

HOSTEL MANAGEMENT SYSTEM

Project submitted to the
SRM University – AP, Andhra Pradesh
for the course Project of
CSE 305L Software Engineering Lab

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Abstract

In today's computerized world, the almost entirely manual system has given way to an automated and computerized system. Every college must build hostels, so we are developing software for the "Hostel Management System" to mimic the existing system and correct its problems. Previously, the respective warden held control over hostel administration through the use of books. Since they must use handwritten paperwork and are unaware of the number of vacant rooms, the number of rooms that have been reserved, the method of payment, etc., the wardens and the students who come from various locations find it challenging to control the overall hostel price. At this time, the "Hostel management" steps in to address the problem. The Hostel Management System automates the existing manual system using computerized hardware and fully functional computer software in an effort to meet their needs. They will be able to easily access and manipulate their vital data and information for a longer period of time thanks to this. We developed this approach to make a flexible and aggressive hostel management system less complicated and more effective. For ease of usage, both the necessary software and hardware are readily available.

Introduction

Initially, we intend to pilot the initiative in just one of the city's hostels, and only a small number of students housed in various hostel rooms will be granted access during the trial period. After a successful testing phase, we want to implement it throughout the entire hostel. Once we are aware of all of its flaws, we can utilize the project at several hostels and progressively increase the number.

The project's scope is not restricted to a single hostel, hostels in the same city, or a single college campus; rather, the same process can be applied to other campuses as well. Numerous colleges across the nation are in need of hostel automation so that students can enjoy their accommodations. This technique can also be used in major cities with a high density of service apartments.

System Requirements Specification(SRS)

1.1 Purpose

This SRS document's objective is to give a thorough overview of our software product, including its specifications and objectives. This document outlines the target market for the project as well as the hardware, software, and user interface requirements for the eventual product. It outlines how our audience, team, and final client view the usefulness of the product.

1.2 Intended Audience

Students who stay in hostels make up an ideal social group. As a result of the numerous issues that students encounter while residing in their hostels, we are working to automate all aspects of hostel administration so that students can enjoy their stay there without any hassles. If there are no issues for students to deal with while residing in the hostel, then a few more students may be interested in using the hostel's services.

1.3 Intended Use

This document is intended to give a thorough description of our software product, its specifications, and its objectives. It also serves as a contract between the software management and the developers and testers, allowing the manager to understand exactly what the developers plan to accomplish to create the program.

1.4 Scope

The aim is to provide dependable hostel administration software. The initiative will entirely automate every aspect of the hostels' operations. When a student decides to stay in the hostel, they must first visit our website, create an account by entering the necessary information, and then select their preferred room type from the available options (2-person, 4-person, etc.). We will then proceed with the confirmation of the room. When a student living in a hostel requests that his room be cleaned, the members of the help desk will receive a notification and will then dispatch a member of the housekeeping staff to clean the room at the time specified in the request. If a student

encounters an issue with the electrical work being done in the room, another notification will be sent to the help desk, which will then contact the electrician, who will arrive in the room at the mutually agreed-upon time. Any other complaints regarding carpentry work, plumbing problems, or AC repairs will also be handled in a similar manner.

The software must be able to perform the following operations:

- **Student details:** It must be able to take the required student details to create an account.
- **Room details:** It must be able to show the available rooms for the hostellers to choose the rooms of their choice to stay in the hostel.
- **Take requests:** It must be able to take requests from the students in the hostel about the type of work required i.e. plumbing, room cleaning, AC repair, etc.
- **Notify staff:** It must be able to notify the help desk staff about the request made by hostellers and once the help desk staff got the request then a person is allotted to do that task.

1.5 Definitions and Acronyms

- SRS – System Requirement Specifications
- DFD – Data Flow Diagram
- ERD – Entity Relationship Diagram
- HMS – Hostel Management System
- User – Student who lives in the hostel
- Database – Records of every hosteller

Overall Description

2.1 User Needs

The product will be used by colleges and universities that offer dormitory facilities to students. College management will be the product's primary user because they have direct access to the system interface and database. Students will be the secondary users because they register on the portal, select the hostel rooms they want to stay in, and lodge complaints there if any arise.

2.2 Assumptions and Dependencies

The list of assumptions, dependencies, or rules that are imposed onto the implementation of the System is as follows:

I. The product has to feature an intuitive user interface that is easy to use for all types of users.

II. Response times are limited to five seconds.

III. In order to properly utilize the product, you must have some basic computer or smartphone expertise.

IV. They need access to the internet in order to use the product.

2.3 Operating Environment

The operating environment for the hostel management system includes

Operating system: Windows XP, 7/ Mac OS

Front End: HTML, CSS, JavaScript

Database(Back End): SQL SERVER, PHP

Admin and Student side system

The admin and student side components of the software system must operate within common web browser environments.

The browsers that must be included and supported are

- Apple Safari 7+
- Google Chrome 44+
- Microsoft Internet Explorer 10+
- Mozilla Firefox 40+

System Features and Requirements

3.1 Functional Requirements

- The admin can enter student information and do a few actions, such as deleting student records or adding new student records. Administrators won't have to keep a book up to date or register student information. Through an online interface, they may easily register them, save them, and change them at any time.
- The admin can look up student records, and the stored information must be retrieved within the allotted time. Time delays may necessitate the use of software, which is favored over using a book because it saves time whereas manually doing something takes a lot of time.
- Give guests the chance to voice their complaints regarding issues the hostel is experiencing. Residents will no longer be required to record their issues and grievances in the register, which is not read by any management personnel. They only need to click on an online site to file a complaint. In order to track the hostel's quality, a form is created and many criteria are taken into account. Residents can submit complaints in the other box after completing the form.
- Students can choose from a variety of rooms and beds on the website. They are asked to supply some personal information during registration in order to complete their registration successfully.

3.2 External Interface Requirements

User Interface Requirements:

In order to manage hostels effectively, software must be created, and the process must be automated. Following is a list of the different user kinds.

I. Hostellers and students

II. The Administrator

Users should be able to easily run the system with the help of the proper user interface, user guide, and web pages, as well as installation and maintenance instructions.

- Users get access to special features like FORGOT PASSWORD & RECOVERY.
- A user-friendly interface that provides additional engaging assistance for all of the listed services should be available to them. The displayed interface is menu-based.

Our objective is to provide software that is simple for all users to use. Therefore, one can assume that each user type has the following qualities while building the software:

1. The user is computer-literate and has little or no difficulty using the software keeping in mind the software is user-friendly.
2. A user is required to understand how the software functions internally in order to use it.
3. Once a user registers with the software or website, they will be informed of all the usage instructions.

Hardware Interface Requirements:

The machine must be able to interact with various hardware components. There are a few hardware interface requirements that must be satisfied for the software to function correctly.

- Intel Core i5 is used as a processor because it performs consistently and reliably while being faster than other CPUs. This allows us to use our computers for extended periods of time. With the help of this processor, we may continue working on the current project without any worries.

Software Interface Requirements:

- A PHP database server (phpmyadmin) will be needed to store and retrieve information about the actions carried out through the hostel administration system.
- To access the website, you will need a web browser.
- HTML is used to write all of the code for webpages, while CSS, javascript, and react JS are used for styling, and Angular is used for server-side scripting.

Communication Interface Requirements:

The communications protocol utilized will be called GUI (Graphical User Interface). The user interface needs to be particularly clear or interesting because the system's user won't get any help utilizing it. Because of the system's straightforward user interface, even those with little computer experience can use it.

System Features

❖ System Feature - A

In the Student View, he can visit all the following pages:

- Rooms and bed details
- Booking-related details
- Help desk page to lodge a complaint

❖ System Feature - B

Hostel wardens who work at the student help desk are there to assist you. You can get in touch with the help desk at any time to ask a question that needs to be answered.

Queries are solved by contacting authorized persons and then students are notified about that and changing rooms or editing personal information also can be done through software.

Description & Result:

Information concerning beds, rooms, student information, necessary personal information, and registration for the hostel are all kept up to date by the hostel administration system.

This project is of high priority because, without this software, it is very challenging for the hostel administrator to keep track of the hostlers' data. Additionally, this software makes it much easier for students to check in quickly and without delay, as they no longer require assistance, and paperwork is eliminated. It finally allocates the room booked and helps students to have an identity.

3.3 Non-Functional Requirements

Performance Requirements:

The program must run on any platform and be built using web technology. The initial load time of the application will rely on how well the operating system performs. The hardware and software components of the computer or smartphone we are using will determine how well it performs.

Safety Requirements:

Due to a virus or operating system malfunction, the database could crash at any given time. Because of this, a database backup is necessary.

Security Requirements:

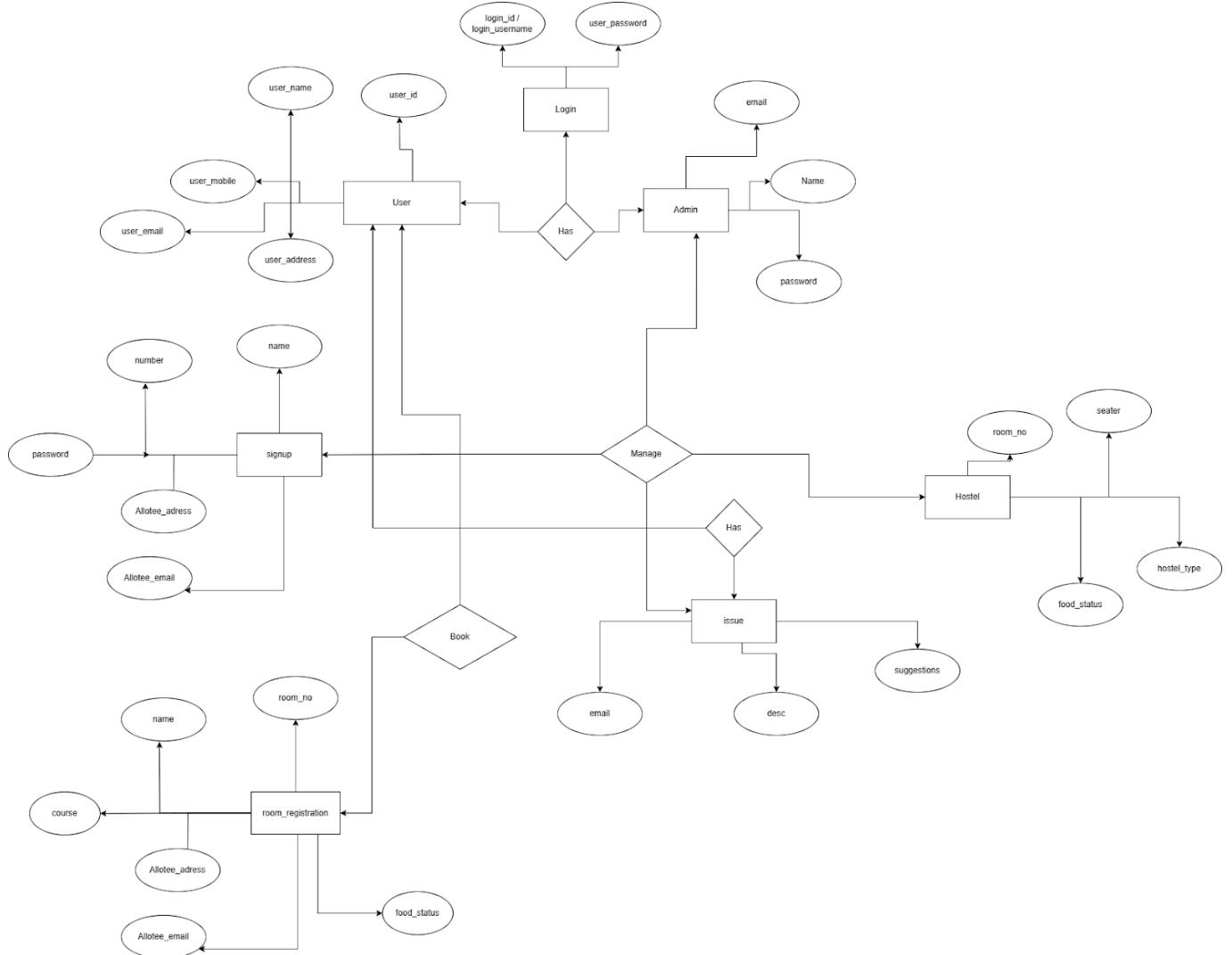
Given that the database's details are password-protected, this project offers a real protection to everyone whose information is contained there. This is a crucial component of the design and should address issues with hardware dependability, backup plans, data security on a physical level, and provisions for the identification of fraud and abuse.

Quality Requirements:

Functionality, dependability, usability, maintainability, portability, and efficiency are six quality attributes that the software is ready to specify.

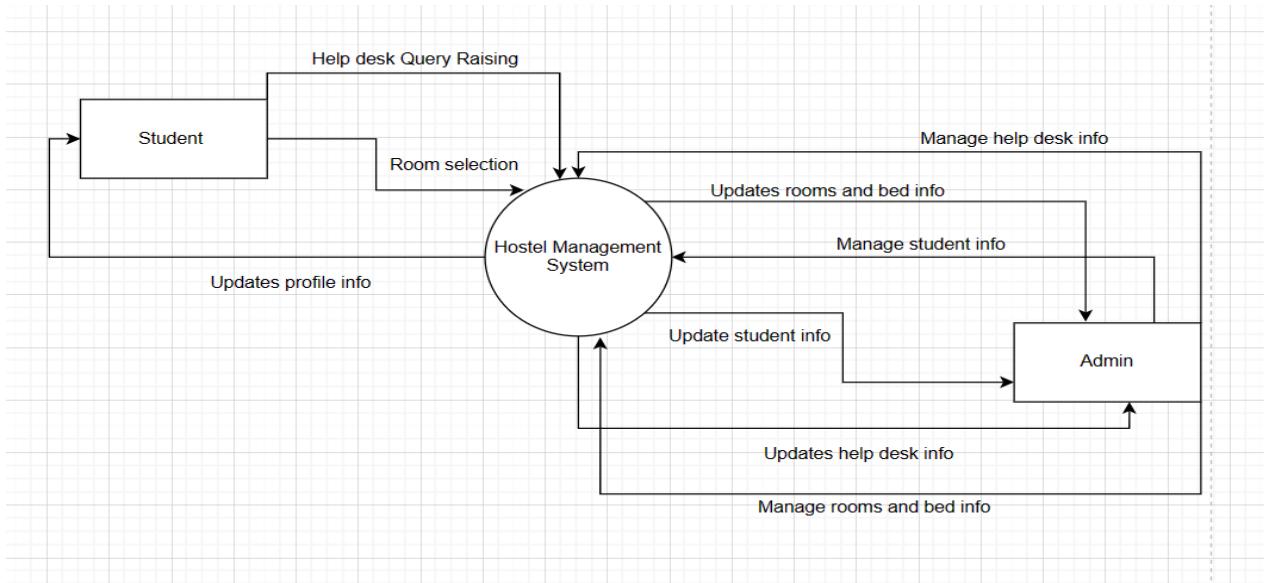
Software Design

4.1 ER (Entity Relationship) Diagram

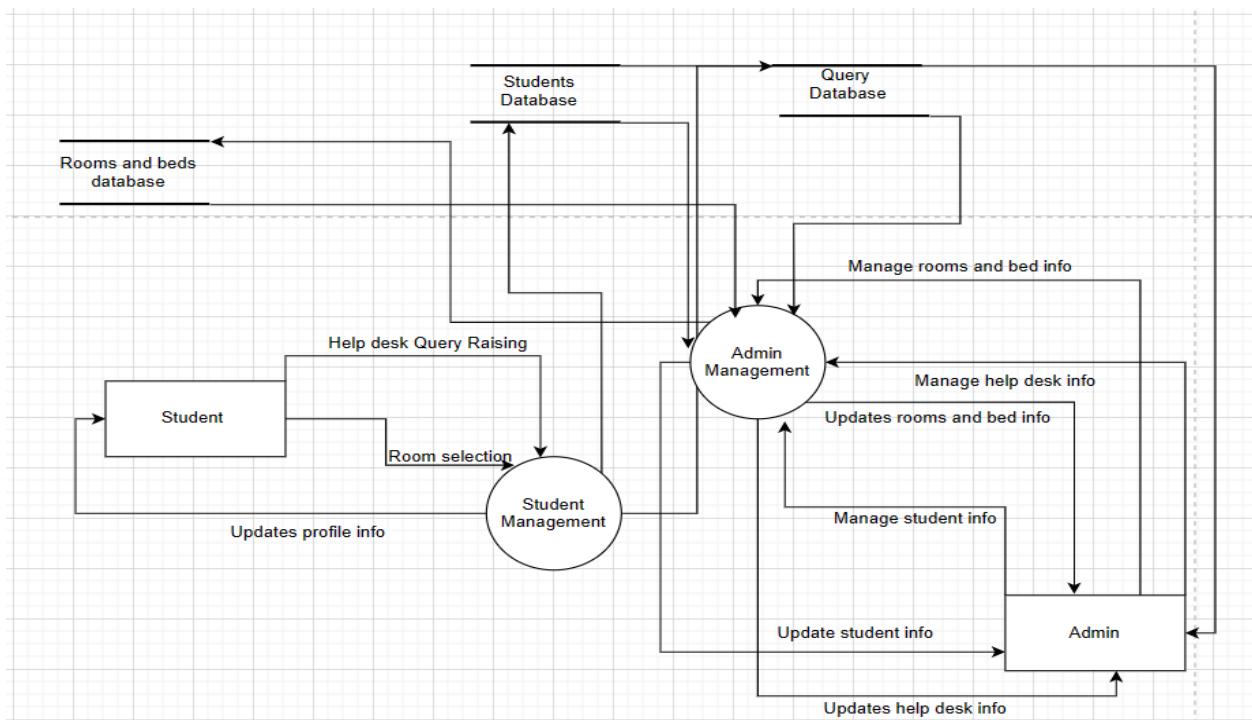


4.2 Data Flow Diagram (DFD)

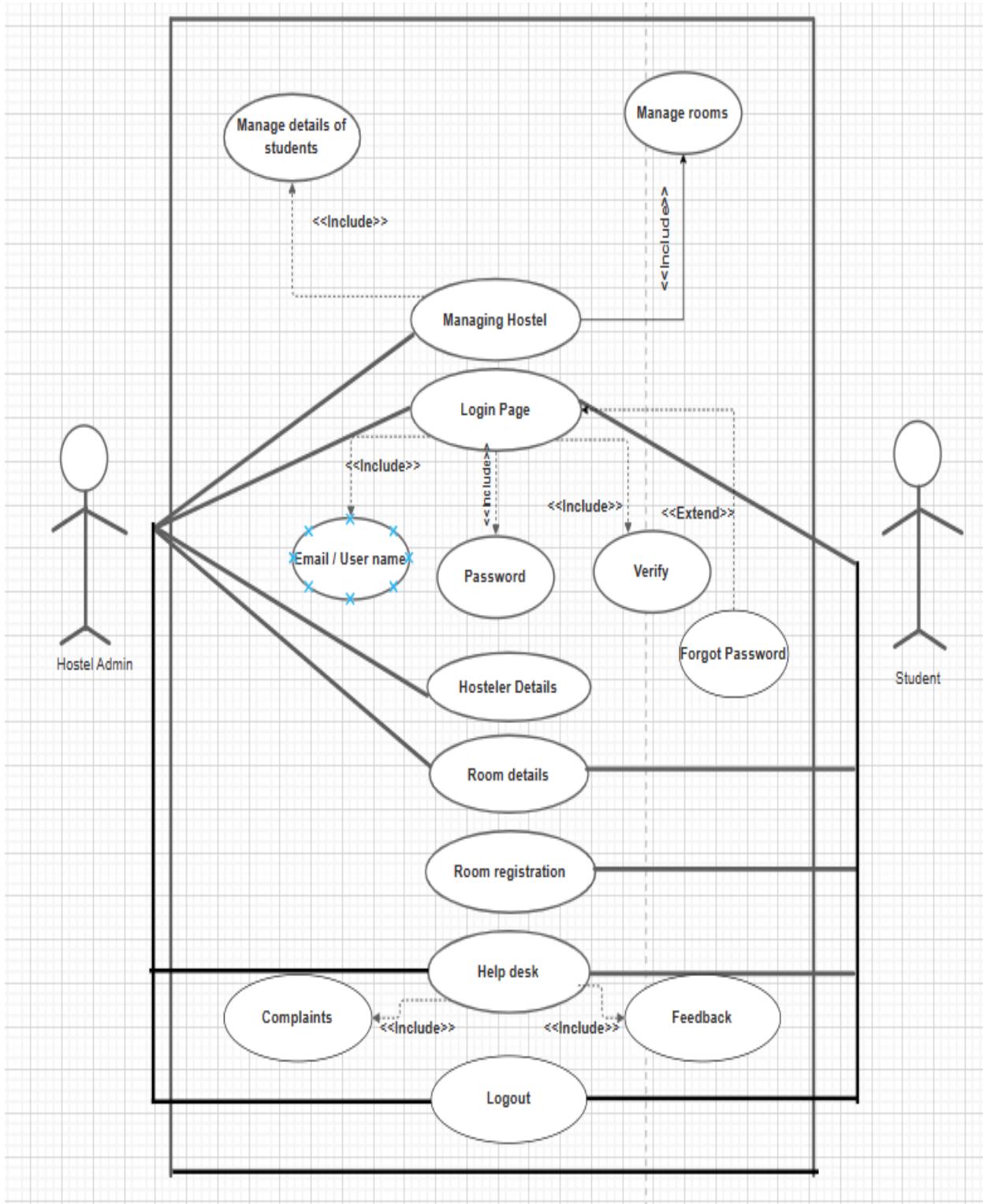
Level - 0



Level - 1



4.3 Use Case Diagram



Use-Case Diagram Scenarios:

❖ MANAGING HOSTEL

Actors: Admin

Description: Admin logins and Opens the hostel room booking, Manages rooms, and Manages student details.

Pre-Conditions: Admin should log in first.

Main Flow of Events:

- Admin logs in to the system.
- Then they're directed to the dashboard. They can open room bookings based on availability.
- Then they can manage rooms, transactions, and payments made by the hostlers.
- Once the admin logs out of the software, then the application is closed.

Post-Conditions: The login Page is back on.

❖ LOGIN EVENTS

Actors: Student/Admin

Description: Students and admin fill in their details to log in and view the dashboard, can book rooms, and pay the fee accordingly.

Pre-Conditions: The login page opens.

Main Flow of Events:

- Students and admin fill in their respective details like ID/Username and password.
- They are directed to the dashboard and can view room details and proceed with registration.
- Then, the person is logged out once the logout button is selected.

Post-Conditions: The login Page is back on.

❖ MANAGING STUDENT DETAILS

Actors: Admin

Description: Admin logins and enters student details respectively.

Pre-Conditions: The login page opens.

Main Flow of Events:

- Admin login into the portal.
- Admin selects student details.
- Admin enters the student details based on the data obtained from the students.
- Admin enters details such as mobile number, address, parent details, etc.
- Then, the person is logged out once the logout button is selected.

Post-Conditions: The login Page is back on.

❖ ROOM DETAILS

Actors: Student

Description: Students check for the rooms available and details regarding them.

Pre-Conditions: The login page opens.

Main Flow of Events:

- Student login into the portal.
- They are directed to the dashboard. They choose the room details option.
- They can see the available rooms in that hostel.
- They can able to see their room details and can also get a print of the details.
- The student is then logged out once the logout button is selected.

Post-Conditions: The login Page is back on.

❖ ROOM REGISTRATION

Actors: Student

Description: Student logins, and register for rooms in the hostel.

Pre-Conditions: The login page opens.

Main Flow of Events:

- Students login into the portal using respective login details like ID/Username and password.
- User then directs to the hostel room Registration page on selecting.
- Registration completes after entering the details and the room is allocated to students.
- The student is then logged out once the logout button is selected.

Post-Conditions: The login Page is back on.

❖ HELP DESK

Actors: Student/Admin

Description: Students and admin fill in their details to log in and view the help desk where a student requests help and the admin provides the required help.

Pre-Conditions: The login page opens.

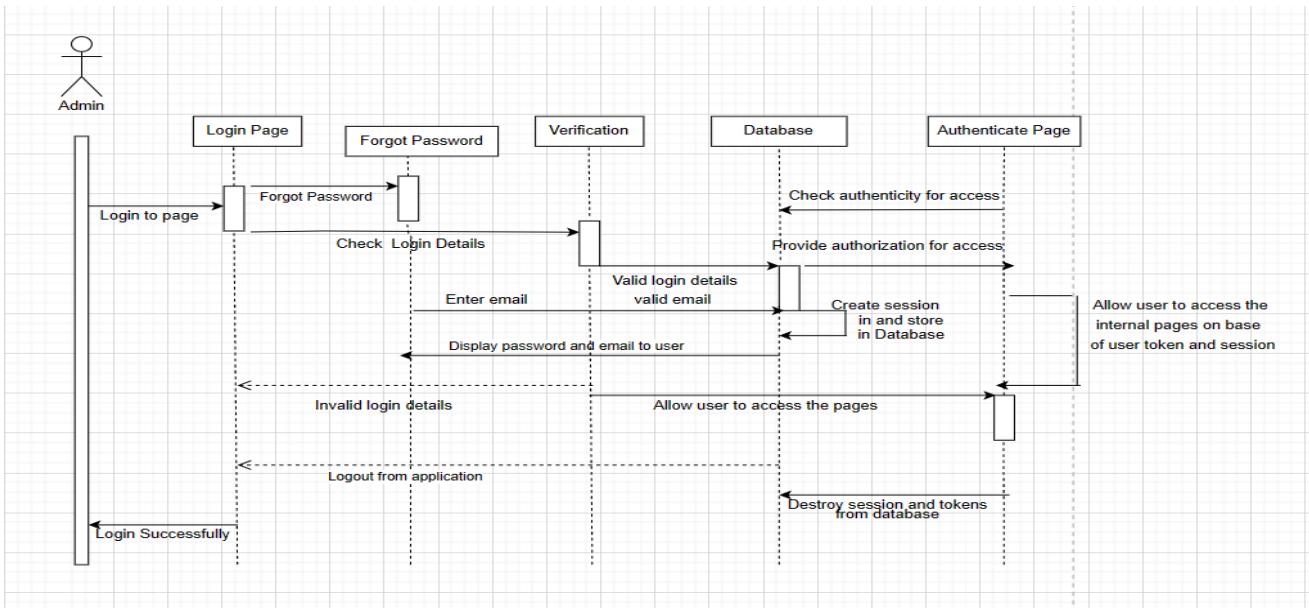
Main Flow of Events:

- Students/Admins login into the portal using respective login details like ID/Username and password.
- User then directs to the help desk page on selecting.
- Then students can request any help regarding hardware problems faced in the hostel room or any help regarding hostile rooms.
- Once students raise a request for any help the admin follows up on the request and makes sure to solve it by providing the required help.
- Then, the person is logged out once the logout button is selected.

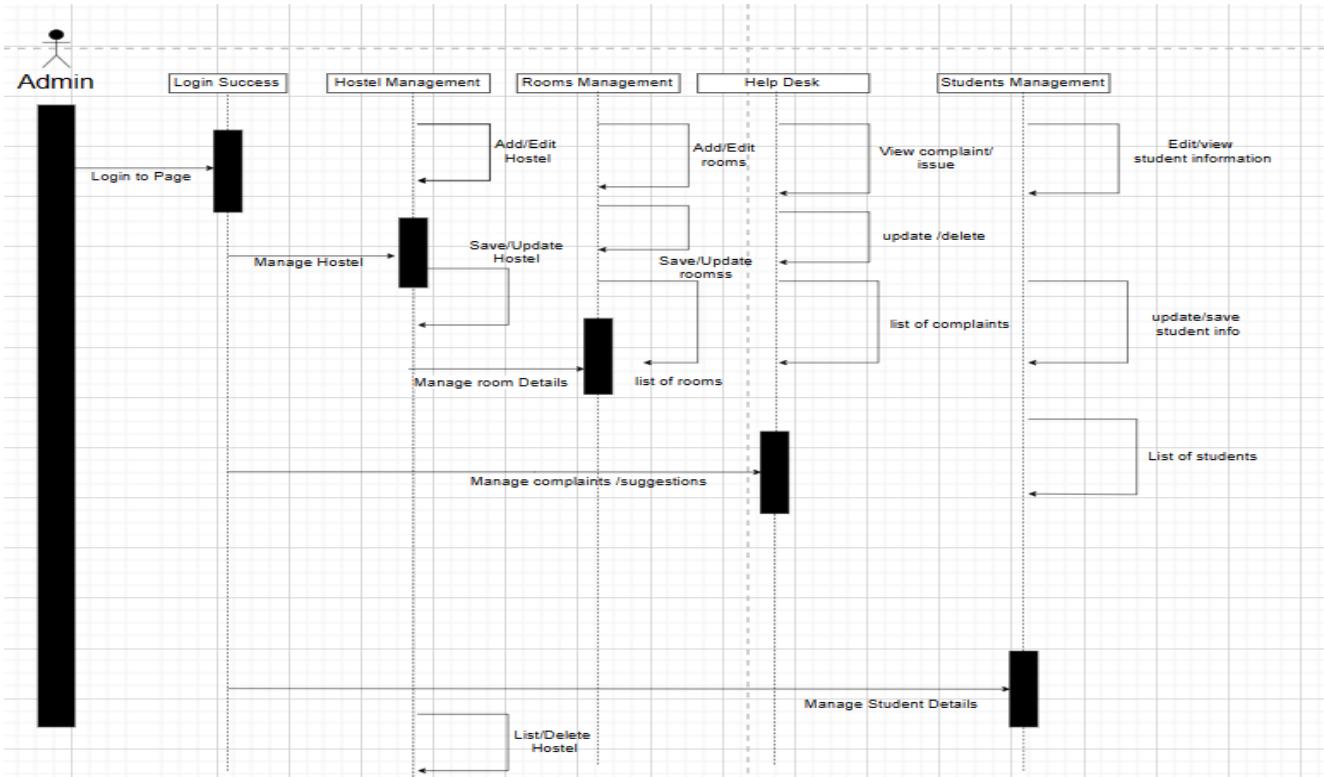
Post-Conditions: The login Page is back on.

4.4 Sequential Diagram

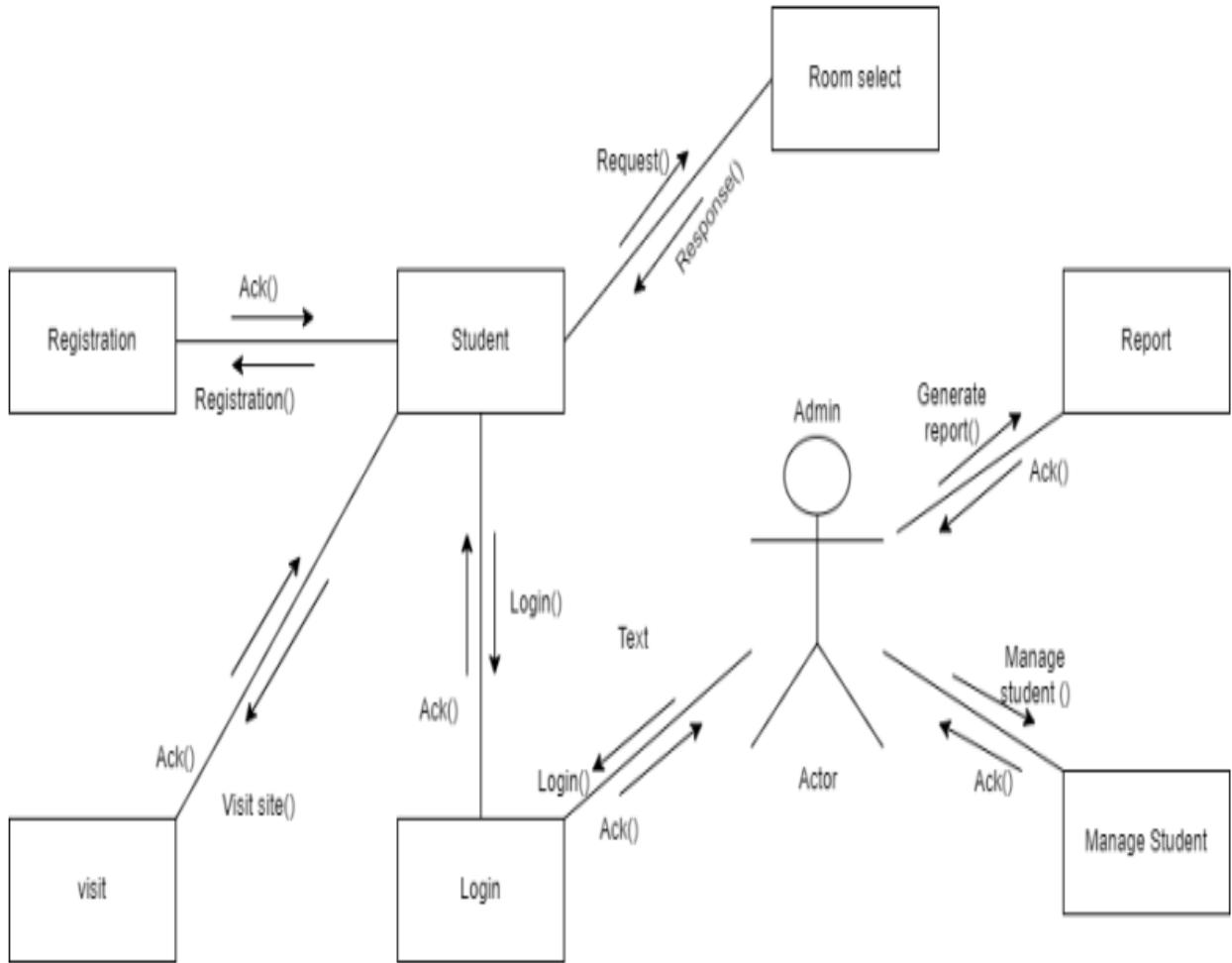
Admin login flow



Admin Hostel Management



4.5 Collaboration Diagram



Results

5.1 Home Page



Code Group Houses

Feel like second home

Room

The room exudes a vibrant and communal atmosphere, buzzing with the energy of diverse individuals from around the world. The walls are adorned with colorful posters and travel-inspired decorations, reflecting the spirit of wanderlust that permeates the space. The beds are typically equipped with comfortable mattresses, fresh linens, and individual reading lights, providing a haven for rest after a day filled with exploration.

Mess

“Tastes of heaven”

Our hostel mess is more than just a dining area; it's a hub of flavors, conversations, and connections. It's a place where hungry travelers gather to satisfy their appetites and nourish their souls. Amidst the clatter of cutlery and the aroma of diverse cuisines, strangers become friends, and friendships deepen over shared meals.

Hostel

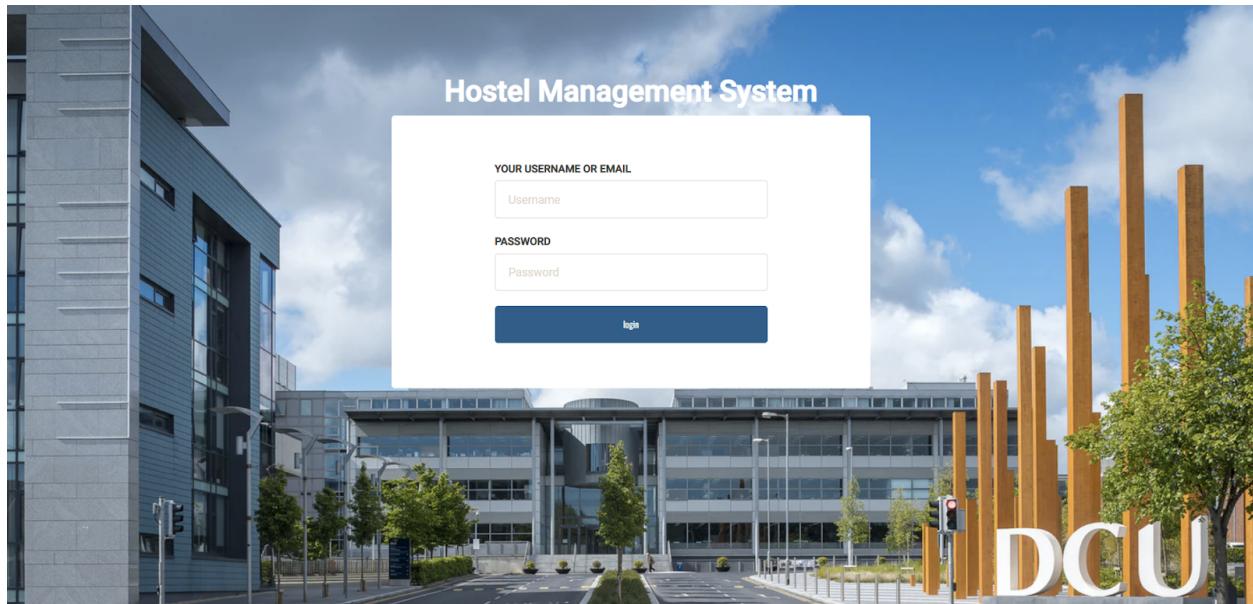
Our hostel environment is a vibrant tapestry woven with the threads of diversity, camaraderie, and shared experiences. It's a lively ecosystem that thrives on the energy of adventurous souls from all walks of life. Within its walls, the air is filled with an electric buzz, an amalgamation of different languages, laughter, and the constant hum of excitement.

5.2 Login Page

Student Login

The screenshot shows the 'User Login' page of the Hostel Management System. At the top left is a sidebar with a dark background and white text, labeled 'MAIN' at the top. Below it are three items: 'Student Registration' with a user icon, 'Student Login' with a lock icon, and 'Admin Login' with a gear icon. The main area has a light gray background and is titled 'User Login' in bold. It contains two input fields: 'EMAIL' with placeholder 'Email' and 'PASSWORD' with placeholder 'Password'. Below these is a blue rectangular button with the word 'login' in white. At the bottom right of the main area is a small link 'Forgot password?'

Admin Login



5.3 Student Registration Page

Student Registration

FILL ALL INFO

Registration No :	<input type="text"/>
First Name :	<input type="text"/>
Middle Name :	<input type="text"/>
Last Name :	<input type="text"/>
Gender :	<input type="text"/> Select Gender
Contact No :	<input type="text"/>
Email Id:	<input type="text"/>
Password:	<input type="text"/>
Confirm Password :	<input type="text"/>

5.4 Student Privileges

Student Dashboard

Hostel Management System

MAIN

- Dashboard
- My Profile
- Change Password
- Book Hostel
- Room Details
- Help Desk

Dashboard

My Profile

FULL DETAIL →

My Room

SEE ALL →

Account

Student Registration

Hostel Management System

Registration

FILL ALL INFO

Hostel already booked by you

Room Related info

Room no.:

Seater:

Fees Per Month:

Food Status: Without Food With Food (Rs 2000.00 Per Month Extra)

Stay From:

Duration:

Total Amount:

Personal info

course:

Registration No.: AP20110010297

First Name: Tarun

Middle Name: Varthan

Last Name: K

Gender: male

Contact No.: 8467067344

Email Id: tarun@gmail.com

Emergency Contact:

Guardian Name:

Guardian Relation:

Account

Room Related Info

Hostel Management System

MAIN

Dashboard

My Profile

Change Password

Book Hostel

Room Details

Help Desk

ALL ROOM DETAILS

Room Realted Info

Reg no.: 2023-05-18 16:42:21

Room no.:	112	Seater:	3	Fees PM:	4000
Food Status:	Without Food	Stay From:	2023-05-18	Duration:	8 Months
Total Fee : 32000					
Reg No.:	0	Full Name:	TarunVardhanK	Email:	tarun@gmail.com
Contact No.:	8467067344	Gender:	male	Course:	Bachelor of Technology
Emergency Contact No.:	9121045037	Guardian Name:	vardhan	Guardian Relation:	Best Friend
Guardian Contact No.:	9121045037				
Correspondense Address	129-94, Near Shivalayam, East Bazar, Gornatla, Guntur Land mark : near shivalayam Guntur, 522034 Andhra Pradesh	Permanent Address	129-94, Near Shivalayam, East Bazar, Gornatla, Guntur Land mark : near shivalayam Guntur, 522034 Andhra Pradesh		

Report Of Room Details

The screenshot shows the Hostel Management System interface. On the left, a sidebar menu lists 'MAIN' categories: Dashboard, My Profile, Change Password, Book Hostel, Room Details, and Help Desk. The 'Room Details' option is selected. The main content area displays 'ALL ROOM DETAILS' and 'Room Related Info' for a student named Tarun K. The 'Reg no.' is 2023-05-18 16:42:2. The 'Room no.' is 112, 'SEATER' is 3, 'FEES PM' is 4000, and 'Food Status' is WITHOUT FOOD. The 'TOTAL FEE' is 32000. Below this is a 'Personal Info Info' section with fields like 'Reg No.', 'COURSE' (BACHELOR OF TECHNOLOGY), 'Contact No.', 'FIRST NAME' (TARUN), 'MIDDLE NAME' (VARDHAN), 'LAST', 'GENDER' (MALE), 'CONTACT NO.', 'EMAIL ID' (TARUN@GMAIL.COM), 'EMERGENCY CONTACT' (9121045037), 'GUARDIAN NAME' (VARDHAN), 'GUARDIAN RELATION' (BEST FRIEND), and 'GUARDIAN CONTACT' (9121045037). To the right, a 'Print Data' button is highlighted with a red circle. A preview window titled 'Student Information - Google Chrome' shows the same information in a tabular format, including the address: 129-94, Near Shivalayam, East Bazar, Gornatla, Guntur Land mark : near shivalayam, Guntur, 522034, Andhra Pradesh.

Help Desk / Issue

The screenshot shows the 'Raise Ticket' form within the Hostel Management System. The sidebar menu on the left includes 'MAIN' categories: Dashboard, My Profile, Change Password, Book Hostel, Room Details, and Help Desk. The 'Help Desk' option is selected. The main content area has a title 'Raise Ticket' and a 'ENTER DETAILS' header. It contains four input fields: 'Email' (with placeholder 'Email'), 'Subject' (with placeholder 'Subject'), 'Description' (with placeholder 'Description'), and 'Suggestions' (with placeholder 'Suggestions'). A blue 'Send' button is located at the bottom of the form.

5.5 Admin Privileges

Admin Dashboard

The screenshot shows the Admin Dashboard of the Hostel Management System. The left sidebar is titled 'MAIN' and includes links for Dashboard, Helpdesk, Rooms, Student Registration, Manage Students, and User Access logs. The main area is titled 'Dashboard' and displays two cards: one blue card showing '3 STUDENTS' with a 'FULL DETAIL →' link, and one purple card showing '6 TOTAL ROOMS' with a 'SEE ALL →' link.

Help Desk / Raised Tickets

The screenshot shows the 'Raised tickets' section of the Admin Dashboard. The left sidebar is identical to the previous dashboard. The main area is titled 'RAISED TICKETS' and contains a table titled 'ALL COURSES DETAILS'. The table has columns for Sno., Subject, Description, Suggestions, Email, Reg Date, and Action. There is one entry: Sno. 1, Subject Hello, Description aaaaaaaaaaa, Suggestions aaaa, Email tarun@gmail.com, Reg Date 2023-05-19 00:40:35, and Action with a delete icon. Below the table, it says 'Showing 1 to 1 of 1 entries'. At the bottom right are buttons for 'PREVIOUS', '1', and 'NEXT'.

Sno.	Subject	Description	Suggestions	Email	Reg Date	Action
1	Hello	aaaaaaaaaaa	aaaa	tarun@gmail.com	2023-05-19 00:40:35	X

Managing Room Details

- Adding room
- Editing the room details

The screenshot shows the 'Add a Room' page of the Hostel Management System. The left sidebar has a dark theme with white icons and text. The 'Rooms' section is currently selected. The main content area has a light gray background with a title 'Add a Room'. Below it is a form titled 'ADD A ROOM' with three input fields: 'Select Seater' (a dropdown menu), 'Room No.' (a text input field), and 'Fee(Per Student)' (a text input field). At the bottom right of the form is a blue 'Create Room' button.

Manage Student's Info

The screenshot shows the 'Manage Students' page of the Hostel Management System. The left sidebar has a dark theme with white icons and text. The 'Manage Students' section is currently selected. The main content area has a light gray background with a title 'MANAGE STUDENTS'. Below it is a table titled 'ALL STUDENTS DETAILS' with columns: Sno., Student Name, Reg no, Contact no, room no, Seater, Staying From, and Action. There are three entries in the table:

Sno.	Student Name	Reg no	Contact no	room no	Seater	Staying From	Action
1	TarunVardhanK	0	8467067344	112	3	2023-05-18	
2	TarunVardhanK	0	8467067344	100	5	2023-06-03	
3	TarunVardhanK	0	8467067344	205	5	2023-06-03	

Below the table, a message says 'Showing 1 to 3 of 3 entries'. At the bottom right are navigation buttons: 'PREVIOUS', '1', and 'NEXT'.

Conclusion and Future Work

6.1 Conclusion

The "HOSTEL MANAGEMENT SYSTEM" project is a very useful and important effort that will manage numerous operations in the hostel, including housing, rents, student data, and many other things that are crucial for a well-run hostel. The goal of this project is to offer living accommodations to rural students who are unable to continue their education there. They will be able to live in hostels at reasonable prices, and the environment they require for their studies will be completely provided.

This project also has the advantage of making it simple to manage all hostel operations, which saves us time and human effort.

6.2 Future Work

By adding payment gateways, a feedback system, and other features that will develop in the near future, we contemplated enhancing the project's functionality in the future. Developing a dedicated mobile application for the Hostel Management System can greatly enhance accessibility and convenience for both hostel administrators and residents.

The Hostel Management System can be integrated with intelligent technologies to streamline and automate a variety of processes. Implementing IoT devices, for instance, can assist minimize energy waste and maximize resource use by automating lighting or temperature controls and monitoring energy consumption. Residents may be given keyless entry and have security measures increased by integration with smart locks.

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- www.apache.org/
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