A

Mini Project Report

on

RoomMate – The Ultimate Hostel Manager

Submitted in partial fulfillment of the requirements for the

degree

Second Year Engineering – Computer Science Engineering (Data Science)

by

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CERTIFICATE

This to certify that the Mini Project report on **RoomMate – The Ultimate Hostel Manager** has been submitted by Aayush Balip (24207010), Aryan Shelar (24207012), Gauri Kandarkar (24207013) and Mauz Shaikh (24207016) who are bonafide students of A. P. Shah Institute of Technology, Thane as a partial fulfillment of the requirement for the degree in **Computer Science And Engineering (Data Science)**, during the academic year **2024-2025** in the satisfactory manner as per the curriculum laid down by University of Mumbai.

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Chapter 1

Introduction

The Ultimate Hostel Manager is a comprehensive software solution designed to streamline hostel management tasks. The system allows administrators to efficiently handle student and room data through a user-friendly interface. Key features include secure admin login, the ability to add student information such as name, age, gender, email, room type, and room number, and options to edit or delete this data as needed. Additionally, the system provides functionalities to view detailed student and room information, ensuring seamless hostel operations. This solution is designed to enhance administrative efficiency and organization within a hostel environment.

The Ultimate Hostel Manager is developed to simplify and automate the administrative tasks involved in managing a hostel. By offering a secure, organized platform for storing and updating student and room information, the system reduces manual workload and the chances of errors. It aims to provide hostel administrators with a more efficient and accurate way to manage student data, track room allocations, and perform key operations like adding, editing, and deleting student information with ease. This project ultimately enhances the overall management experience, allowing for better time management and operational transparency

The target audience for this project includes:

1. Hostel Administrators: To manage hostel resources, allocate rooms efficiently, monitor occupancy, and track financial transactions such as rent and fees.
2. College or University Hostels: Large-scale institutions that need a reliable system to handle high volumes of student data and room assignments.
3. Hostel Owners/Managers: Private hostel or dormitory operators looking for an automated solution to manage daily operations, maintain student records, and optimize the use of available rooms.
4. Students/Residents: Indirectly benefiting from a more organized and transparent system that ensures smooth allocation and management of hostel facilities

1.1 Problem Statement

Managing a hostel involves handling a large volume of student and room information, which can be time-consuming and prone to errors when done manually. Traditional methods of record-keeping using paper or basic spreadsheets are inefficient, making it difficult for administrators to quickly access, update, or delete student data. Additionally, manual systems lack proper security measures, making sensitive information vulnerable. This creates challenges in maintaining accurate records and efficiently managing room assignments. The need for a more organized, reliable, and secure solution has driven the development of The Ultimate Hostel Manager, a system that automates these tasks, minimizes errors, and enhances the overall efficiency of hostel management.

Hostel administrators frequently face challenges such as:

- **Inefficient Room Allocation**: Difficulty in assigning rooms based on availability, student preferences, or special needs.
- **Disorganized Data Management**: Scattered or inaccurate records of student information, financial transactions, and room occupancy details.
- **Time-Consuming Administrative Tasks**: Excessive time spent on routine tasks like updating records, managing check-ins/check-outs, and tracking fees.
- **Lack of Real-Time Monitoring**: Inability to track room occupancy and student activities in real time, leading to inefficiencies in space utilization.
- **Potential for Human Errors**: Manual processes increase the chances of errors in data entry, fee calculation, and room assignment.

1.2 Objectives:

- **User Authentication and Authorization:** Implement secure login and registration for admins, hostel managers, and students.
- **Student Information Management:** Maintain records of student details such as personal information, contact details, and room assignment.
- **Database Management:** Ensure efficient data storage and retrieval using MySQL.
- **Room Allocation and Management:** Enable the admin to allocate rooms to students. Track room availability and occupancy status.

1.3 Scope

The Ultimate Hostel Manager is designed to streamline the core administrative functions of hostel management. The system's primary focus is on managing student information and room allocations efficiently. It includes the following key features: admin login for secure access, adding student details (name, age, gender, email, room type, and room number), editing and deleting student information, and viewing detailed student and room information. The system will be implemented for hostel administrators and can be expanded to integrate additional features, such as fee management, room availability tracking, and reporting capabilities in future versions. It is intended for use in medium to large-scale hostels and can be adapted to meet the specific needs of various hostel environments. The project will be deployed on a Windows operating system with MySQL as the database management system and Java as the core technology stack.This system aims to reduce manual effort, minimize errors, and enhance operational efficiency in hostel management.

Chapter 2

Proposed System

The proposed system is an integrated web-based platform designed to streamline project management and collaboration for remote teams. It features task tracking, real-time communication tools, and file sharing, all while ensuring data security and user privacy. The system will utilize a micro-services architecture to allow for scalability and flexibility, employing technologies like React for the frontend and Node.js for the backend. Key functionalities include customizable dashboards, automated reporting, and user roles to enhance productivity and accountability. The development will follow Agile methodologies, with regular testing and feedback loops to ensure a high-quality user experience, while a robust deployment and maintenance plan will support ongoing updates and improvements.

2.1 Features and Functionality

1. **Admin Login:** Provides a secure login system for administrators, ensuring that only authorized personnel can access and manage the hostel data.
2. **Add Student Information:** Allows administrators to input and save detailed student information, including: Name, Age, Gender, Email, Room type (single, double)
3. **Edit Student Information:** Enables administrators to update or modify student details when needed, ensuring that records remain accurate and up-to-date.
4. **Delete Student Information:** Allows deletion of student records using the student's unique ID, ensuring easy removal of data when a student leaves the hostel.
5. **View Student Information:** Displays a list or detailed view of all student data stored in the system, providing quick access for audits or information lookup.
6. **View Room Information:** Allows administrators to view available room details, including room type and current occupancy, helping them manage room assignments efficiently.

Chapter 3

Project outcome

The Hostel Management System project is expected to streamline and automate the entire process of managing hostel operations, providing significant improvements in efficiency, accuracy, and user experience. With the implementation of this system, administrative tasks such as student registration, room allocation, fee tracking, and leave management will be automated, reducing manual workload and minimizing errors. The system will also provide real-time data access for administrators, enabling better decision-making and improved monitoring of hostel resources, room occupancy, and fee collections. For students, the system will offer a more convenient experience by allowing them to manage their stay, submit complaints, check fees, and monitor their leave status through a centralized platform.

The successful deployment of the Hostel Management System will result in smoother operations, better record-keeping, and enhanced transparency. This will lead to increased satisfaction for both administrators and hostel residents. Furthermore, the system's ability to generate detailed reports and analytics will support future planning and resource management, helping hostel authorities make data-driven decisions. Over time, this solution can be expanded to incorporate additional features such as online payment gateways and mobile applications, ensuring that the system can evolve to meet future needs.

Chapter 4

Software Requirement

The software requirements for the proposed project management platform include a user-friendly web interface that allows users to create and manage tasks, set deadlines, and assign team members. The system must support real-time messaging and notifications to facilitate communication among team members, along with secure file sharing capabilities. It should integrate with popular third-party applications, such as calendars and document storage services, and feature role-based access control to ensure data security. The platform needs to be responsive across devices, maintain high performance under load, and comply with data protection regulations. Additionally, comprehensive reporting tools for tracking project progress and user analytics are essential for optimizing team performance.

Backend:

Java Development Kit (JDK): Version 17 for building the backend logic.

Database:

MySQL: Version 9.0.0 for database management.

MySQL Connector/J: Version 9.0.0 for Java and MySQL database connectivity.

MySQL Workbench: For database design and management.

Development Environment:

VS Code: For coding and project development.

Operating System:

Windows OS: The system will be developed and run on Windows.

Chapter 5

Project design

A project design flowchart visually represents the sequence of steps or tasks in a project. It uses symbols like rectangles (for processes), diamonds (for decision points), and arrows (for flow direction) to map out the workflow. The flowchart helps in understanding how different tasks are interconnected and ensures clarity in the project structure. It simplifies complex processes, making it easier to identify bottlenecks or inefficiencies. Flowcharts also serve as a communication tool, ensuring all team members are aligned on the project's plan. They are widely used in both software development and project management.

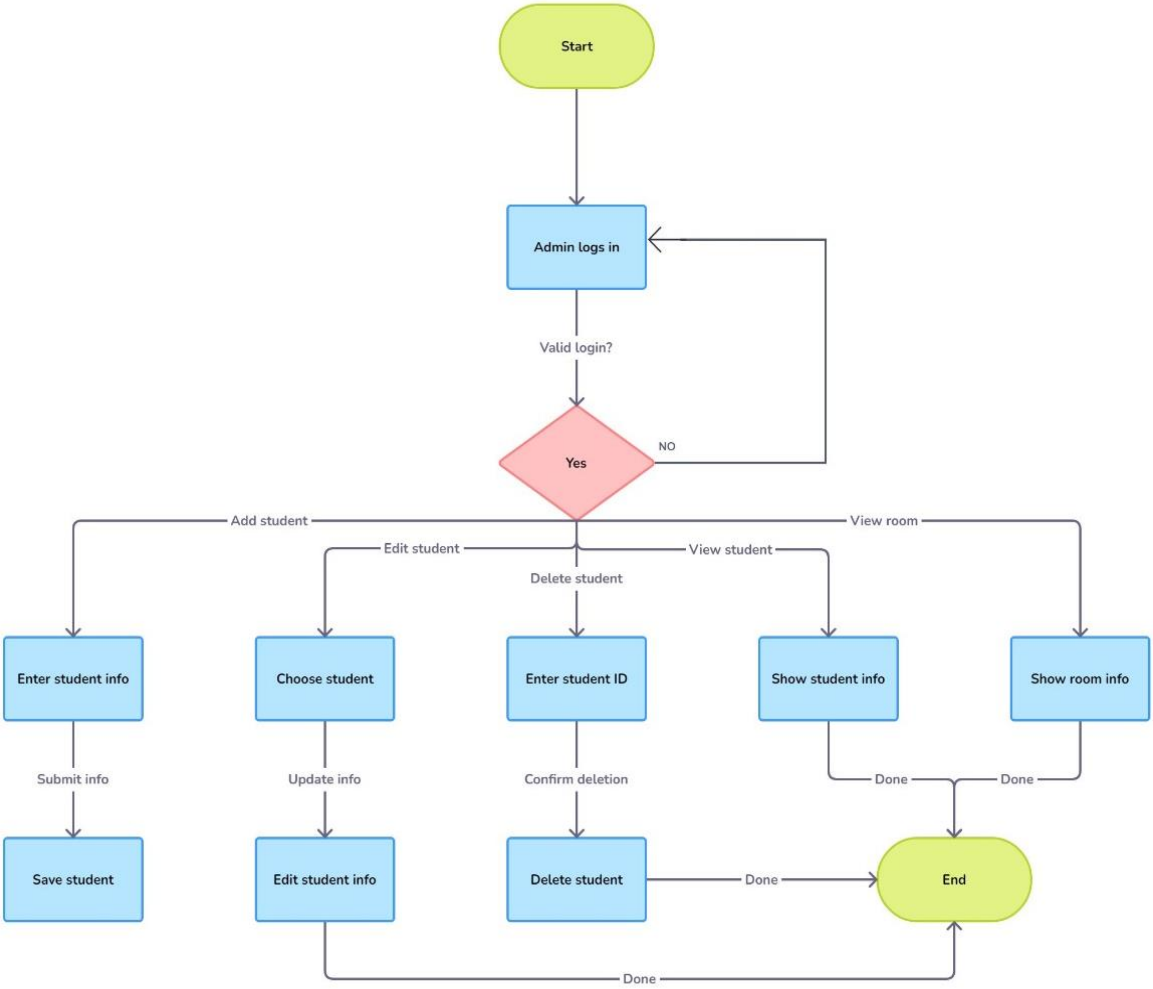

Fig 5.1 Flowchart

Chapter 6

Project scheduling

Project scheduling involves the systematic allocation of tasks and resources over a defined timeline to ensure the successful completion of a project within its constraints. This process typically includes defining project milestones, estimating the duration of tasks, and determining dependencies between activities. Tools such as Gantt charts or critical path method (CPM) diagrams can visualize the schedule, helping project managers identify key deadlines and resource allocation needs. Regular updates and adjustments are essential to adapt to any changes or delays, ensuring that the project stays on track and meets its objectives while efficiently utilizing available resources.

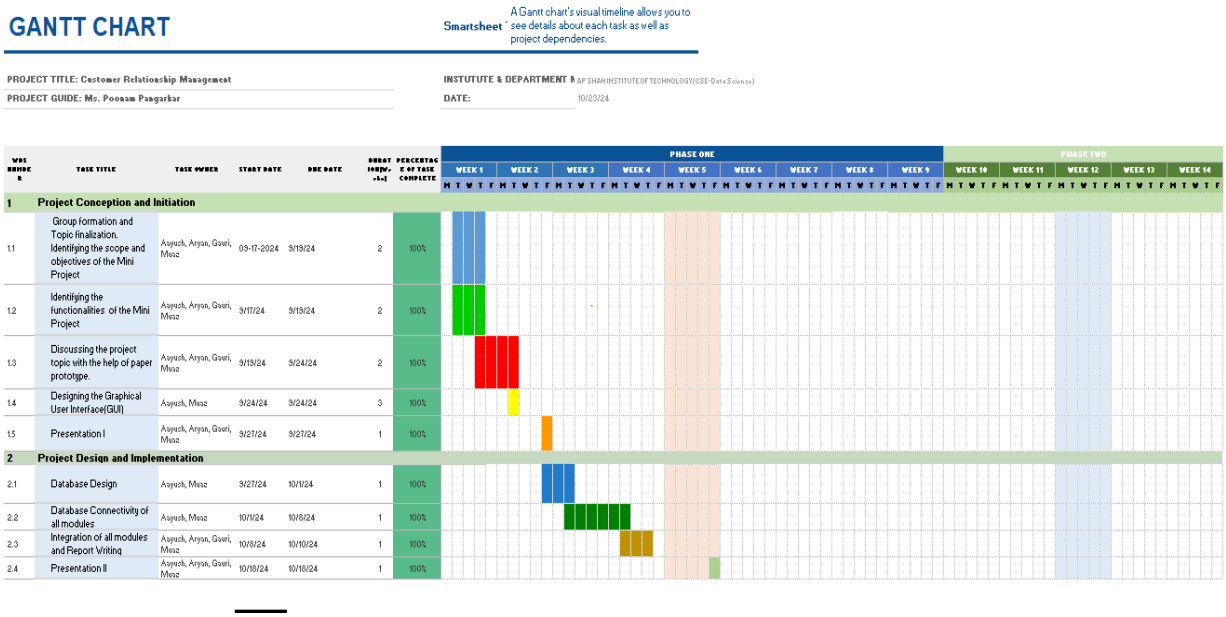

Fig 6.1 Gantt Chart

A Gantt chart is a type of bar chart that illustrates a project schedule. It represents tasks or activities on the vertical axis and time intervals on the horizontal axis. Each task is displayed as a horizontal bar, with the length of the bar representing the duration of the task. Gantt charts help track project progress, identify overlapping tasks, and monitor deadlines. They are commonly used in project management to ensure tasks are completed on time and resources are properly allocated.

Chapter 7

Results

Project results refer to the measurable outcomes and findings that demonstrate whether the project has achieved its objectives. These results can be both quantitative, such as specific performance metrics, and qualitative, such as feedback from stakeholders. Quantitative results might include data like increased productivity, cost savings, or enhanced efficiency, while qualitative outcomes could involve improved customer satisfaction or team collaboration. Additionally, the results should highlight any challenges faced during the project and how they were resolved. Ultimately, the results showcase the project's impact, its success in meeting goals, and any lessons learned for future initiatives.

Achievement of Objectives: Did the project meet its goals or deliverables? This could include completed tasks, developed products, or implemented solutions. Quantitative Data: This includes measurable outcomes such as increased sales, reduced costs, improved efficiency, or performance metrics. Qualitative Outcomes: Feedback from users, stakeholders, or participants, improvements in processes, or changes in behavior or satisfaction. Challenges and Issues: Any difficulties or setbacks encountered during the project, and how they were addressed. Impact: The long-term effects or changes brought about by the project, which could be economic, social, or operational..

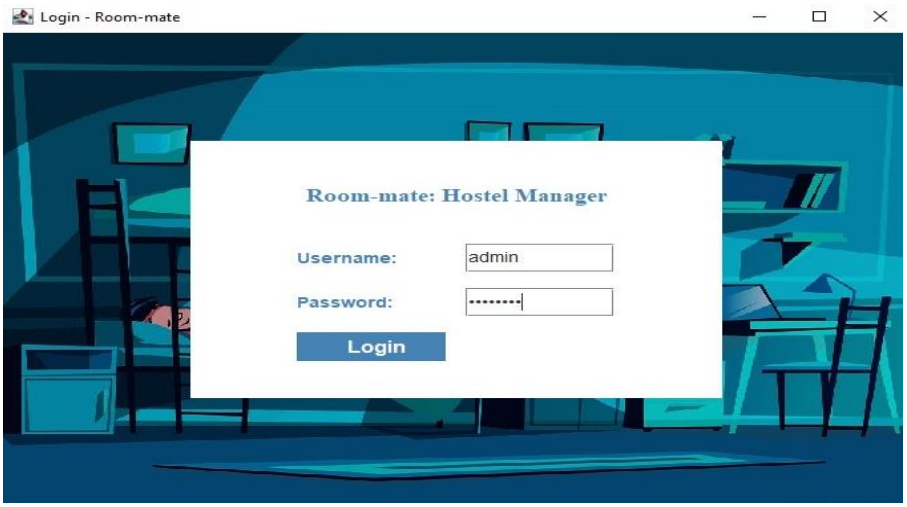

Fig 7.1 Login Module

This Figure describes the Admin Login page in which by entering the valid login info, you can login to the system.

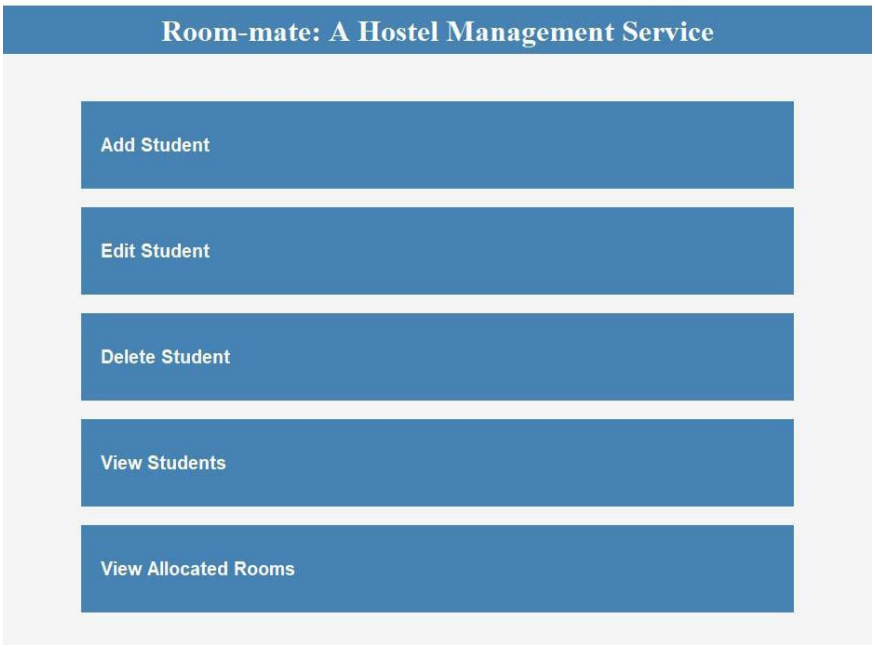

Fig 7.2 Home page

The Figure 7.2 describes the optionto be selected for adding , editing, deleting, viewing student, and viewing the allocated rooms.

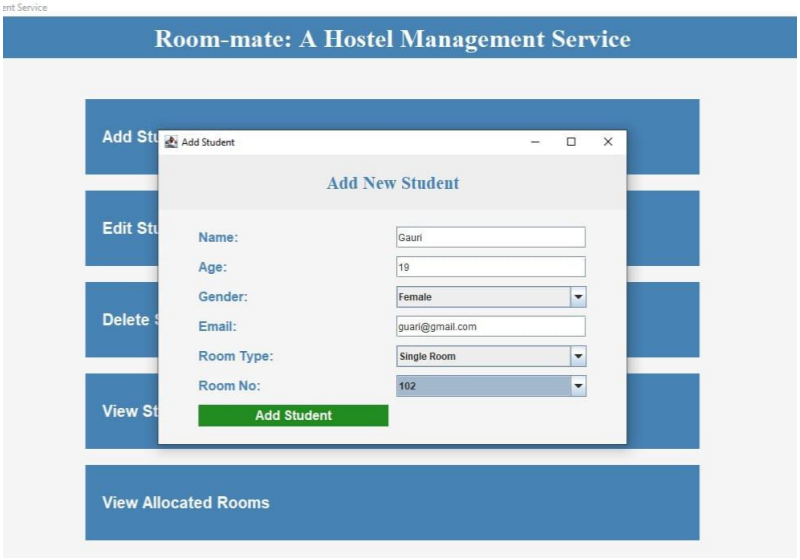

Fig 7.3 Module to add new student

The Figure 7.3 describes the from to enter personal details of student which are Name, Age, Gender, Email, Roll no. and click on add student to add student

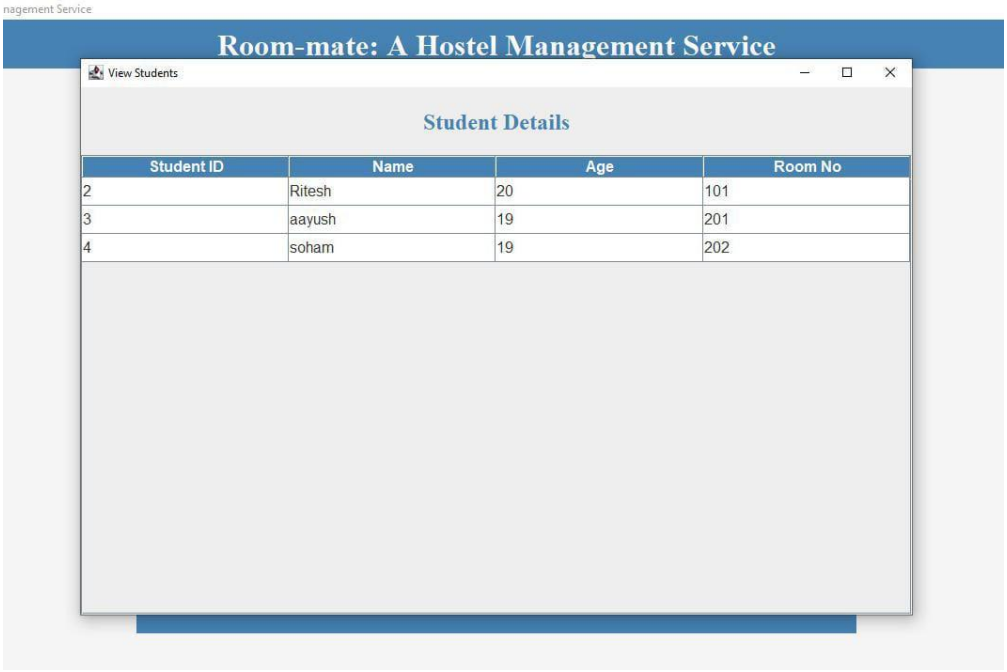

Fig 7.4 Module to view Student details

The Figure 7.3 describes table showing the details of the students who are currently staying in hostel

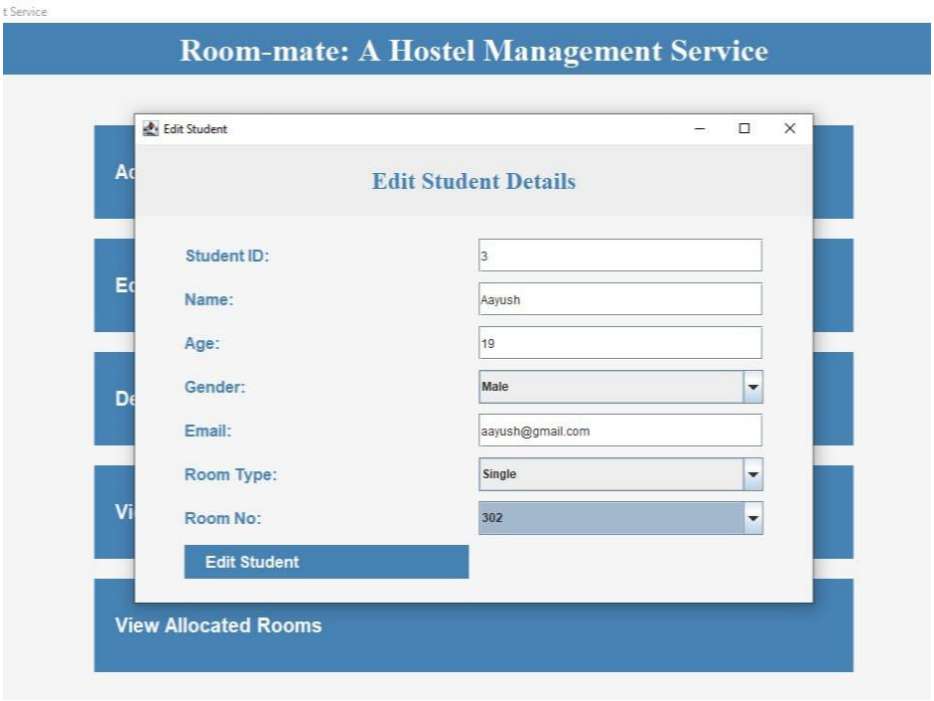

Fig 7.5 Module to edit student details

The Figure 7.5 describes the Edit from to enter students details and click on edit student button to edit existing student information.

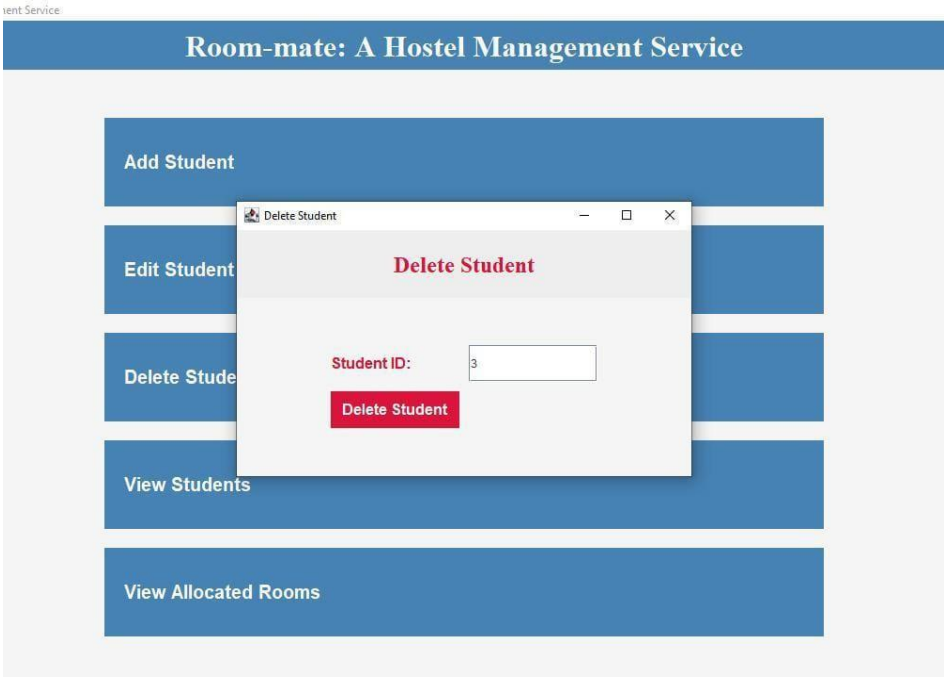

Fig 7.6 Module to delete student

The Figure 7.3 describes the Delete from to Enter student id and simply delete the existing student from the table.

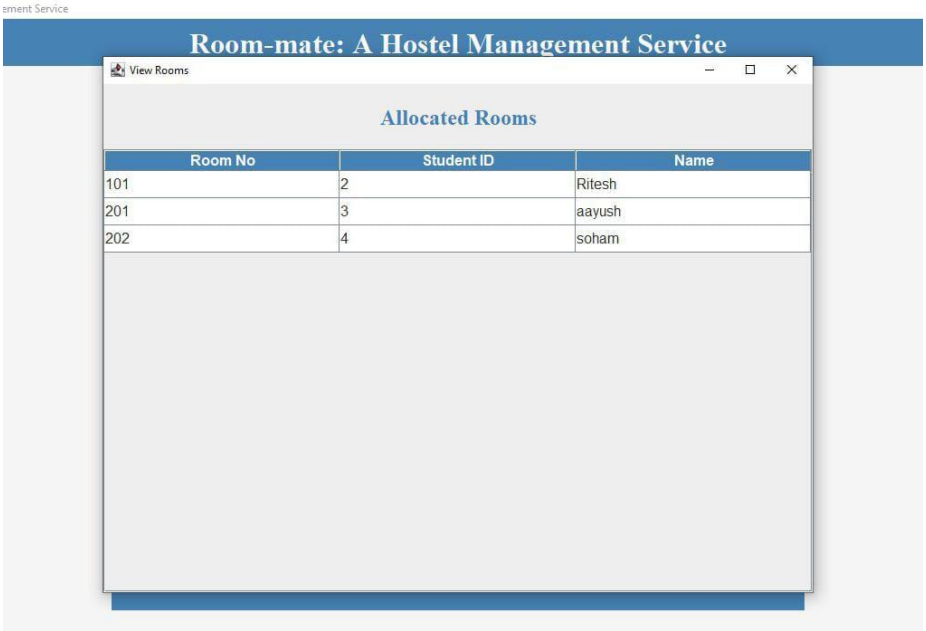

Fig 7.7 View allocated rooms module

The Figure 7.3 describes table showing the details of the hostel rooms. Here you can check which room is allocated to which student.

Chapter 8

Conclusion

In conclusion, the proposed project management platform has successfully met its objectives by delivering a robust solution that fosters collaboration and enhances productivity for remote teams. Through careful planning, strategic implementation, and ongoing user engagement, the platform not only streamlines project workflows but also provides valuable insights for continuous improvement. The positive feedback from users underscores the effectiveness of its features, while the integration capabilities ensure adaptability to diverse work environments. As we move forward, ongoing maintenance and updates will be prioritized to ensure the platform evolves alongside user needs and technological advancements, positioning it as a vital tool for project management in the modern workspace.

The Ultimate Hostel Manager successfully addresses the challenges of manual hostel management by providing an automated, secure, and efficient system for handling student and room information. Through features like admin login, student data management, and room information tracking, the project simplifies administrative tasks and improves overall accuracy and efficiency. This system reduces errors, enhances data accessibility, and ensures better organization in hostel operations. With its scalable design, the project lays a strong foundation for future enhancements, offering the potential to integrate additional functionalities that further meet the evolving needs of hostel management.

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