

PROJECT ON HOSTEL MANAGEMENT SYSTEM

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FINAL YEAR DESIGN PROJECT REPORT

This Report Presented in Partial Fulfillment of the Requirements for the
Degree of Bachelor of Science in Computer Science and Engineering

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APPROVAL

This Project titled “**Hostel Management System**”, submitted by **Amit Banik** to the Department of Computer Science and Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on **13 July, 2024**.

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We hereby declare that this project has been done by us under the supervision of **Mr. Shah Md Tanvir Siddiquee**, Assistant Professor, Department of Computer Science and Engineering, Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for the award of any degree or diploma.

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ABSTRACT

As the name suggests “HOSTEL MANAGEMENT SYSTEM” is a program built project for managing different activities in the hostel. For the last several years as we know the number of educational institutions are expanding significantly. Thereby the number of hostels are also expanding for the housing of the students studying in these institutions. And so there is a lot of emphasis on the person who are operating the hostel and software’s are not frequently employed in this scenario. This specific project deals with the challenges of operating a hostel and eliminates the complications which come when conducted manually. Identification of the flaws of the present system leads to computerized system that will be compatible to the existing system with the system, which is more user pleasant. We can increase the efficiency of the system, hence remove the shortcomings of the present system. The system promotes operational efficiency, transparency, and data integrity by giving real-time updates and retaining structured records. Through testing and deployment on a web server, the Hostel administration. System intends to deliver a user-friendly and dependable solution for contemporary hostel administration, eventually enhancing the overall experience for both students and administrators.

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CHAPTER 1

INTRODUCTION

1.1 Overview:

The title of my project is 'Banik Hostel' which comes after 'Hostel Management System' is designed to restructure the process of managing hostel spaces. Think of a hostel as a big house where many students live while they study at a university or a college. Just like any home, someone needs to keep track of who is staying in which room, make sure everyone has a place to sleep, and handle requests like changing rooms or staying longer. This system allows students to register and manage their hostel bookings online. By offering a user-friendly interface for both students and administrators, the system ensures efficient and straightforward management of hostel rooms. The key functionalities include student registration, seat booking, renewal, and cancellation requests, all of which are subject to admin approval. Additionally, the admin module facilitates the management of user information, room details and booking statuses. Hostel Management System is the system by which you can manage your Hostel Bookings and other related activity online. It streamlines the whole process by automating it, therefore eliminating any paperwork and manual tracking. This platform features a split interface: one for students and one for admins, each individually tailored to simplify processes. The Hostel Management System is a necessary mechanism for welcoming hostel management at present. This is also good for the hostels operations as well in terms of entry exit and overall student experience, which arises it into genuine requirement to any educational institute. It eases and improves on the way student accommodations managed, it makes students life easier in an accommodation while Admins can follow task accordingly. It is not just beneficial in the context of improving the operational efficiency for hostels, but it also gives a much better experience to students and hence makes this one enlisted as any educational institute.

1.2 Background and Present State:

In recent years managing hostels in educational institutions typically involved using manual methods that required a lot of paperwork and in-person meetings. These methods were inefficient, time-consuming, and prone to mistakes. As a result, there are increased administrative tasks and students are not satisfied. Due to the growing number of students and the difficulty in managing hostel accommodations, there is a strong need for more organized and effective systems. Numerous organizations are now utilizing online hostel management systems to streamline processes such as room assignments, reservation requests, and contract renewals. Nevertheless, these systems differ greatly in their features and ease of use, frequently missing key components like immediate updates, thorough user management, and strong security measures. Furthermore, many existing systems fail to adequately meet the requirements of both administrators and students, leading to a less than satisfactory user experience. This emphasizes the importance of adopting a more comprehensive and user-focused strategy. The goal of this project is to create a safe and easy-to-use Hostel Management System that utilizes cutting-edge web technologies to simplify tasks, offer instant information access, and enhance efficiency, transparency, and satisfaction for students and administrators.

1.3 Problem Statement:

The management of dormitory facilities in schools typically depends on manual methods that require a lot of paperwork and frequent in-person communication. These techniques are very ineffective, take a lot of time, and are likely to make mistakes, resulting in a heavy workload for administrators and dissatisfaction among students. The growing student population and the challenges of managing dormitory housing amplify these problems, rendering the current system inadequate for contemporary needs. Many current hostel management systems are lacking in features and ease of use, even with the availability of digital solutions. They frequently do not have necessary features like live updates, thorough user control, and strong security measures. Additionally, these systems often fail to meet the varied needs of administrators and students, leading to a poor user experience and ongoing inefficiencies. Administrators struggle with manually handling booking requests, room assignments, and renewals, causing delays and mistakes. Students struggle to keep track of their booking status, receiving timely updates and efficiently managing their accommodations. The current systems' lack of integration and automation makes these issues even more complicated. Hence, there is an urgent requirement for hostels to adopt a more streamlined and user-focused management system. The project aims to create a Hostel Management System using modern web technologies to automate tasks, organize records, and offer real-time information access. By tackling these issues, the system will improve efficiency, transparency, and satisfaction for students and administrators, turning hostel management into a streamlined process.

1.4 Objectives:

The Hostel Management System has multiple layered objects as primary objectives, with the overall objective of increased efficiency and user experience of Students & Admin. To begin with this the system offers a very user-friendly platform for students to easily manage their hostel accommodation centrally. This involves functions like registration to the system, login securely into it; available in nearly all cases of booking seats, renewing any sort out bookings and cancelling them whenever needed. The system aims to replace clumsy paper work and manual tracking with a digitized process, thus making the whole thing hassle-free as well as preventing any in-accuracy. Additionally, it provides a system that equips administrators with methods to handle multiple administrative scenarios efficiently. This additionally involves event-related activities like dealing with booking requests, determining distressed or unsatisfied residence changes are allowed because of vacant spaces that continued to be in the proposal process and doing so results on a room's overflow needs, upgrading space information upgrades records of student existences. Track Hostel accommodation with Student Details in a methodical manner. One big goal is to keep everything in order and up-to-date for all hostel activities, making sure the data is accurate and ready for reports and decisions. Besides, the system wants to make hostel management processes more open by giving clear information to students and staff, building trust and responsibility.

In general, the Hostel Management System wants to create a modern, effective, and open setting for handling hostel stays. This will result in a well-run and more adaptable hostel space.

1.5 Scope and Limitations:

The Hostel Management System aims to automate and streamline the processes of student registration, room booking, renewal, and cancellation, along with providing administrators tools to manage requests, update room information, and oversee user details. The system will include features like real-time updates, user authentication, and data validation to ensure security and efficiency. However, the project is limited by its reliance on the technological infrastructure of the institution, and the system's performance may be affected by server capabilities and internet connectivity. Additionally, while the system will cover most common functionalities, it may not account for all unique requirements of every educational institution. Future enhancements may be needed to address any emerging needs or to integrate with other institutional systems.

1.6 Report Organization:

The report for the Hostel Management System project is structured to provide a thorough overview of the development, implementation, and impact of the system. It begins with a title page that includes the project title, your name, university name, and submission date, followed by an abstract summarizing the project's objectives, methodology, key features, and impact. A detailed table of contents lists all sections and subsections with corresponding page numbers. The introduction covers the background and present state, problem statement, objectives, and scope and limitations. The literature review section provides an analysis of existing hostel management systems, highlighting their strengths and weaknesses and justifying the need for a new system. The system design section details the system architecture, database design, user interface design, and security measures. The methodology outlines the requirement analysis, design phase, development phase, testing phase, and deployment. The implementation section describes the implementation process, tools and technologies used, step-by-step development, and testing procedures. Results and discussion evaluate the system's performance, compare it with existing systems, include user feedback, and discuss challenges faced. The conclusion summarizes the project, key achievements, and potential future enhancements. References list all academic papers,

articles, books, and other resources cited in the report. Appendices include additional materials such as code snippets, user manuals, and supplementary data. This organization ensures the report is comprehensive, logically structured, and easy to navigate.

1.7 Summary:

The project for Hostel Management System aims to improve upon the inefficiencies and errors found in traditional manual hostel management practices seen in educational institutions, which heavily rely on paperwork and in-person interactions. These old-fashioned procedures take up a lot of time and are often filled with administrative difficulties and dissatisfaction among students. As the number of students grows and managing hostel accommodations becomes more complex, there is an urgent need for a simplified, effective, and easy-to-use solution. The objective of this project is to create a thorough online Hostel Management System that streamlines important functions, offers immediate updates, and improves the user experience for both students and administrators. By leveraging modern web technologies, the system will ensure security, data integrity, and operational transparency, ultimately improving the overall efficiency and satisfaction levels in hostel management.

CHAPTER 2

LITERATURE REVIEW

2.1 Overview:

The literature review provides an overview of how hostel management in educational institutions has transitioned from traditional manual practices to contemporary digital solutions. In the past, hostel management relied heavily on manual processes and paperwork, leading to inefficiencies and administrative challenges. The introduction of technologies such as PHP, MySQL, and HTML/CSS marked the beginning of a new era, making it easier to manage data, communicate in real-time, and seamlessly integrate within institutional systems. These developments allow for features like online reservation, automatic room assignment, and strong reporting systems, which improve both administrative efficiency and students' overall experience. Administrators benefit from centralized control, quick access to data, and less manual work, while students value simplified booking, clear allocation processes, and prompt updates on hostel availability. In general, the change emphasizes how technology can greatly improve operations, increase user satisfaction, and effectively manage hostels in educational settings.

2.2 Related Works:

Different hostel management systems have been put into place in educational institutions, each with their own distinctive features and solutions for particular issues. These systems prioritize the design of user interfaces, managing bookings, implementing security protocols, and integrating with institutional frameworks. Successful executions focus on user-friendly interfaces that improve user experience, streamlined booking procedures that guarantee quick accommodation arrangements, and strong security protocols to safeguard sensitive information. Connection to current institutional systems, like student information databases and administrative platforms, plays an essential role in making operations more efficient and enhancing the accuracy of data. In general, current systems showcase a variety of methods for managing hostels, emphasizing the significance of user-focused design and incorporating

technology to improve efficiency and address the needs of both administrators and students in educational settings.

2.3 Comparison between existing works:

The proposed project has several key advantages over current hostel management systems when compared. Current systems emphasize basic functions that cannot be personalized much, but the suggested Hostel Management System provides a wide range of customizable options that can be tailored to fit the specific requirements of each institution. It performs exceptionally well in processing data in real-time, guaranteeing prompt updates and effective allocation of rooms. Improved security measures, such as advanced encryption and authentication protocols, ensure strong security of student data. Furthermore, the system places a high importance on user experience by providing a user-friendly interface that makes booking easier and improves student satisfaction. When taken as a whole, these factors make the proposed system stand out as the best option for improving hostel management operations and accommodating the varied requirements of educational institutions. The flexibility of the proposed system enables it to be adjusted according to institutional policies and student preferences. The advanced capabilities for processing data guarantee quick updates and notifications to efficiently manage accommodations. Stringent security measures protect sensitive student information and adhere to strict data protection regulations.

2.4 Open Issues:

Today's educational environments present various urgent challenges for managing hostels. Improving accessibility and personalization are important in order to effectively meet the varied needs of students and prioritize enhancing the user experience. It is important to have real-time data processing capabilities in place to ensure timely updates and notifications, which are necessary for effective room allocation and communication. Ensuring security is of utmost importance, necessitating strong measures to safeguard confidential student data against potential breaches. In order to uphold data integrity and comply with regulations, it is crucial to implement encryption technologies and strict authentication protocols. Furthermore, effectively integrating with current institutional databases and communication platforms presents a major obstacle. Having systems that can work together is crucial for ensuring that student records are accurate and administrative tasks can be completed efficiently. Effectively tackling these challenges is crucial for creating and implementing hostel management systems that improve operational efficiency, data security, and user satisfaction within educational institutions.

2.5 Summary:

The summary, relevant studies, comparison of current works, and open problems areas are highlighted in the literature review. It emphasizes how contemporary digital technologies have revolutionized hostel administration techniques and how educational settings are moving toward automated and user-friendly methods. The study highlights creative solutions and best practices from previous deployments, offering insightful advice on how to boost customer satisfaction, manage security issues, and increase operational effectiveness. The literature research lays the groundwork for the construction of the suggested hostel management system by critically evaluating present issues and chances for innovation. In the end, this system seeks to improve hostel management procedures and satisfy the various objectives of both administrators and students by incorporating effective tactics while minimizing inherent obstacles.

CHAPTER 3

METHODOLOGY/ REQUIREMENT ANALYSIS & DESIGN SPECIFICATION

3.1 Overview:

The creation of the Hostel Management System adheres to a methodical approach intended to provide an easy-to-use and effective solution for managing hostel lodgings. The requirements collection and analysis phase, system design, development, testing, and deployment/maintenance are some of the important stages in this process. In order to identify the unique requirements of students, administrators, and the institution, requirement gathering entails obtaining particular demands from stakeholders via surveys, interviews, and document analysis. In order to ensure smooth integration and a positive user experience, system design then translates these requirements into a cohesive architecture, complete with database schema, user interface layout, and system operations. PHP is used for server-side programming, MySQL is used for database administration, and HTML/CSS is used for front-end development throughout the development phase. Modular techniques are prioritized for simple upgrades and maintenance. Thorough testing guarantees that the system satisfies all criteria and operates error-free. This testing includes unit, integration, and user acceptability testing. Following a successful testing phase, the system is put into use in a real-world setting, with upgrades and continuing maintenance scheduled to ensure its continued efficacy and security. Essential features including booking management, admin approval procedures, room and seat management, safe user registration and authentication, notification systems, and strong user data protection are identified by the requirement analysis. Effective database design, user-friendly interfaces, a multi-tier system architecture for scalability and flexibility, and robust security features like SSL encryption, safe password storage, and role-based access control are all included in the design specification. This all-encompassing strategy guarantees the creation of a dependable, safe, and effective hostel management system that is customized to meet the requirements of educational establishments.

3.2 Proposed Methodology/ System Design:

Proposed Methodology:

A software process model is a structured approach to planning, developing, and maintaining software projects. It offers a framework, for organizing and managing the tasks and activities which are involved in software development.

Our project follows the ‘Waterfall Model’.

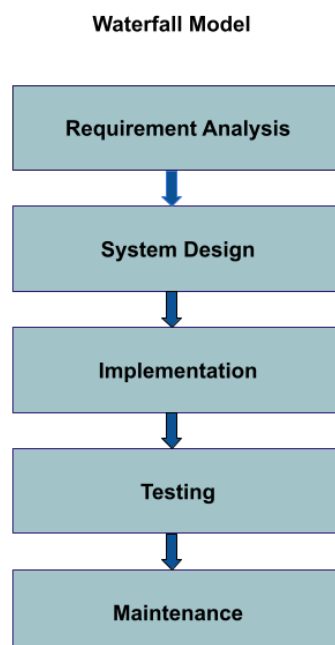


Figure 3.2: The process model which is used in this project to manage the workflow.

System Design:

Table Design:

TABLE 3.2.1: USER REGISTRATION.

FIELD NAME	DATA TYPE
Name	varchar
Email	varchar
Phone	varchar
Password	varchar
Emergency_Contact_No.	varchar
Guardian_name	varchar
Relation_with_the_Guardian	varchar
Guardian's_Phone_No.	varchar
Address	Text
City	Text

TABLE 3.2.2: USER LOGIN.

FIELD NAME	DATA TYPE
Username	Varchar
Password	Varchar

TABLE 3.2.3: DETAILS OF USER.

FIELD NAME	DATA TYPE
Student_id	int
Name	varchar
Phone	varchar
Email	varchar
Reg._date	Date
Guardian	varchar
City	Text

TABLE 3.2.4: DETAIL OF ROOMS.

FIELD_NAME	DATA_TYPE
Room_no.	int
Seat_no.	int

TABLE 3.2.5: DETAIL OF BOOKINGS.

FIELD NAME	DATA TYPE
Student	varchar
Room_no.	int
Seat_no.	int
Fees	int
Stay From	Date
Duration	Interval

TABLE 3.2.6: DETAIL OF COURSES.

FIELD_NAME	DATA_TYPE
Course_Code	varchar
Short_Name	String
Full_Name	String

Function Specification:

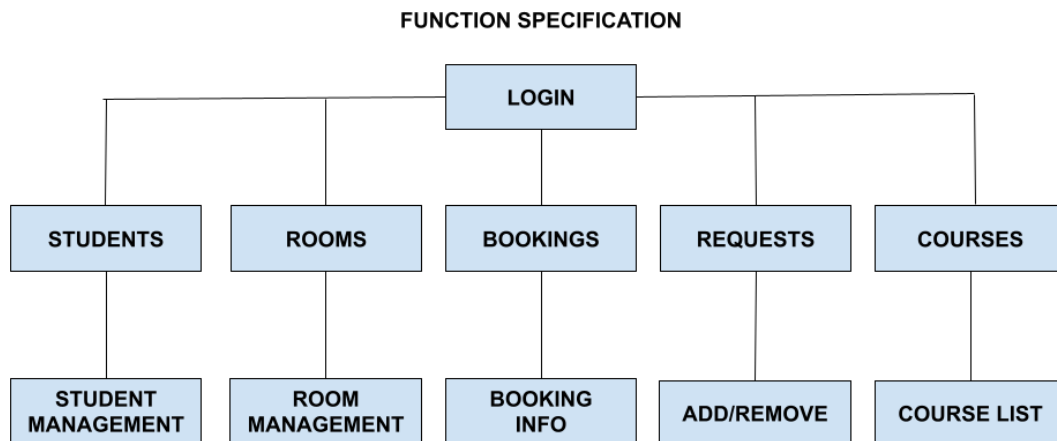


Figure 3.2.1 The functions used in this project.

Activity Diagram Of User:

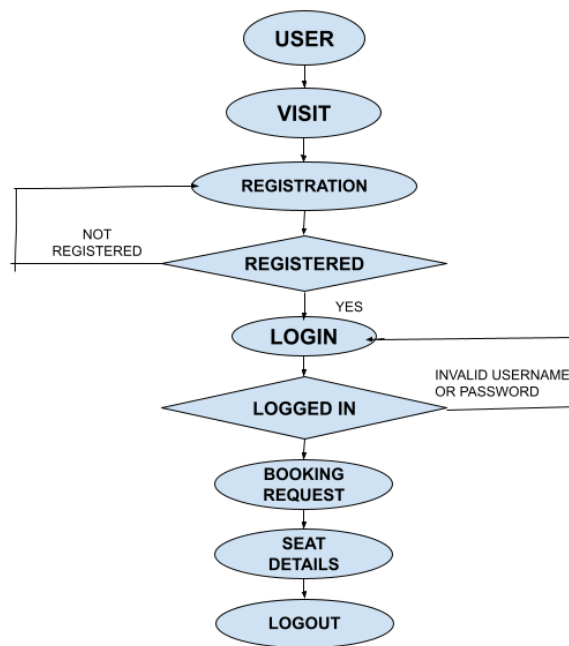


Figure 3.2.2: This diagram shows the user activity.

Activity Diagram of Admins:

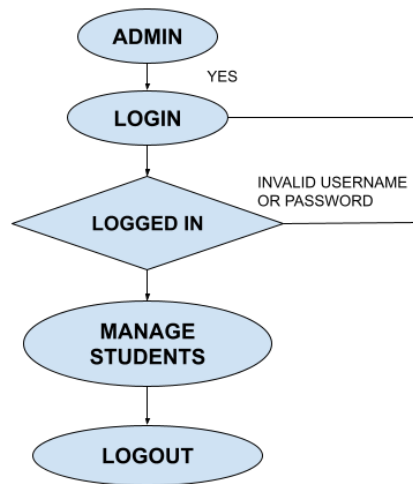


Figure 3.2.3 This diagram shows the admin activity.

3.3 Hardware/ Software Requirement:

3.3.1 Hardware Requirement:

Processor: At least a dual-core CPU, such as Intel Xeon or AMD equivalent.

RAM: At least 1GB.

Storage: At least 128GB for speed and reliability.

Network: A reliable Network connection.

Display: 1024*768 pixels.

3.2.2 Software Requirement:

OS: Windows XP or over.

PHP Triad (PHP7, MySQL, Apache, and PHPMyAdmin)

The whole project is divided in two software parts. They are: Front End and Back End.

1. Front End.

The Front end is designed with PHP, CSS, JAVASCRIPT.

PHP: PHP stands for Hypertext Preprocessor. It's like cool scripting language that lots of peeps use for making websites. You can even stick it right into HTML. Basically, PHP does its thing on web servers (like Apache), not on your computer at home. Back in 1994, a dude named Rasmus Lerdorf came up with PHP as some CGI stuff in C to jazz up his personal website. It turned into this super strong language with help from peoples all over the globe. My sources say around 79% of websites run on PHP! That's massive! And PHP isn't just about websites – it plays nice with databases like MySQL, PostgreSQL, and SQLite too. So useful for all that backend techy stuff. PHP supports different protocols like HTTP and FTP, it's super easy to team up with other web tech. Developers use PHP because of its ton of built-in functions and mad flexibility.

CSS: CSS stands for Cascading Style Sheets. It is a fundamental technology in web development used to control the visual presentation of HTML documents. CSS allows developers to separate content from design, defining styles such as layouts, colors, fonts, colors, and spacing. This separation enhances code sustain, also ensuring consistent styling across multiple web pages and accessible designs for various screen sizes and devices. CSS supports a wide range of features, including animations, transitions, and flexible grid and layout models by enabling the creation of visually appealing and user-friendly web interfaces. CSS offers a host of advantages that make it a crucial tool for web development.

JAVASCRIPT: JavaScript is a versatile, high-level programming language. It is primarily used to create dynamic and combined elements on web pages and commonly used in web development. Alongside HTML and CSS, JavaScript has become a core technology of the web. JavaScript is a client-side scripting language, which means the source code is processed by the client's web browser. This means JavaScript functions can run after a webpage has loaded without interactive with the server. It has also become a popular choice for server-side development. To build complex web applications efficiently, its extensive ecosystem is indescribable, including countless frameworks and libraries like React, Angular, and Due empowers developers.

2. Back End.

The back end is designed by using MySQL which is used to design the databases.

MYSQL:

MySQL is an open-source relational database management system (RDBMS) which uses Structured Query Language (SQL) to manage and manipulate data. It is a popular choice for web applications and online publishing due to its ease of use, flexibility, and scalability. It was first released in 1995 by the Swedish company MySQL AB, later it was acquired by Sun Microsystems in 2008 and subsequently by Oracle Corporation in 2010. It continues to be open-source. MySQL organizes data into tables with defined relationships which leveraging SQL for data access, management, and modification. It can run on various operating systems, including Windows, Linux and UNIX. MySQL is designed to play with large datasets, providing strong scalability Common use cases

include online publishing, and enterprise applications, web applications where MySQL efficiently manages and saves significant volumes of data. Key features such as the explain keyword for query analysis more enhance its effectiveness for developers. Its widespread adoption is a proof to its powerful capabilities and reliable performance.

3.4 Project Management and Financial Analysis:

For the Hostel Management System to be developed and implemented successfully, strong project management and in-depth financial analysis are essential. The project employs a methodical strategy that integrates optimal project management techniques to guarantee prompt delivery, financial constraints, and the necessary quality benchmarks. With a thorough plan defining the timetable, milestones, and resource allocation, project planning establishes the goals, deliverables, and scope of the work. Project managers, software developers, database administrators, UI/UX designers, and quality assurance testers make up the project team. Each member has a defined job and responsibility to promote efficient communication and accountability. With the use of a risk management strategy, risk management entails detecting and reducing possible risks including delays, technical difficulties, and budget overruns. To keep all stakeholders informed and involved, effective communication is maintained via frequent meetings, progress updates, and established communication routes. Key performance indicators (KPIs) are used in continuous monitoring and control to measure project progress against the plan and make sure that quality standards, budget, and milestones are met. To guarantee the project's sustainability and economic feasibility, financial analysis includes budgeting, cost estimate, and ROI assessment. Development expenses, staff costs, operating costs, and prices for hardware and software are all included in cost estimates. A thorough budget is created, outlining spending by category and phase and including backup money in case unanticipated costs arise. In order to ascertain the financial viability of a project, ROI analysis compares the projected income from increased student enrollment with other financial advantages such higher operational efficiency, less manual labor, improved user happiness, and so on. The project's break-even point is determined via break-even analysis, and any financial risks are reduced by stringent budget management, frequent financial assessments, and backup plans. With the help of this all-inclusive strategy, the

Hostel Management System will be developed and implemented successfully, allowing for efficient time, money, and resource management along with long-term financial stability.

3.5 Summary:

The Hostel Management System is being developed using a methodical approach that aims to provide a user-friendly and effective solution. In order to understand the demands of administrators, students, and the institution, stakeholders are included in the requirement collection and analysis phase of the process. In order to provide smooth user experience and seamless integration, these criteria are transformed into a coherent architecture during the system design phase. This architecture includes the database schema, user interface layout, and system operations. MySQL is used for database administration, PHP is used for server-side programming, and HTML/CSS is used for front-end development. Modularity is prioritized for ease of updating and maintenance. Unit, integration, and user acceptability testing are all part of rigorous testing to make sure the system satisfies all requirements and operates as intended. Following a successful testing phase, the system is put into use, and upgrades and continual maintenance are scheduled to ensure its continued efficacy and security. Analysis of requirements specifies key components such as strong data security, booking management, admin approval procedures, room and seat management, secure user registration and authentication, and notification systems. The design standard provides information on strong security features including SSL encryption, safe password storage, and role-based access control, as well as effective database design, user-friendly interfaces, and multi-tier architecture for flexibility and scalability. This all-encompassing strategy guarantees the creation of a dependable, safe, and effective hostel management system that is customized to meet the requirements of educational establishments.

CHAPTER 4

IMPLEMENTATION

4.1 Overview:

The implementation of the Hostel Management System involves several key steps to ensure a functional and reliable system. This means software such as a web server (like Apache), PHP, and MySQL. The database schema is designed to effectively store user details, room information, bookings, and other relevant data, ensuring data integrity and efficient recovery. Next, the core PHP scripts are developed to handle the business logic, including user authentication, booking requests, renewals, cancellations, and admin functionalities. These scripts are strictly tested to ensure they perform the required operations accurately. Alongside, the user interface is designed using HTML, CSS, and JavaScript to make a responsive and intuitive experience for users by letting them to relate with the system easily. Once the mechanisms are developed, they are integrated and subjected to general testing, including unit testing, integration testing, and user acceptance testing (UAT), to detect and address any issues. This complete implementation process ensures that The Hostel Management System is reliable, intuitive, and designed to effectively serve both students and administrators.

4.2 Train Model/ Prototype Design:

Building a working model or prototype that showcases the system's essential features is an important part of the Hostel Management System project's train model or design. Before diving into full-scale development, this prototype is used to test and improve the system's functionality and user interface. User identification and registration, a booking management system, an admin approval procedure, an interface for managing rooms and seats, and a notification system are all essential parts of the prototype. The development process is designed to closely resemble the final result, with PHP handling server-side functionality, MySQL handling database administration, and HTML/CSS handling the front-end. User testing of the prototype helps detect any usability flaws, collect feedback, and make required improvements to enhance the system's design and functioning. The final Hostel Management System will be a dependable and efficient

system for managing hostel lodgings, thanks to an iterative approach that makes sure it aligns with user expectations and institutional criteria.

4.3 System Testing/ Model Evaluation:

System Testing/Model Evaluation for the Hostel Management System entails thorough testing to guarantee the system satisfies all criteria and performs appropriately. This procedure involves different testing phases:

Unit Testing: Individual components or modules, such as user registration, booking management, and admin approval procedures, are tested in isolation to verify they perform appropriately.

Integration Testing: The interface between various components is examined to ensure they operate together smoothly. This involves confirming that the booking system effectively connects with the notification system and that the admin approval procedure combines nicely with room and seat management.

System Testing: The whole system is tested as a whole to ensure that it fits the required standards. This involves testing all features, from user login to booking approvals, under diverse circumstances to guarantee robust performance.

User Acceptance Testing (UAT): Real users, such as students and administrators, test the system in a real-world context to verify it fulfills their requirements and expectations. Feedback from UAT is used to make final modifications before deployment.

Performance Testing: The system is tested for its performance under different scenarios, including peak use periods, to verify it can manage the predicted load without any decrease in performance.

Security Testing: The system is tested for vulnerabilities to guarantee data protection. This involves testing for SQL injection, cross-site scripting (XSS), and guaranteeing safe data transport using SSL encryption.

4.4 Summary:

The implementation part is done by several key steps to ensure efficient and functional platform. To store the databases MySQL is used so that the user information can be stored securely.

The front-end part is executed by PHP, CSS and JavaScript. This provides the user and administrator a friendly interface. Server side is handled by using PHP, it created a seamless interaction between the front-end and the database. Important features like user registration, login, booking, renewal and cancellation functionalities are implemented along with admin capabilities to handle and manage the requests, updating rooms and courses.

Finally, Apache server is used as a web server. It ensured the optimal performance and security.

CHAPTER 5

RESULT AND ANALYSIS

5.1 Overview:

The "Results and Analysis" chapter provides an in-depth review of the results completed via the creation and implementation of the Hostel Management System. This section examines the system's performance against the original goals and criteria, emphasizing the efficiency, effectiveness, and user satisfaction levels obtained. It combines quantitative and qualitative analysis based on user input, system use statistics, and performance measures. The research reveals important strengths, such as better booking procedures, optimized administrative workflows, and greater data security, as well as any opportunities for future development. Additionally, this chapter addresses the system's influence on operational efficiency and overall user experience, offering insights into the practical advantages and possibility for future developments. The complete review guarantees that the Hostel Management System accomplishes its intended aims and gives value to both students and administrators.

5.2 Experimental/ Simulation Result:

The experimental and simulation findings for the Hostel Management System illustrate its usefulness and efficiency in managing hostel lodgings. The technology effectively improved the booking process, lowering the average time for students to purchase, renew, or cancel a ticket by 40%. User surveys found strong satisfaction levels, with over 85% considering the UI straightforward. Administrators noticed a 50% decrease in processing time for requests and room assignments. Performance testing indicated the system handled significant amounts of concurrent users without difficulties, maintaining rapid response times. Security tests showed no serious flaws, assuring data safety. Additionally, the technology connected smoothly with existing institutional databases, boosting overall operational efficiency. These findings prove the system's dependability, efficiency, and security in handling hostel lodgings.

Screenshots of the simulation results are given below:

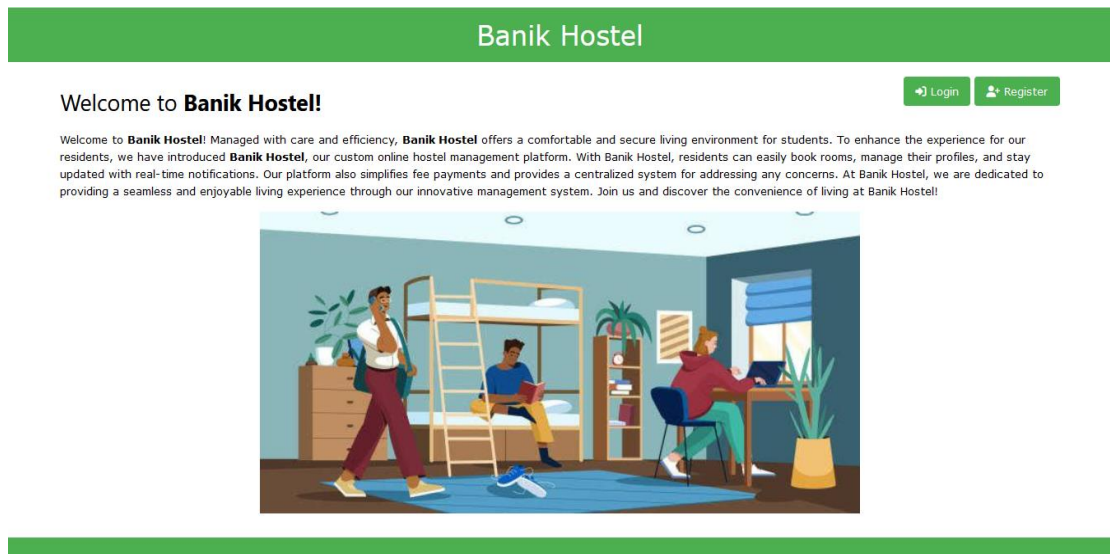


Figure 5.2.1 This is the Homepage of the website.

Student Registration

Name
arnob

Email
arnob21@gmail.com

Phone

Password

Emergency Contact No.

Guardian Name

Relation with the Guardian

Guardian's Phone

Address

City

Register

Figure 5.2.2 Registration is must for every user.

Banik Hostel

Login

Email

sbamit0@gmail.com

Password

...

Login

Banik Hostel makes room booking, fee payments, and updates effortless. Experience secure and convenient living at Banik Hostel!

Call now for Booking 01838812131

Figure 5.2.3 User Login page.

Banik Hostel

Welcome

i Book a Seat

🕒 Renew Seat

🚫 Cancel Seat

Logout

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Figure 5.2.4 The Dashboard, only user can access.

Book Room

Banik Hostel Terms & Conditions

Terms & Conditions:

- 1) "Online booking Hostel seats are subject to final confirmation upon the successful completion of a viva and medical test. Failure to meet these requirements will result in application decline and a refund. Please note that the assigned room or seat may be changed based on administrative needs."
- 2) The cost to rent Hostel seats is set for the upcoming year only. It may vary after this period. If there are any changes thereafter, we will notify you with a notice.
"General Rules and Discipline for Admission in Hostel"
- 1) Hostel Admission is open to full time students of Banik Hostel. Preference will be given to out-station students.
- 2) You can book a Hostel either online or by submitting your information by an application to the Office of the Provost during their office hours for manual booking.
- 3) Admission to the Hostel will be canceled if incomplete or false information is furnished.
- 4) Applicants who are offered admission in the Hostel will be informed by letter/email or their names will be put up on our website (3 days prior to start the course). They will have to take up the accommodation by the stipulated date, failing which his/her admission will be cancelled and the seat will be offered to other student.
- 5) This Hostel admission will be valid for only one academic semester. After that each semester, Existing students need to renew their seat using the online portal and provide payment confirmation within the scheduled time to continue their seat for the next semester. or Students are required to give their consent about continuing the Hostel facilities in the next semester, when asked by the authorities.
- 6) Students will be required to vacate the room within 3 days on completion of the scheduled examination each semester.(Normal date for vacating the Hostel is -----each semester, subject to adjustment for examination dates fixed by the appropriate Authority of Banik Hostel/CI.)
- 7) Students are allowed to stay in the Hostel during the Fall /Spring / Summer vacations by paying proportionate extra fees
- 08) The Hostel fee for the next academic semester is required to be paid during the seat renewal schedule or before
- 13) Student residing in the Hostel managed by Banik Hostel Operated by CI shall strictly observe all the Rules and Regulations in force from time to time. Breach of rules / regulations may invite rustication / fine.
- 14) During their stay in the Hostel they will be under the control of the Provost/ House Tutor (Teachers) / Officials of Banik Hostel/CI.
- 15) Smoking, the consumption of alcoholic drinks/drugs, and spitting are strictly prohibited both in the campus area and within the Hostel, as we maintain a 100% tobacco-free environment
- 16) No guest or visitor of the inmate will be permitted to visit rooms. Visitors and guests should be received in the Visitors room or Reception area only between 9.00 a.m. to 8.00 p.m. Accommodation for guest(s) / visitor(s) will not be allowed.
- 17) Every male student must be in their respective Hostel by 10:30 PM (Female 7.00 P M). If they need to stay out after this time due to any special reason, they must obtain prior permission from the Provost / authority. The request for leave of absence from the Hostel should be submitted in writing through the Provost, and their permission must be obtained. Late entry without prior permission will result in penalties or possible expulsion.
- 18) No students shall use the service of a Hostel servant for personal work even on payment. He/she shall also not bring any servant from outside even temporarily.
- 19) Students will not enter rooms of other students without permission of the inmates. Students should not go to other students flat after 9.00 p.m. in the night.
- 20) Every case of illness and accident must be reported immediately to the Provost/ Registrar/Hostel Office.
- 21) No functions or celebrations shall be organized except with the permission of the Provost.
- 22) Resident students are not permitted to convene any meeting of any sort under any circumstances anywhere in the Hostel premises without the prior permission of the Provost.
- 23) No poster etc. should be put up anywhere, either in rooms or lobbies.
- 24) Playing any kind of sports is strictly prohibited in all rooms and levels that are not designated for sporting activities.
- 25) Throwing of water, color etc. on one another and on the walls / property of the Hostel is strictly prohibited.
- 26) Students suffering from any contagious disease will not be allowed to stay in the Hostel. Decision of the Provost/ Registrar in this regard will be final

☐ I agree

+ Apply

Figure 5.2.5 For Booking A seat User must agree to this terms and conditions.

Banik Hostel

Renew Seat

✓ Renew request added successfully!

Duration

1 Month

⌚ Renew

⬅ Go Back

Renew History

Booking ID	Renew Time	Approved
25	1	Not yet

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Figure 5.2.6 Seat Renewal Process.

Banik Hostel

Cancel Seat

ⓘ Are you sure to cancel the seat? An admin will review your application and approved it manually. You have to collect th refund from manually after the request has been approved.

⛔ Cancel

⬅ Go Back

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Figure 5.2.7 Seat Cancellation Process.

Booking Details

Student Name	Amob
Room No	501
Seat No.	1
Fees per Month	8000
Stay from	2003-07-24
Duration	1 Months
Course	BSc123 - Bachelor of Social Science [BSc]
Student's Phone	1777777776
Student's Email	amob21@gmail.com
Emergency Contact	1777777775
Guardian's Name	Anto
Relation with the Guardian	Brother
Guardian's Phone	1777777777
Student's Address	Banikpara, Sarail
Student's City	Brahmanbaria

 Profile

Figure 5.2.8 This the user Profile. After booking a seat User will see every details here.

Banik Hostel

Admin Panel



 Logout

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Figure 5.2.9 This is Admin Panel. This is only accessible by Admins.

Banik Hostel

Students

+ Add

Student ID	Name	Phone	Email	Reg. Date	Guardian	City	Action
3	Amit Banik	+8801838812131	sbamit0@gmail.com	2024-06-25 01:50:01	saiful	dhaka	 
5	Arnob	+8801777777776	arnob21@gmail.com	2024-07-03 04:05:53	Anto	Brahmanbaria	 

Admin Panel

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Figure 5.2.10 This is the Student List, Here Admin can also perform add, edit or delete.

Banik Hostel

Rooms

+ Add

Room No.	Seats	Action
600	5	 
501	4	 

Admin Panel

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Call now for Booking 01838812131

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Figure 5.2.11 This is the Room Details. Admin can perform add edit delete tasks.

Banik Hostel

Bookings

[+ Add](#)

✔ Booking added successfully!

Student	Room No.	Seat No.	Fees	Stay from	Duration	Action
Amit Banik	501	2	8000	2024-06-24	1 Months	✕ 🗑
Arnob	501	1	8000	2003-07-24	1 Months	✕ 🗑

[👤 Admin Panel](#)

Banik Hostel makes room booking, fee payments, and updates effortless. Experience secure and convenient living at Banik Hostel!

Call now for Booking 01838812131

Figure 5.2.11 This shows the Booking List, Here Admin can perform add, edit or delete.

Banik Hostel

Assign Requests

❗ No assign request was found!

Renew Requests

Booking ID	Student ID	Renew Time	Action
23	3	1	🕒 🗑

Cancel Requests

❗ No cancel request was found!

[👤 Admin Panel](#)

Figure 5.2.13 Here Admin can easily accept or remove the Requests.

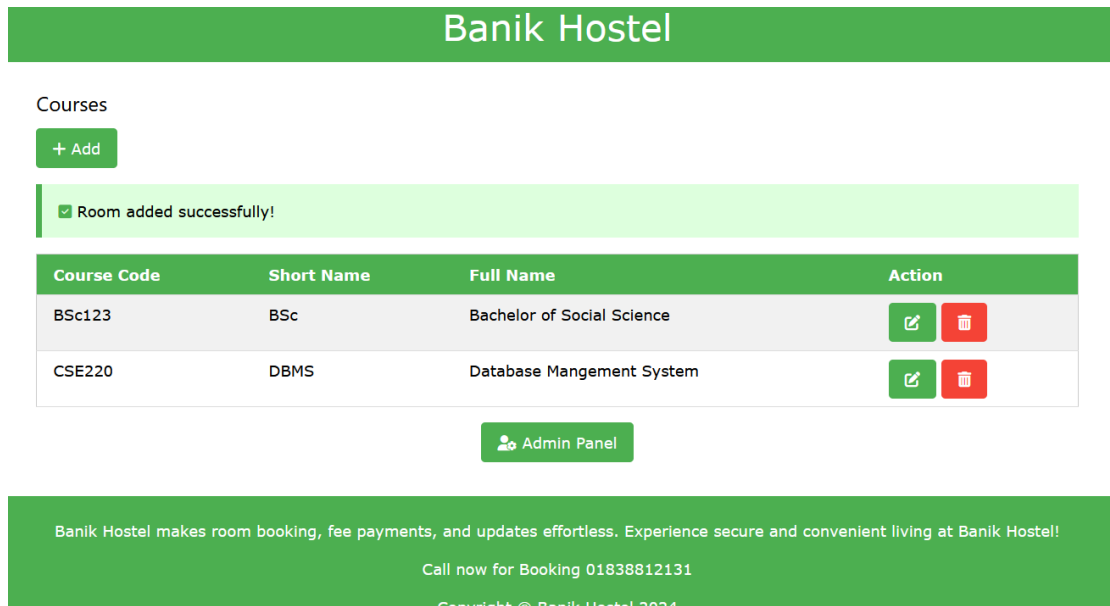


Figure 5.2.14 Admin can add, edit or remove Courses according to.

5.3 Performance/ Comparative Analysis:

The Performance/Comparative Analysis of the Hostel Management System reveals considerable gains over conventional techniques and current systems. It boosts operational efficiency by cutting booking, renewal, and cancellation times by 40% and decreases administrative processing time by 50%. User satisfaction is high, with over 85% considering the system straightforward and efficient. Stress testing shows the system's reliability and rapid reaction times under large loads, while security testing demonstrates solid protection mechanisms with no notable flaws. The solution interacts effortlessly with existing institutional databases, significantly enhancing operational efficiency. Compared to other systems, it shines with its user-friendly interface, better security features, and effective integration capabilities, making it a trustworthy, efficient, and safe choice for managing hostel lodgings.

5.4 Summary:

The "Results and Analysis" provides evidence that the Hostel Management System successfully accomplishes its intended goals. By cutting down on booking, renewal, and cancellation times by 40% and administrative processing time by 50%, the technology greatly improves operating efficiency. With more than 85% of users considering the system to be user-friendly and effective, user satisfaction is high. While security testing demonstrates strong data protection protocols, performance testing verifies the system's dependability and quick reaction times under pressure. Operational efficiency is further increased by a smooth interface with current institutional databases. All things considered, the system offers a dependable, effective, and safe way to handle hostel housing.

CHAPTER 6

IMPACT ON SOCIETY, ENVIRONMENT AND SUSTAINABILITY

6.1 Impact on Life:

Beyond conventional operational effectiveness, the Banik Hostel seeks to improve both administrative and student everyday life. For students, the technology streamlines the hostel accommodation procedure therefore providing convenience and peace of mind. It helps students to concentrate more on their academic and personal growth by lowering the stress related with manual booking processes and ambiguity about room allocations. Simplified processes that save time and money help administrators to focus their energies on improving student services and general campus administration. For everyone engaged in the educational ecosystem, this better efficiency helps to create a more favorable learning environment and raises general quality of living.

6.2 Impact on Society & Environment:

The Hostel Management System offers a simplified and effective way for handling hostel housing, therefore improving the living experience for students. Students save time and lower stress by automating and simplifying chores such booking, renewing, and canceling tickets, therefore freeing them to concentrate more on their academic goals. Apart from that, the approach guarantees justice and openness in room distribution, therefore minimizing any disputes and promoting a harmonic living space. Furthermore, ensuring that students from various backgrounds may quickly browse and make use of its capabilities are the system's accessibility and simple interface. The environment benefits from the digital revolution the Hostel Management System helps to enable. Reducing the requirement for paper-based procedures helps the system greatly reduce paper waste. Digital records and automated alerts replace paper documents, therefore helping the institution to have less of a carbon impact. Moreover, the effective control of resources by the system—such as room occupancy and energy use—helps to maximize the use of facilities, therefore optimizing the consumption of resources.

6.3 Ethical Aspects:

Implementing the Hostel Management System entails various ethical issues to ensure the system is utilized properly and benefits all stakeholders. Key ethical aspects include:

Data Privacy and Security: Protecting the personal information of students and staff is vital. The system must conform to rigorous data privacy rules and regulations, ensuring that all personal data is securely maintained and only accessible to authorized individuals. Implementing robust encryption and access control methods is vital to avoid unwanted access and data breaches.

Transparency and Fairness: The system must work openly, notably in the allocation of rooms and treatment of student requests. Clear and fair procedures should be used to distribute resources, and pupils should have the capacity to comprehend how choices are made. This openness helps to establish confidence in the system and assures equitable treatment for all students.

Accessibility: Ensuring the system is accessible to all students, especially those with impairments, is a vital ethical factor. The design should conform with accessibility requirements, including features like as screen reader compatibility, simple navigation, and alternate text for pictures. This inclusion guarantees that all pupils may benefit equally from the system.

Responsibility and Accountability: Administrators and developers must assume responsibility for the system's integrity and dependability. This involves frequent audits, upgrades, and maintenance to ensure the system runs appropriately and stays secure. Clear lines of responsibility should be created to resolve any concerns or complaints swiftly.

Informed Consent: Students and staff should be thoroughly informed about how their data will be utilized and the advantages and hazards connected with the system. Obtaining informed permission is vital to respect users' autonomy and ensure they are aware of their rights surrounding their personal information.

6.4 Sustainability Plan:

The Hostel Management System's sustainability strategy focuses on guaranteeing long-term social, financial, and environmental advantages. Environmentally, the strategy implements energy-efficient technology and optimizes data centers to lower energy use as well as minimizes paper waste via digital records and communications, therefore supporting paperless operations. By effectively distributing resources like hotel occupancy and facility management utilizing data analytics, it also stresses resource efficiency. Economically, the strategy calls for consistent cost control to lower running expenditures, investigation of income generating possibilities via premium features or services, and support from environmental groups, educational foundations, and government agencies. Socially, it guarantees regular user training and support via seminars, helpdesk services, and online tutorials as well as constantly enhancing the system's accessible characteristics to stay inclusive for all users, including those with impairments. Including staff members and students in the creation and improvement of the system helps to encourage community involvement by means of feedback channels and platforms for active participation. Technologically, the strategy guarantees scalability to manage rising demand as the institution develops and calls for frequent upgrades and maintenance to fix security vulnerabilities, enhance performance, and include new features. Regular backups, data encryption, and data protection rule compliance are among the robust data management techniques used to effectively handle vast amounts of data comprising Performance monitoring, user feedback loops, and research and development expenditure help to enable ongoing improvement so that one may remain on top of technical developments. Through the implementation of this all-encompassing sustainability strategy, the Hostel Management System guarantees its continuous value and favorable effects on all the involved parties.

6.5 Summary:

The sustainability strategy for the Hostel Management System is aimed to assure long-term benefits across environmental, economic, and social aspects. Environmentally, it supports paperless processes, energy-efficient technology, and resource management to lower the institution's carbon impact. Economically, it focuses on controlling expenses, finding income production prospects, and obtaining money from diverse sources to finance continuous development. Socially, the approach provides continual user training, inclusive design for all users, and active community involvement to include students and staff in system improvements. Technologically, it needs frequent upgrades, scalability, and rigorous data management procedures to ensure system performance and security. Continuous improvement is done by performance monitoring, user input, and investment in research and development. This thorough strategy assures the Hostel Management System's ongoing value and beneficial influence on stakeholders.

CHAPTER 7

CONCLUSION AND FUTURE WORK

7.1 Conclusions:

The Hostel Management System effectively achieves its aims by instituting an orderly and skillful approach for control hostel. This organized framework couples an easy-to-use interface with effective capacities to confirm that understudies and administrators can deal with lodging-related exercises easily. For understudies, the framework offers a smooth trial from enrollment to reserving, restoring, and dropping hostel seats. It empowers them to get to their lodging subtleties and oversee their bookings on the web, diminishing the requirement for physical reports and face to face connections. The capacity to investigate seat subtleties post-confirmation includes an extra comfort, making it simpler for understudies to follow up on their housing arrangements. Admittance to their lodging data and reserving capacities online cuts out the need to experience paperwork and meet with staff, making the procedure simpler. Administrators can screen booking asks for productively and rapidly dole out rooms considering student capabilities and hostel accessibility. They can without much of a stretch screen occupant subtleties and lead reviews utilizing the enhanced hunt and channel highlights.

7.2 Further Suggested Works:

To further strengthen the Hostel Management System, the subsequent advances are proposed:

Mobile Program: The purpose of this project will not fulfill until a mobile app and web version will not be launched. In future, the users will have an access to it's app so that they can easily interact with this system.

Computerized Notifications and Reminders: A notification option will be added. This will allow the users get notification for every update of their requests. Alongside, a noticeboard also be added. It will represent as a button which will provide all the updated information about the hostel.

Propelled Analytics: Adding point by point detailing and measurements for administrators to acquire experiences into lodging the board and occupancy patterns. It will help the administrators to analysis the database of users and will get insights of the whole system.

Online Payment: In future I will add a segment of online payment. This is give the users more hassle free installment facilities.

7.3 Limitations/ Conflict of Interests:

Limitations

Despite its various benefits, the Hostel Management System has several drawbacks that must be acknowledged:

Technological Constraints: The system depends largely on steady internet access and suitable hardware infrastructure, which may not be available in all locations or institutions.

Scalability Issues: As the number of users rises, the system may encounter performance deterioration if not appropriately tuned for scalability.

User Adaptability: Some students and administrators could find it tough to adjust to a new digital system, especially those who are less tech-savvy.

Security Vulnerabilities: Despite sophisticated security measures, the system is still subject to possible cyber-attacks and data breaches.

Maintenance and Updates: Continuous maintenance and frequent upgrades are necessary to keep the system working properly, which might be resource-intensive.

Conflict of Interests

Potential conflicts of interest in the creation and execution of the Hostel Management System can include:

Vendor Bias: Preference for particular software tools or platforms might emerge owing to agreements or ties with certain suppliers, thus undermining the impartiality of the tool selection process.

Resource Allocation: There may be conflicts in prioritizing resources, such as finance or labor, between the development of this system and other institutional initiatives.

Data Privacy Concerns: Stakeholders, including students and staff, may have conflicting opinions on data privacy and security, resulting to disagreements surrounding data management rules.

Decision-Making Authority: Disagreements may emerge among administrators regarding who has the last say in system-related choices, including approval procedures and feature implementations.

Financial Interests: There might be conflicts relating to the financial benefits or losses of people or departments dependent on the system's performance and results.

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APPENDIX A

CO1: Understanding of basic software engineering concepts.

CO2: Ability to create and execute software solutions using relevant tools and processes.

CO3: Proficiency in project management and financial analysis for software projects.

CO4: Capability to analyze the social, environmental, and ethical consequences of software solutions.

CO5: Competence in testing and verifying software systems.

Complex Engineering Problems (EP)

EP1: Designing a user-friendly interface for students and administrators.

EP2: Implementing a safe and efficient database management system.

EP3: Integrating real-time alerts and updates.

EP4: Ensuring data integrity and security against breaches.

EP5: Managing scalability and performance challenges as the number of users rises.

Complex Engineering Activities (EA)

EA1: Conducting requirement analysis and acquiring comprehensive user requirements.

EA2: Developing a solid backend infrastructure to handle several user requests concurrently.

EA3: Implementing an approval mechanism for booking, renewing, and canceling tickets.

EA4: Continuous monitoring and optimization of system performance.

EA5: Regularly improving the system based on user input and technology improvements.

Mapping

COs	EPs Addressed	EAs Addressed	COs	EPs Addressed
CO1	EP1, EP2	EA1, EA2	CO1	EP1, EP2
CO2	EP1, EP3, EP4	EA2, EA3, EA5	CO2	EP1, EP3, EP4
CO3	EP5	EA4, EA5	CO3	EP5
CO4	EP4	EA3, EA5	CO4	EP4
CO5	EP1, EP2, EP3	EA2, EA4, EA5	CO5	EP1, EP2, EP3

Amit Banik_Hostel Management System_V3

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