com/engineering/computer-engineering/14110

[13] J. Doe and A. Khan, "Development of a Web-Based Hostel Management System," *AB Journals of Computer Science and Technology*, 2019. Available: https://abjournals.org/bjcnit/papers/volume-8/issue-1

[14] N. Patel, "Design and Implementation of Online Hostel Management System," UniProjectTopics, 2020. Available: https://uniprojecttopics.com/project/design-and-implementation

[15] A. O. Johnson and M. T. Olatunde, "Hostel Management System Project," *International Student Housing Journal*, 2018. Available: https://www.researchgate.net/publication/380400944

