Design and Implementation Hostel Management system

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***Abstract*-** Hostel management in educational institutions often involves manual record keeping, which is time-consuming, errorprone, and inefficient. This paper presents the design and implementation of a web-based hostel management system aimed at automating key operations such as room allocation, fee management, complaint tracking, attendance, and communication between students and administrators. The system leverages web technologies to provide real-time access, transparency, and efficiency in hostel administration. The HMS is designed as an Android application integrating real-time authentication, notifications, and secure data management. This paper explores the design, implementation, and future enhancements of the system, incorporating insights from contemporary research on hostel automation. . This research aims to create an efficient and reliable hostel allocation system that can do all the manual work with ease. This project is carried out using HTML, CSS for the front-end design while PHP was used for the backend and MySQL for the database. The developed system overcomes the drawbacks of traditional methods of hostel management; it is more user-friendly, graphicaluser-interface oriented, reliable, efficient and secured with access control mechanism. It is recommended that Olayinka hostel and other institutions or organization managing hostels should adopt the ebased system for their hostel management so as to reduce manual paper work, administrative tasks and save times spent by on doing things manually with the old hotels management technique.

Keywords: Hostel, System, Hall Allocation, Hostel Management system, Hostel Administration, etc.

I .INTRODUCTION

Hostel can be identified as a place of residence that schools, colleges or universities built to accommodate students of various categories, all hostels being managed by the respective institutions are supervised by the hostel wardens and other category of staff. The hostel generally consists hundreds of students that resides in a particular halls at particular time. All of them make a group of students (Amina Iftikhar & Asir Ajmal, 2015). Hostels in most cases provides shared sleeping quarters, common facilities like kitchens and lounges, and a range of services and amenities. Hostel management means a way of running and overseeing the day-to-day operations of a hostel. This includes equipment upgrading and the facility overhauling, financing, staffing, and guests management. Hostel management is a complex task that needs a range of skills and expertise, including communication, organization, and problem-solving (Sharma & Kumar, 2016).

The hostel management system is often a web-based software which provides students accommodation to the clientele more efficiently. This project also keeps details of the hostelers and applied students. This system is intended to minimize human works and make hostel bookings an easier job for students and hostel authorities by providing online application for hostel, automatically select the students from the waiting list and mess calculation, complaint registration, notice board etc. The goal of this research work is to provide a solution to the problem of hostel management, by designing a computerized system which is user-friendly and GUI (graphical user interface)oriented that will be compatible with the existing manual system. The system will solve the problem of hostel management; thus, helping to reduce inherent problems associated with the manual hostel management. There are a lot of drawbacks in keeping and maintaining a hostel using the manual method such as time

wastage in searching for registers, inadequate use of statistical data, error prone calculations, and redundancy of information. This paper is aimed at devising a system that will remove the above problems and improve efficiency in terms of hall administration and use by the students allotees.

This paper focuses mainly on design and implementation of an e-based hostel management system for Olayinka hostel, Federal School of Surveying, Oyo, Oyo State, Nigeria by reviewing the existing manual system, developing a secured central database system that will contain information of all the available rooms in the hostel and allocations done on them, implementing the system using web based technologies to solve the problem of up to date information and testing the developed software to check for reliability and efficiency.

The system will also be of importance to institution and general hostel or house managers as it will ease to a great extent the hostel management processes. HTML, CSS and JavaScript were used for the frontend development while PHP and MYSQL were used for the backend development to debug, test, check for reliability and efficiency of the developed software.

The evolution of Artificial Intelligence (AI) has unlocked transformative possibilities in various domains, particularly in service automation and user interaction. AI-powered systems offer realtime responses, data-driven decision-making, and intelligent automation.
There has been a cosmic increment in the quantity of educational sector particularly over the most recent four decades everywhere throughout the world. This improvement has brought education to the doorstep of individuals. Therefore, it has expanded information and helped create a population of edified residents who can without much of a stretch comply with the principles of civilized society. A large portion of the recently established educational institutions, are utilizing the old ordinary procedures for dealing with all the record keeping and especially for managing hostel facilities. This old method of managing records hence have an adverse effect on the efficiency of the institution. The proposed framework overcomes the disadvantages of traditional techniques for hostel administration; it is easier to use, graphical-UI oriented.
The Hostel Management System is an online site developed for managing different activities in the hostel. It is very easy to use with a user-friendly GUI to automate, arrange and handle all the procedures of managing hostel offices. This is an online site which is developed using HTML and CSS for front end and PHP & JavaScript for backend. The site will be a great relief to the workers. It is very helpful especially in large institutional organizations with a huge number of hostels.

II . LITERATURE REVIEW

Hostel management involves the management and operation of a facility that provides accommodation services to resident students. As proposed by Gupta and Bhatia (2015), hostel management is a mundane task that involves a range of activities such as maintenance, security, catering, and customer service. Hostel management is one of the most important aspects of a student's life. It is the responsibility of the hostel administration to provide a safe and comfortable environment for each of their students. According to the article Hostel Management: Principles and Practice by Sharma and Kumar (2017) hostel management involves the provision of food, accommodation, and other related services to students, travelers, and other individuals the facilities, finances, staff, and guests effectively and efficiently. Effective hostel management requires a focus on customer service, financial management, and staff training. Hostel management systems provides a range of menus that enable efficient management of hostel operations which includes booking management, room allocation, inventory management, reporting and analytics, and guest communication. Pashaei, Shehri and Ahmadi (2015) named several important issues which are necessary to effectively manage hostels and their efficiency. For instance, the study identified the need for highly configurable Hostel Management Information System (HMIS) which can be tailored to the needs of different hostel types and facilities, as well as for multilingual user interfaces which could enable international hostels to provide high quality services to their guests. In a study by Ukpere, Adewale and Omoregbe (2017), the authors founded that Hostel Management Systems can improve communication between hostel staff and students, as well as between different departments within the hostel. The study also noted that such systems can improve security by tracking the movement of people and property within the hostel. According to Kamble and Rajput (2017), a Hostel Management System is a web-based software application that helps hostel administrators manage hostel operations, including room allocation, student records, billing, and security. The authors noted that such systems can improve efficiency and reduce errors associated with manual management. In a study by Ukpere, Adewale & Omoregbe (2017), the authors found that Hostel Management Systems can improve communication between hostel staff and students, as well as between different departments within the hostel. The study also noted that such systems can improve security by tracking the movement of people and property within the hostel.

Khare and Sisodia, (2018) published a paper titled "Hostel Management System: A Case Study" in the International Journal of Computer Sciences and Engineering. The authors analyze the impact of the hostel management system on various aspects of hostel operations. They evaluate its effectiveness in streamlining processes, reducing manual efforts, improving data accuracy, and enhancing overall efficiency. The study also considers the feedback and satisfaction of hostel staff and residents regarding the implemented system. By presenting empirical findings and analysis, this study offers insights into the realworld implementation of a hostel management system and its impact on improving the operations of a hostel facility within an Indian university context.

III . METHODOLOGY

The web-based application was implemented using HTML, CSS and JavaScript for the user interface which comprises of three main pages which are: Admin Page, Staff Page and Student Page. While the Backend was done with PHP programming language and MYSQL, PHP was used to link the frontend with the backend and MYSQL was used for the database where all the students' information who register for the Hostel will be stored for later retrieve.

A. Description of Existing System

The existing system for hostel management typically includes the following features:

- Room allocation and management, which allows administrators to assign rooms to guests and check room availability
- Guest management, which allows the creation and management of guest profiles such as name, contact details, and duration of stay.
- Billing and payment management: the system allows the creation and management of bills and invoices for guest stays, including charges for room and board, meals, and other services. Payment processing and tracking of outstanding balances are also included.
- Reporting and analytics: here, the system generates reports on various aspects of hostel operations, such as occupancy rates, revenue, and guest satisfaction. It also provides data analytics capabilities to help administrators make informed decisions.
- Overall, the existing system for hostel management is designed to streamline administrative tasks and improve the efficiency and effectiveness of hostel operations.

Weakness of the Existing System

There are several weaknesses and limitations that need to be addressed. Some of these weaknesses include:

- Limited functionality: The existing system may lack certain features that are important for efficient hostel management, such as online booking, automatic room allocation, or integration with other systems.
- Data security: The existing system may not have adequate security measures in place to protect sensitive guest and administrative data from unauthorized access or cyberattacks.
- User interface: The user interface of the existing system may be outdated or difficult to use, which can lead to user error or reduce efficiency and adoption. It may also have a poor user interface or require extensive training, which can lead to user frustration and reduce adoption.
- System compatibility: The existing system may not be compatible with the latest hardware or software, which can limit its functionality and cause technical issues.
- Inefficiency: The existing system may be slow, require manual data entry, or be prone to errors, which can lead to delays and reduce efficiency.
- Lack of integration: The existing system may not integrate with other systems or platforms, such as online booking systems or payment gateways, which can lead to the need for duplicate data entry and reduce the overall user experience.
- Addressing these weaknesses can help to improve the overall effectiveness and efficiency of the hostel management system, enhance the user experience, and support better decisionmaking.

B. Description of the Developed System

The developed system for hostel allocation is a software application designed to automate and streamline the various administrative tasks associated with allocating of rooms to students and managing room availability in facility. The developed system aims to address the weaknesses of the existing system by providing the following features:

- Online booking: The developed system allows students to make online bookings, which are automatically updated in the system, and can be managed by the administrators.
- Automatic room allocation: The developed system allows for automatic room allocation based on guest preferences and availability, reducing the need for manual allocation.
- Billing and payment management: The developed system automates the billing and payment process, including tracking of outstanding balances and integration with online payment gateways.
- Staff management: The developed system includes a staff management module that allows administrators to manage and track staff schedules, assign tasks and responsibilities, and track performance.
- Data security: The developed system includes adequate data security measures to protect sensitive guest and administrative data from unauthorized access or cyberattacks.

Overall, the proposed system for hostel management aims to provide a more efficient, user-friendly, and secure solution for managing hostel operations, reducing administrative burden, and improving the student's experience.

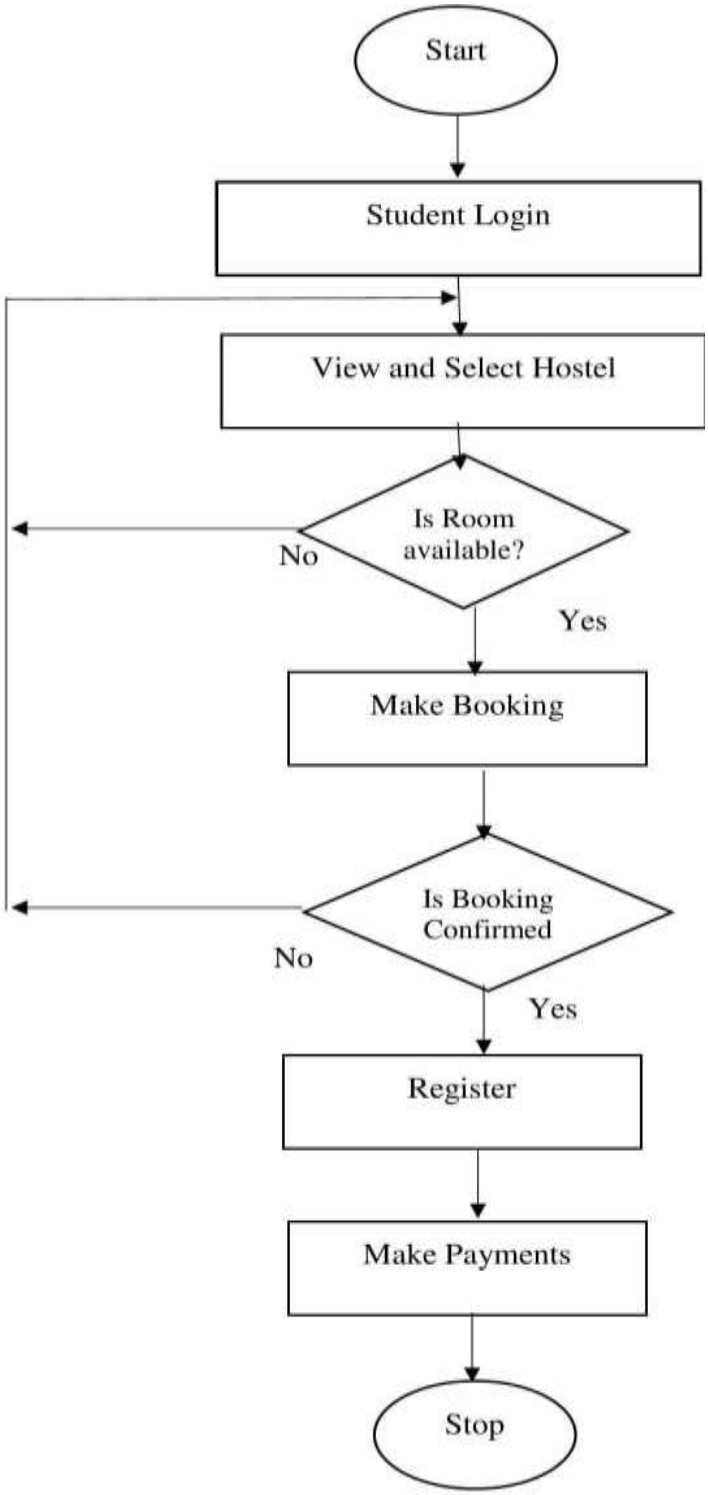

Fig 1 Data Flowchart of registration process

IV .RESULT (PURPOSE FOR EXPECTED)

➢ Home Page

This is the welcome page of the project, it is opened when the URL of the hostel management system, when you open this page, it would bring the User registration, User login and the Admin login interfaces.

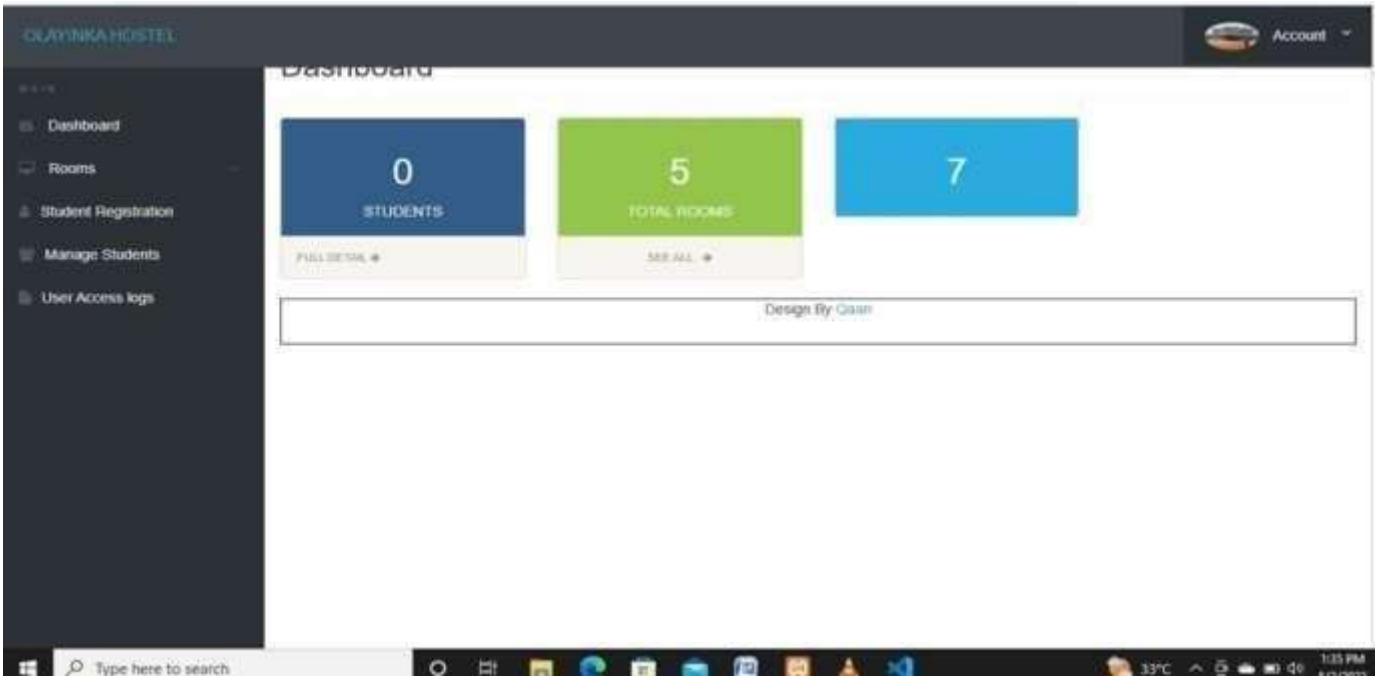

Fig 3:Showing The Home Page

- User Registration

Before a user can login into the application interface, number), first name, middle name, last name, gender, he/she has to create an account, that is, he/she has to contact info, email id.

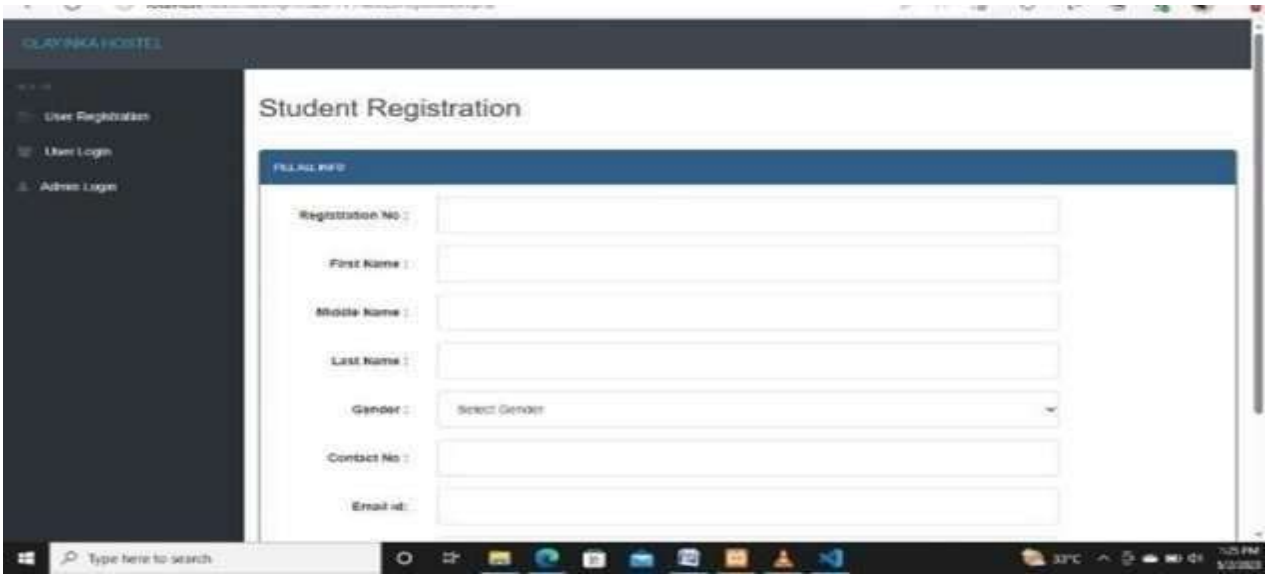

Fig 4 : Showing The User Registration

- *User Login*

This interface is accessed by clicking on the login, comprises of the profile, rooms, manage students, and which is on the homepage, and it brings you to the place access log.

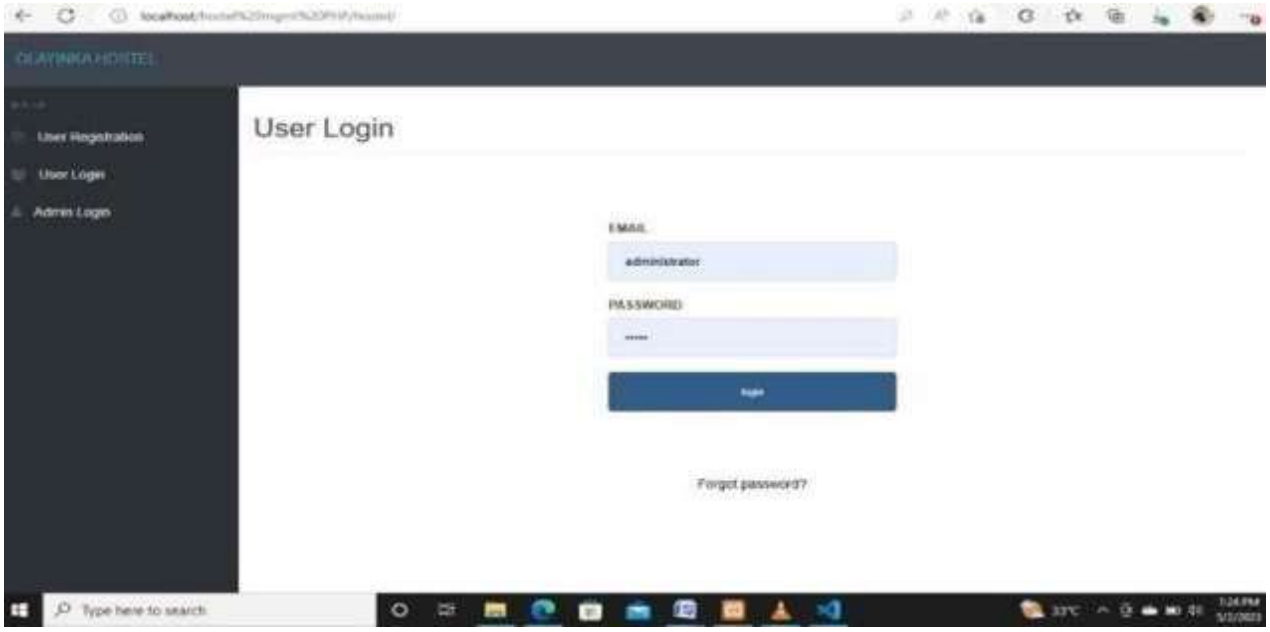

Fig 5 : Showing The User Login Dashboard

V .CONCLUSIONS

This Hostel Management System is a user-friendly computerbased system for managing hostel facilities in institutions. It has been designed to automate, manage and look after the overall processing of records of students residing in a large hostel. It is capable of managing Enquiry details, Student details, etc. The developed system provides solution to manual hostel management problems and also provides information such as hostel information, hostel room information, and hostel accounts information. The software offers stability, cost- effectiveness and usability. It provides the most flexible and adaptable standards.

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REFERENCES

I. Amina Iftikhar & Asir Ajmal (2015). A Qualitative Study investigating the impact of hostel life. International Journal of Emergency Mental Health and Human Resilience, Vol. 17, No.2, pp.511-515, ISSN 1522-4821

II. Acharya, Kamal. "STUDENT INFORMATION MANAGEMENT SYSTEM." Authorea Preprints (2023).

III. Acharya, Kamal. "Library Management System." Available at SSRN4807104 (2019).

IV. ACHARYA, KAMAL, et al. "LIBRARY MANAGEMENT SYSTEM." (2019).

V. Acharya, Kamal. “ATTENDANCE MANAGEMENT SYSTEM.” International Research Journal of Modernization in Engineering Technology and Science (2023):

VI. Acharya, Kamal. “College Information Management System.” SSRN ElectroNIC ASIA Journal (2024):

VII. Acharya, Kamal, Attendance Managements system Project (April 28, 2024). Available at SSRN: https://ssrn.com/abstract=4810251or http://dx.doi.org/10.2139/ssrn.481025