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A WEB BASED HOSTEL MANAGEMENT SYSTEM FOR NIGERIAN UNIVERSITIES

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ABSTRACT

Background: In a world full of evolving universities, there is the need for a computerized web-based hostel management and allocation system due to the vast number of students who need hostel accommodation to undergo successful studies far away from home. Some of the problems include: insufficient hostels, poor management of existing hostels, poor students' record handling leading to students who have paid hostel fees not getting rooms, illegal room occupants and poor maintenance of hostel facilities. In view of all of these existing problems, it is necessary to design a system capable of managing a database which allocates hostel to students. It is imperative therefore to make hostel allocation, management, and safekeeping of students and staff data safe and easily accessible, hence this study.
Objectives: Using Anchor University Lagos as a case study, this paper addresses some of the problems encountered in the manual allocation of hostels to students in Universities in Nigeria.
Methods: The hostel management system designed in this study keeps track of all the available rooms and its occupants. This hostel management system was implemented using HTML, PHP and MySQL.
Results: The novelty of our system is in its capacity to eliminate instances of double allocation, effectively track students records through real-time access to the database and as such ensure better management of hostel facilities.
Conclusions: In view of the results obtained from this study, it is our recommendation that Universities across the world should adopt web-based hostel management systems in order to avoid the pitfalls associated with manual hostel management.

Keywords: Software Engineering, Nigerian Universities, Computation and intelligent design, Hostel management, Web-based application

INTRODUCTION

Over the years, there have been several systems used in managing students hostels. Early literature reveals that there were no hostels available in many Universities. Students may have to live with friends or relatives around the University campuses. With time, the idea of housing students in the University campuses evolved. As expected, hostel management cum room allocation was manually done. With the popularity of computers in the past five decades, the idea of web-based management evolved(Suriya, Sundaram et al. 2021).

In many developed and some developing countries today hostel administration is basically electronic and web-based using some hostel management software (Odili 2013, Odili, Kahar et al. 2017, Odili 2018). The software handles the booking, maintain booking schedule, visitor relationship with the executives, registrations, checkouts, solicitations, receipts, bookkeeping and record reports(Noraziah, Azila et al. 2021). The Hostel Management System (HMS) gives total data about the hostel and staff of the hostel. These days web services technologies are broadly used to incorporate heterogeneous systems and grow new applications(Odili 2017). An application of integration of hostel management systems by web services technology is introduced by different gatherings of specialists(ODILI, NORAZIAH et al. 2018).

The Hostel management system coordinates many systems of the hostel in the educational and service industries, for example, front-end management, property management, security management(Odili, Noraziah et al. 2020), occupants' management, financial reporting, fault-reporting(Babalola, Ojokoh et al. 2020) etc. This integration solution can include or grow hostel programming systems in any size of the hostel chain environment(Babalola, Ojokoh et al. 2020). It is commonly acknowledged that the function of web services in business is without a doubt significant. Increasingly more commercial software systems broaden their capacity and are powered by utilizing web services technology(Azeeta, Misra et al. 2020, Babalola, Ojokoh et al. 2020, J.B Odili 2020)

The rest of this paper is organized in the following way: Section two examines some literature on the subject, section discusses the methodology adopted for the research, section three implements the web-based management system in Anchor University Lagos and discusses the results while section four draws conclusions on the study.

Literature Review

The Nigerian higher education was set up with the aim of giving the students sound and objective training so they can work successfully in any climate where they may find themselves. Moreover the Nigerian educational system aims at turning graduates who are more beneficial citizens, critical thinkers, and nation-builders(Odili 2017, Odili 2017). This is because, in Nigeria, students are the absolute most significant partners in the college/school framework. Likewise, students' convenience is among the most significant considerations in Nigerian university campus. Campuses are built in such a way that ensures that students living on campuses are able to cooperate among their associates from resources other than their own notwithstanding the remarkable open door for night conversations and social connections which when assembled will help in shaping the world view(Odili and Fatokun 2020, Adejumo, Asongu et al. 2021).

In spite of the laudable objectives of the hostel system in Nigeria, a few challenges have been observed. Some of such challenges include overcrowding, insufficient hostels, poor management of existing hostels, poor students' record handling leading to students who have paid hostel fees not getting rooms, illegal room occupants and poor maintenance of hostel facilities. To provide solutions to some of the above listed challenges, there is the need for an efficient hostel management system.

Hostel Information Management System (HIMS) is a method that is utilized in the satisfactory services to students, and makes hostel management simpler. HIMS requires the installment framework on the client booking gateway, absence of concentrated administration (Asset Register, Staff Records, and Payroll System). It gives total data about the hostel and staff of the hostel. The HMS is relied upon to give the users access to both the hostel administrators and enlisted staff, decrease expenses, give data about new administration strategies, change structure, financial situation, new installations, new standards and monitor all the rooms in the hostel(Ma'radzi, Zakaria et al. 2021).

2.1 Benefits of Hostel Management Systems

In literature, some of the benefits of HMS include **Performance**: Since inception, HMS helps avoid the physical treatment of students records which is usually very tedious and profoundly inclined to blunder. To improve the exhibition of the Hostel management System, the automated framework is to be embraced.

Efficiency: The fundamental objective of HMS application is effectiveness. The site ought to be productive with the goal that whatever the client presents any details, the application is refreshed promptly and the management updated real-time.

Control: The unlimited oversight of the electronic framework is under the hands of approved people who have the secret key to get to the framework and who ensure that all illicit access is denied. Control is totally in the possession of the director and different individuals reserve the options to see the records not to make change to any entry.

Security: Security is the principal standard for an electronic hostel management framework. Since illicit access may degenerate the information base and guarantee the assurance of the sored information.

Effectiveness: This is another high point of HMS. It eliminates haphazard allocations

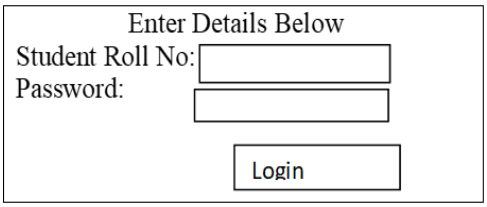

Fig.1: Login interface

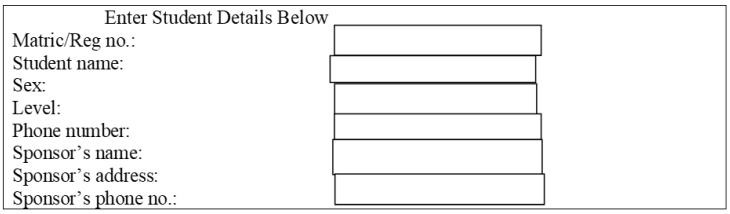

Fig 2: Update Hostel Interface

leading to over-crowded rooms. HMS also has capacity for remote access, thus, enabling students to book their rooms ahead of physical arrival on campuses

Financial benefits: HMS has ensured efficiency and effectiveness in room allocation using electronic means, thereby removing the need to engage several staff in hostel management (Ashesh and AppaRao 2020).

Methodology

In this section, we talk about the analysis and design of our proposed system. Our HMS begins with a portrayal of the structure by means of different Unified Modeling Language (UML) charts for instance the USE case and ACTIVITY charts. The program shows the movement of requests and activities of various subprograms within the system. The database structure which shows the relationship between the informational tables in the database is discussed later

3.1 Input Design

This involves the choice of the best procedure for getting information into the computer system at the perfect time and as precisely as could be expected under the circumstances. The utilization of well-defined interfaces encourages users to enter information precisely without presenting errors. This section shows the part of the system design which is comprised of the input interfaces of the proposed system.

The update Hostel interface allows users of the system to upload information to the database about a hostel. Information collected includes the hall name, room number, location, and the offset. The offset is an integer prescribing what room to start its allocation from. This is shown in Fig. 2 and Fig. 3

3.4 Allocate Hostel Interface

This interface allows the system user to allocate rooms to qualify students in the system. Information collected is the basic details of the students including that of the sponsors (parent or guardian) of the student.

Output Design

The proposed system has two interfaces output design which are View allocation and Search field interface.

3.6 View Allocation

The view allocation interface allows users to view the room or hostel allocated to him/her by the system, showing the student Matriculation Number, Name, Sex, Department, Level, Hall, and Room numbers.

3.7. Search Field

This view allows the users to search for any student at any point in time as the need for such search arises

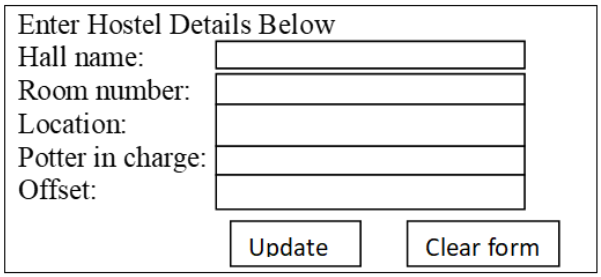

Fig 3 Allocate Hostel Interface

Matric no.	Name	Sex	Department	Level	Hall / room

Fig 4 View Allocation interface

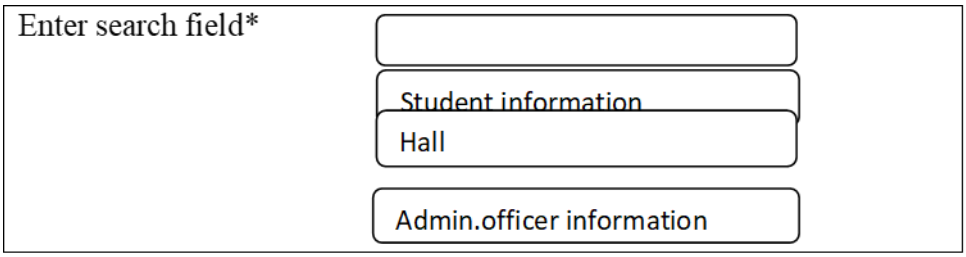

Fig 5 Search field interface

3.8 Menu Design

The menu design describes the various parts of the menu available to the user.

- Home: Navigates the user back to his front page.
- Update: Allows the user to update Hall details.
- Allocate Hostel: allows users to allocate rooms to students.
- Search: To search for student/hall information.
- Create: To create a user of the system.
- Allocation: To view all allocation.
- Logout: To logout from the system.

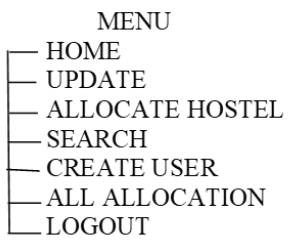

Fig. 6 Menu Design

3.9 Use Case Diagram

Unified Modeling Language (UML) use case outlines can be utilized to portray the usefulness of a system in a horizontal way. This implies that it represents the details of the individual features of a system and its available functionality.

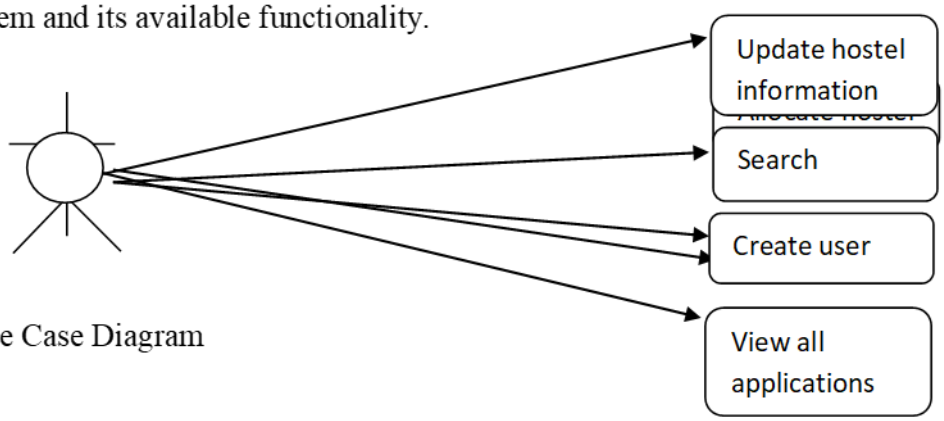

Fig 7 Use Case Diagram

As seen in fig 7, the system models a user with five actions. A user of the system can update information entered about a particular hostel, allocate students to hostel rooms, search for information stored on the database, create new users and also view all allocations on the system.

3.10 Activity Diagram

An activity determines the coordination of executions of subordinate behaviors utilizing control and data flow model. The subordinate behaviors facilitated by these models may be started on the grounds that different practices in the model get done with executing, because objects and data become available. The progression of execution is modeled as activity nodes connected by activity edges.

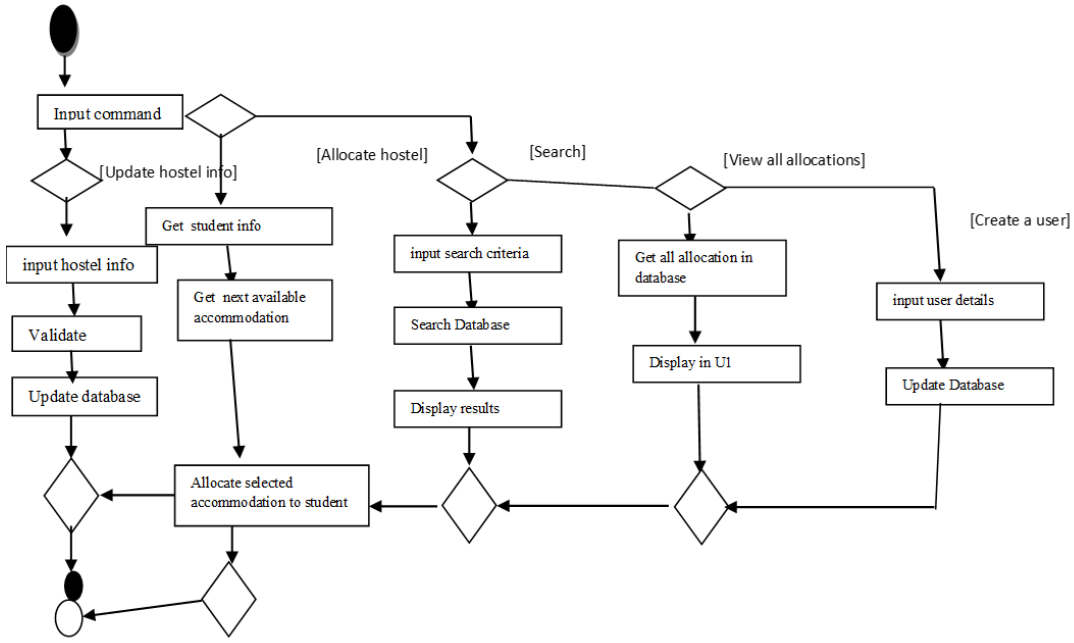

Fig 8 Activity Diagram for the Proposed System.

Activities in this system describe procedural computations as seen in fig 3.8. The activities are modeled in terms of the user. The user can make updates of his/her hostel information, search the data base etc.

. Results

PHP (Hypertext Preprocessor), is the programming language utilized in the implantation of this framework while MYSQL was adopted for the back-end database. PHP is a useful server-side scripting language. It has evolved to include a command-line interface capability and can be utilized in independent graphical applications. It was initially intended for web advancement to create dynamic web pages. .

SAMPLE OUTPUT

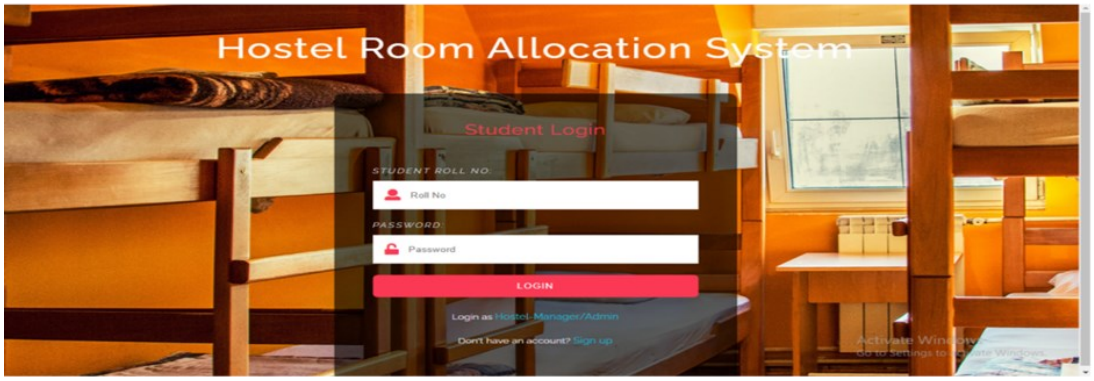

Fig.9: Index / Login Page

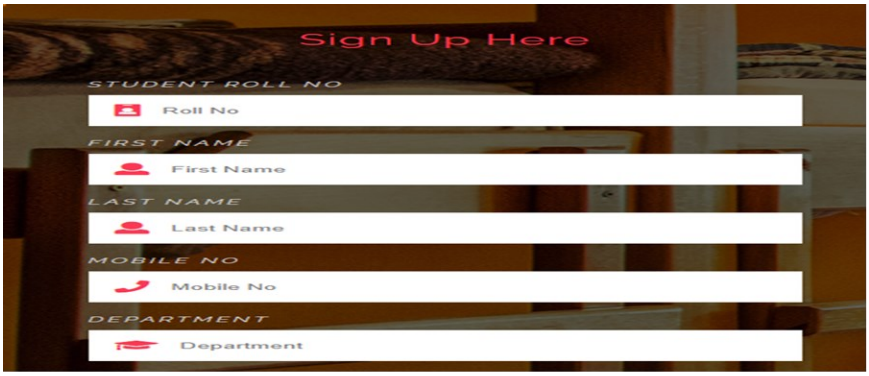

Figure 10: Sign Menu Screen

Figure 11: Hall Home Screen

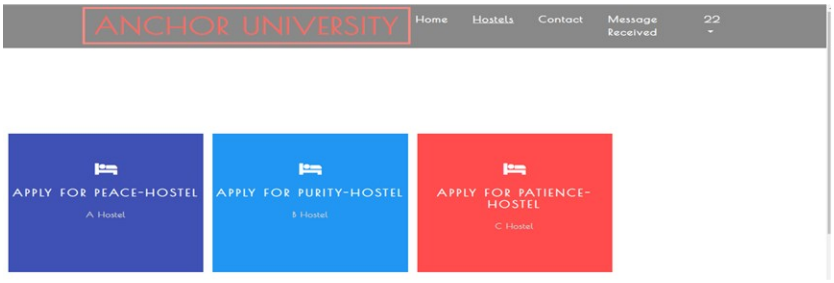

Figure 12: Hostel Screen

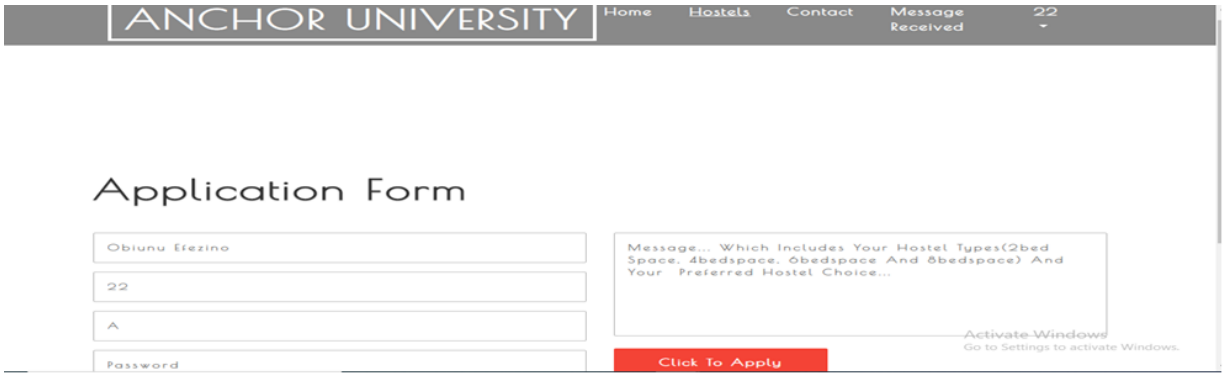

Figure 13: Hostel Application Screen

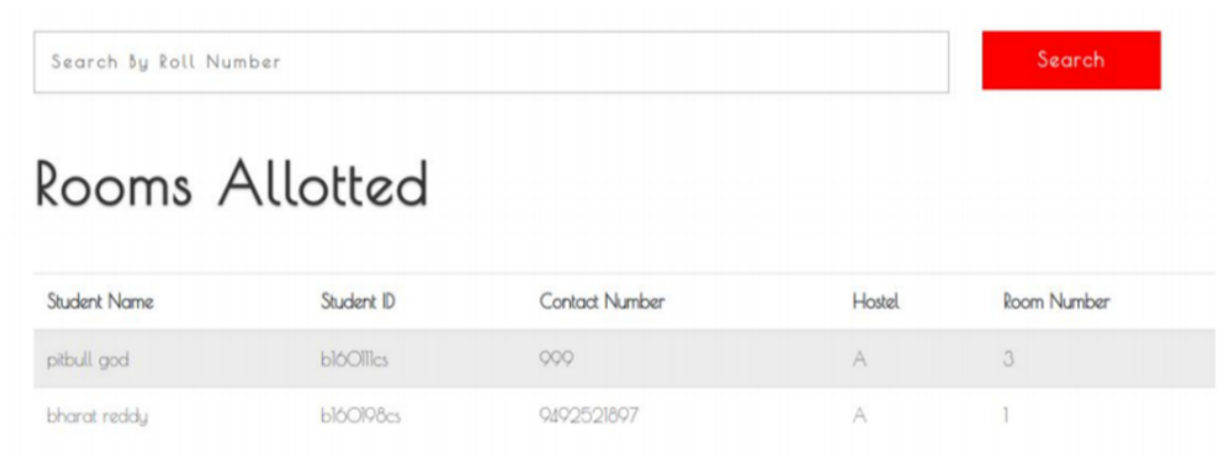

Figure 14: Student Profile Screen

1. Conclusion

We have been able to use PHP and MYSQL to achieve the following objectives:

- To create a Data-Based Management System (DBMS) that can be used to allocate rooms in the hostels to students based on the information on the database. This is done using the student profile as provided by the students while registering in the university's HMS.
- The students after signing up to the platform, applies for a room of his or her choice and depending on the decision of the hostel supervisor a room is allocated.
- To make a Data-Based Management System (DBMS) with the capacity of giving necessary information to the university's security agency about boarders in the various hostels. This is done using the hostel information of every student. With this developed HMS, security agents of the university can easily investigate cases of misconduct in the hostel because relevant details about the students' hostels such as room numbers etc. are readily available.
- This system will remove the stress associated with the current system by making hostel management, allocation and database search for students' information quick and less stressful.
- This system will improve the administration of student hostel in Anchor University Lagos (AUL) by providing security of information, refreshing the records, recovery of a certain data-set practically easy and error-free.

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