GNDEC HOSTELS DASHBOARD

PROJECT SYNOPSIS

OF MINOR PROJECT

BACHELOR OF TECHNOLOGY

Computer Science and Technology

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INTRODUCTION

The GNDEC Hostels Dashboard project addresses the need for a comprehensive digital solution to manage hostel activities effectively. The traditional methods of handling hostel operations are often time-consuming and prone to errors. This project introduces a digital dashboard that simplifies tasks such as room allocation, fee management, and maintenance tracking. By implementing this system, GNDEC aims to enhance the efficiency of hostel management and provide a better living experience for students.

The application will be developed using HTML , CSS , Javascript , Bootstrap , Express.js, MySQL, ensuring a scalable, responsive, and user-friendly solution.

Existing hostel management systems often rely on manual processes, such as paper-based logs, spreadsheets, and basic database applications. These traditional methods are inefficient, prone to human error, and difficult to scale. Problems such as mismanagement of room allocations, loss of student data, and administrative bottlenecks are common. Furthermore, these systems lack real-time data accessibility, making it challenging for administrators to manage hostels effectively.

Proposed system :

The need for a digital hostel management system arises from these inefficiencies. Digital systems automate and streamline various operations, reducing administrative workload and human errors. They offer real-time access to critical data, such as room availability and student information, enhancing decision-making and resource allocation. Overall, a digital solution ensures smoother operations, increased resident satisfaction, and better resource management. The dashboard will feature user-friendly interfaces for different roles:

Administrators: Manage room assignments, Track maintenance requests, and handle student records.

Residents: View their accommodation details, submit maintenance requests, and receive important notifications.

RATIONALE

The **Hostels Dashboard Project** is driven by the need to modernize and streamline hostel management processes, which are often burdened by manual systems. Traditional methods of handling room allocations and complaint resolutions are not only time-consuming but also prone to errors, causing delays and inefficiencies. With increasing student populations and resource demands, there is a pressing need for a centralized digital solution that can automate these tasks and provide real-time updates. A hostel dashboard will enable administrators to manage operations efficiently, reduce paperwork, and improve transparency, while offering students a user-friendly interface to access their personal data, room status, and other hostel-related information.

Furthermore, the dashboard addresses the growing importance of data security and privacy in student management. By incorporating features like role-based access control and data encryption, the system ensures that sensitive information is protected in compliance with data protection laws. Ultimately, the project is designed to enhance communication, accountability, and satisfaction for both administrators and students, making hostel life more organized and seamless.

OBJECTIVES

1. To automate the tasks of room allocation and complaint handling.
2. To notify students about their approval/non-approval of complaint.
3. To display information regarding various events.

LITERATURE REVIEW

The quick digitalization process at educational institutions has been extended to hostel administration, with the need for smart systems to drive processes and enhance the experience of users. Pundir et al. (2021) outlined a web-based "Smart Dashboard for Hostel Management Activities" that was designed to replace traditional manual, paper-based systems. Their effort focuses on automation of room assignment, mess billing, outpass generation, complaint registration, and parent notifications and also resolves issues such as data security and redundancy. The authors recommend user-friendly interfaces and secure access mechanisms to maintain data integrity and efficiency in hostel operations.[1]

Supporting this, Chaudhri and Kevat (2021) proposed eHostel, an Android-based application aimed at end-to-end hostel automation. Their framework has features of live alerts through Firebase, safe virtual passes, and REST API integrations, providing real-time monitoring and engagement for students, wardens, and administrators. Of particular interest is their literature survey, which points out the use of biometric, barcode, and RFID technologies in numerous implementations to enhance security and efficiency. They also point out weaknesses in current systems, including the narrow scope of modules and absence of remote accessibility, thereby recommending scalable and modular approaches.[2]

While so, Magar et al. (2021) created a web application which encompasses several hostels into one combined system to let users filter facilities, book the hostels, and make complaints. Theirs is created by using technologies such as HTML, MySQL, and Bootstrap and gives importance to there being a combination solution whereby the students as well as hostel management interact together fluidly. Their solution involves a multi-login interface for admins, hostel owners, and students, with the goal of solving the disorganization and inefficiencies of conventional hostel booking and grievance systems.[3]

Together, these studies emphasize the increasing demand for secure, integrated, and accessible hostel management systems. They indicate trends towards cloud-based platforms, biometric/RFID integration, and real-time communication capabilities.

FEASIBILITY STUDY

1. Technical Feasibility:

- The project is technically feasible with the availability of modern development tools and technologies like **web frameworks** (Express.js) and **database systems** (MySQL) that can efficiently handle hostel management processes.
- Existing infrastructure (servers, internet connectivity) can support the dashboard's implementation and operation.

2. Economic Feasibility:

- The initial cost for development, including hardware, software, and manpower, is manageable compared to the long-term benefits.
- Automating hostel processes reduces administrative costs, manual errors, and time spent on routine tasks, providing a good return on investment (ROI).

3. Operational Feasibility:

- The dashboard simplifies tasks like room allocation and complaint management, making it easy for administrators and students to use.
- User-friendly design and training sessions ensure smooth adoption by hostel staff and students.

4. Schedule Feasibility:

- The project can be completed within a reasonable timeline, given that standard development methodologies (Iterative Waterfall Model) are followed, and skilled professionals are available.

METHODOLOGY

1. **Requirement Gathering**:

- Collect and analyze the needs of hostel administrators, staff, and students to define system features like room management, complaint handling, and user roles.

2. **System Design**:

- Create wireframes and design the architecture, including the database schema, front-end layout, and back-end structure. Use tools like ER diagrams for database design and flowcharts for system processes.

3. **Development**:

- **Back-end**: Develop the server-side logic using frameworks like Express.js.
- **Front-end**: Design the user interface using HTML, CSS, and JavaScript frameworks like React.
- **Database**: Implement the database for storing student data, room allocations, and fee details (e.g., MySQL).

4. **Integration**:

- Integrate front-end with back-end services and database, ensuring real-time data interaction and smooth communication between components.

5. **Testing**:

- Conduct functional, usability, and security testing to ensure the dashboard operates without errors and meets user requirements.
- Perform unit tests, integration tests, and user acceptance testing (UAT).

6. **Deployment**:

- Host the dashboard on cloud servers (AWS, Google Cloud) or local servers, ensuring it is accessible to users (students and administrators).

7. **Maintenance and Updates**:

- Regularly monitor the system post-deployment, fix bugs, and implement updates based on user feedback.

FACILITIES REQUIRED FOR PROPOSED WORK

1. **Hardware Requirements**:

- **Processor :** AMD Ryzen 5 5600H with Radeon Graphics **,** 11th Gen Intel(R) Core(TM) i5 - 1135G7 @ 2.40GHz
- **RAM :** 16.0 GB , 8.00 GB
- **Storage :** 475 GB , 456 GB

2. **Software Requirements**:

- **Development Tools**: IDEs (e.g., Visual Studio Code), frameworks (Express.js , Bootstrap).
- **Database**: MySQL for managing data.
- **Operating System** : Windows XP

EXPECTED OUTCOME

1. Centralized Management:

- A unified platform for managing room allocations, complaints, and other hostel-related tasks, leading to increased efficiency and reduced manual workload.

2. Enhanced Communication:

- Real-time updates and notifications for both students and administrators, improving communication and speeding up issue resolution.

3. Transparency and Accessibility:

- Easy access for students to their personal information, room status and complaint tracking, and user-friendly experience.

REFRENCES

[1] Abhishek Pundir, Akarsh Singh, Tanvisha Varshney, Tanvi Singh, Ayushi Gupta “Smart Dashboard For Managing The Hostel Activities”, Volume 9, Issue 6 , June 2021 | ISSN: 2320-2882 [Online]. Available : https://ijcrt.org/papers/IJCRT2106484.pdf

[2] Kartik Chaudhri, Riddhi Kevat "Study of Digitalized Hostel Management System", International Journal of Scientific Research in Computer Science, Engineering and Information Technology (IJSRCSEIT), ISSN :2456-3307, Volume 7 , Issue 2, pp. 366-371, March-April 2021.

[Online]Available:https://www.researchgate.net/publication/351311910_Study_of_Digitalized_Hostel_Management_System

[3] Prof. Shyamsundar Magar , Ms. Sakshi Said , Mr. Rohit Jadhav , Mr. Shashikant Jadhav “Hostel Management System and Aggregation” Volume 8, Issue 10, October 2021| ISSN : 2349-5162[Online]Available:https://www.researchgate.net/publication/356579821_Hostel_Management_System_and_Aggregation