Hostel Management System using Java

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Abstract: *Hostel management system is a project for managing various activities in the hostel. For the past few years, the numbers of educational institutions are increasing rapidly. There by the numbers of hostels are also increasing for the accommodation of the students studying in this institution. And hence there is a lot of strain on the person who are running the hostel and software are not usually used in this context. This particular project deals with the problems on managing the hostel and avoids the problems which occur when carried manually. Identification of the drawbacks of leads to the designing of computerized system that will be compatible to the existing system with the system which is more user friendly. We can improve the efficiency of the system. Hostel Management System targeted for the college hostel integrates the transaction management of the hostel for better control and timely response. This eliminates time day and paper transactions being marked. The admin is provided with a better control over the transactions like adding the details of new students in the hostel, modifying the details of the students, deleting the students, viewing the students details in the Hostel. This Project's main motto is to reduce the effect of admin and provide better service to the students. The goal of this project is to develop a system for the computerization of the Hostel. The common transactions of the hostel include the maintenance of mess bills, information about students in the hostel, enrolling of new students and their payments and dues etc are stored into the databases and reports are generated according to the user requirements.*

Keywords: Hostel Management System, Strain, Software, Educational Institutons.

I. INTRODUCTION

In our current era of automated systems with it being hardware, it's not advisable to be using manual system. Hostels without a management system are usually done manually. Registration forms verification to other data saving processes are done manually and most at times, they are written on paper. Thus, a lot of repetitions can be avoided with an automated system. The design of a computerized system that will help reduce a lot of manual inputs. With this system in place, we can improve the efficiency of the system, thus overcome the drawbacks of the manual System. This project system is designed in favour of the hostel management which helps them to save the records of the students about their rooms and other things. It helps them from the manual work from which it is very difficult to find the record of the students andthe mess bills of the students, and the information of about the those ones who had left the hostel years before. This system gives an idea about how a student and fee details, room allocation, mess expenditure are maintained in a better way. The hostel management system will also contain special features like how many students are in a room, student's id and free rooms or space available. The administration has a unique identity for each member as well as student's details.

1.1 Project Overview

The hostel management system is web-basedto provide college students accommodation to the university hostel more efficiently. This project also keeps details of the hostellers and applied students. It is headed by admin. He will be the administrator. This document is intended to minimize human works and make hostelallocation 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. etc. Students will get approval notification in their mails. Hostellers can view notice board, hostel fee and mess menu by login into the online system.

II. PROBLEM DEFINITION

There are a lot of drawbacks in keeping and maintaining a hostel. Especially with a manual system. Since most hostels are being run by only one hostel manager, the number of students in a room are sometimes not known by the officer. He has to go room by room to ensure that a room is occupied or not. Sometimes people may be owing in the hostel and they are saved on papers or huge notebooks, and sometimes receipts. If the books should go missing or stolen, one would never be able to know if a student is owing or not. Room allocation also becomes a problem as the officer might not know which rooms are available or not. Navigating through hostels with numerous rooms and multiple stories can indeed be quite tedious when searching for an available room for an applicant. Moreover, the officer may not have information on the occupancy status of each room or the total number of students accommodated in a room.

III. PROPOSED SYSTEM

The proposed system is having many advantages over the existing system. It requires less overhead and very efficient. The proposed system deals with the mess calculation and allotment process efficiently.

Advantages of the Proposed System

- It's a web-enabled project.
- This project offers user to enter the data through simple and interactive forms. This is very helpful for the client to enter the desired information through so much simplicity.
- The user is mainly more concerned about the validity of the data, whatever he is entering. There are checks on every stage of any new creation, data entry or updating so that the user cannot enter the invalid data, which can create problems at later date.
- Data storage and retrieval will become faster and easier to maintain because data is stored in a systematic manner and in a single database.
- Decision making process would be greatly enhanced because of faster processing of information since data collection from information available on computer takes much less time than manual system.
- Allocating of sample results becomes much faster because at a time the user can see the records of last years.
- Easier and faster data transfer through latest technology associated with the computer and communication.

IV. PROPOSED MODULES

In system design, a module refers to a self-contained unit of software that performs a specific set of functions. Modules are designed to be independent, reusable, and interchangeable components of a larger software system. They encapsulate related functionality, data, and operations, allowing for better organization, maintainability, and scalability of the system.

- User Module: This helps the administrator and user to login to homepage only if password and username matches.
- Change Password Module: Allows the user to change the password.
- Student Module: This module is used to store student details i.e. information like profile details, contact information, educational details, name,gender etc. Users can search according different criteria such as name, room number etc.
- Room Allotment Module: This deals with allocation of room to students according to education details, section or course. Rooms will be allocated to students and an ID will be generated for it. It will display details students staying in the room or rooms. When a student leaves the room after the semester, the left date will be also saved.
- Room Fees Module: This displays fee records, student dues status and balance amount status. It is also used to renew students rent every semester.
- Mess Bill Module: This module keeps track of all transactions related to mess. The mess item expenditure for each student is calculated every month and mess bill for each student is calculated and displayed.

- Report Generation Module: This is provided to view summary detail regarding hostel fees and bills. Students can check hostel fees and bill details by entering the unique hostel ID.
- Electricity Bills: This module keep track on all the bills of electricity. It can be update and add the bills.
- Report Generation Module: This is provided to view summary detail regarding hostel fees and bills. Students can check hostel fees and bill details by entering the unique hostel ID.
- Settings Module: In this module, only the administrator can access. Administrator has a unique account with much special access and permissions over normal users. Module allows add, edit, delete and employee records, building block information, room details, course details etc. The module will work on these activities.
    - Manage Hostel.
    - Allotment of Hosteler.
    - Transfer the hostler from one room to another room.
    - Check Hosteler fees Transactions.
    - Check vacant room, the present status of a room

Functionality and design of the system are divided into two sections – Admin Section, Student section.
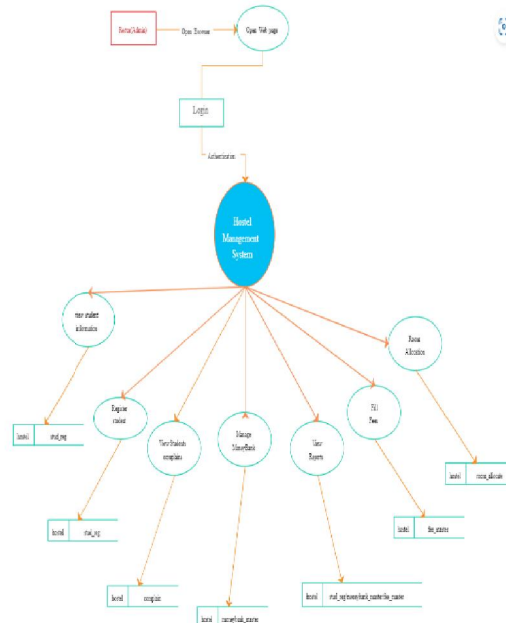
ADMIN:
- He can vacate the students for the hostels.
- The Administrator can allow different students to different hostels.
- Admin can also control the status of the fee payment.
- Admin can also edit the details of the students. He can also change their rooms, edit and delete the student records.

STUDENT
- The student can check for availability of a room.
- All types of rooms available in the hostel with their fees structure will be available here.
- Hostellers can also check for pending fees if any.
- Hosteller can write complaints to hostel admin.
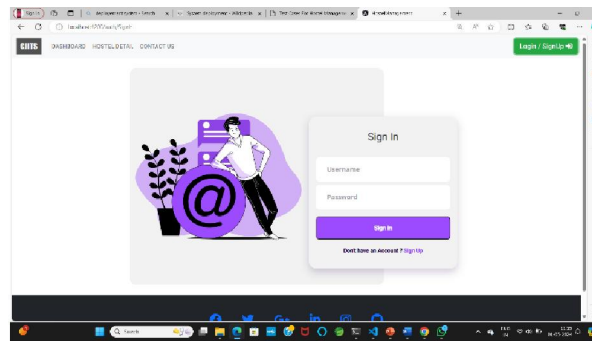
V. SYSTEM ARCHITECTURE
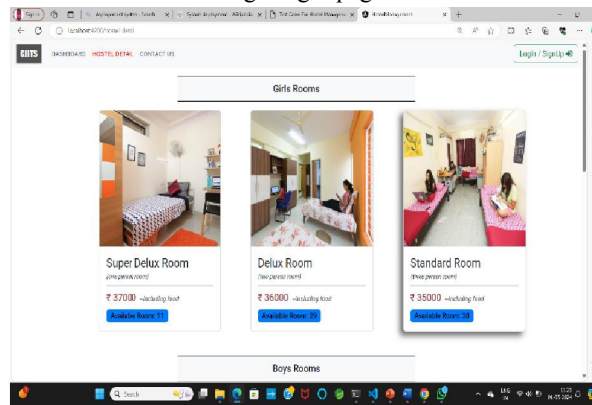
VI. RESULTS

Fig: Login page.

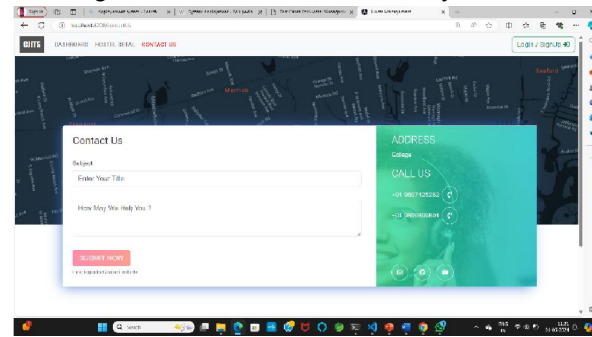Fig: Hostel details can be searched by student.

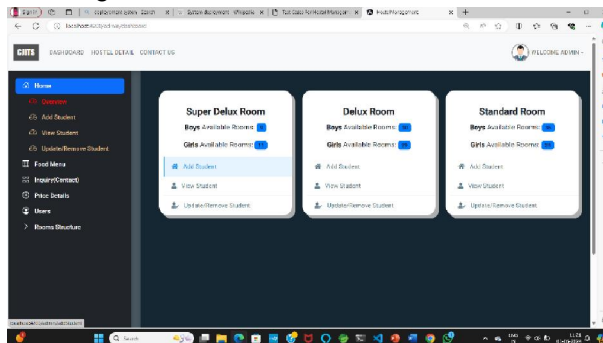Fig: Student can contact admin to book rooms.
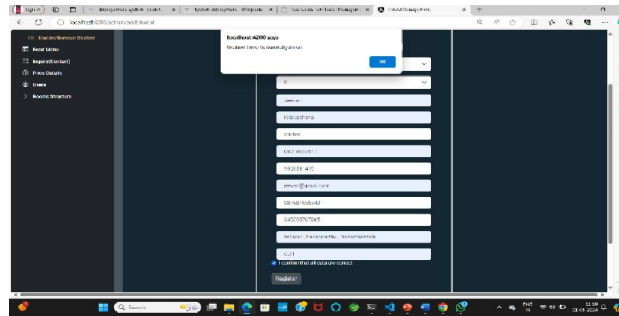

Fig: Admin Dashboard.

Fig: Room booked for student

VII. CONCLUSION

This project, developed using java and mongodb is based on the requirement specification of the user and the analysis of the existing system, with flexibility for future enhancement. The expanded functionality of today's software requires an appropriate approach towards software development. This hostel management software is designed for people who want to manage various activities in the hostel. For the past few years the number of educational institutions are increasing rapidly. Thereby the number of hostels are also increasing for the accommodation of the students studying in this institution. And hence there is a lot of strain on the person who are running the hostel and software's are not usually used in this context. This particular project deals with the problems on managing a hostel and avoids the problems which occur when carried manually. Identification of the drawbacks of the existing system leads to the designing of computerized system that will be compatible to the existing system with the system which is more user friendly.

VIII. FUTURE ENHANCEMENT

Mobile Application: Develop a mobile app version of the Hostel Management System to provide convenience and accessibility for users on the go. This could include features such as mobile-friendly interfaces for student registration, room booking, and fee payments.

Enhanced Reporting: Introduce advanced reporting capabilities to generate insightful analytics and visualizations. This could include metrics such as occupancy rates, revenue trends, student demographics, and maintenance requests. Customizable reports would empower administrators to make data-driven decisions more effectively.

Integration with IoT Devices: Implement integration with Internet of Things (IoT) devices to automate tasks such as room temperature control, energy management, and security monitoring. IoT sensors could provide real-time data on room occupancy, environmental conditions, and resource usage, enhancing efficiency and sustainability.

Online Payments and Financial Management: Expand payment options to include online payment gateways and digital wallets, streamlining fee collection processes for students and improving financial management for administrators. Integration with accounting software could automate financial reporting and reconciliation tasks.

Machine Learning and Predictive Analytics: Leverage machine learning algorithms to analyze historical data and predict future trends related to student behavior, room demand, and facility utilization. Predictive analytics could optimize room allocation, anticipate maintenance needs, and identify opportunities for cost savings.

Enhanced Communication Features: Enhance communication features to facilitate seamless interaction between students, staff, and administrators. This could include integrated messaging systems, notification alerts for important events or announcements, and discussion forums for community engagement. Accessibility and Multilingual Support: Ensure accessibility standards compliance and provide support for multiple languages to cater to diverse user populations. This would enhance inclusivity and usability for students from different cultural backgrounds and language preferences. Customizable Workflows and Role-based Permissions: Allow administrators to customize workflows and configure role-based permissions to align with organizational policies and requirements. This flexibility would enable tailored user experiences and improve administrative efficiency. Facility Maintenance and Asset Management: Implement features for tracking facility maintenance schedules, managing repair requests, and

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473

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monitoring inventory of hostel assets. Integration with maintenance management systems could streamline workflows and ensure timely resolution of maintenance issues.

Feedback and Satisfaction Surveys: Incorporate feedback mechanisms and satisfaction surveys to gather input from users and stakeholders. Continuous feedback loops would enable iterative improvements and ensure that the system evolves to meet changing needs and expectations.

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