

AN AUTOMATIC HOSTEL SPACE ALLOCATION SYSTEM IN A PRIVATE UNIVERSITY, NORTH CENTRAL NIGERIA

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ABSTRACT: Recently, there is a rapid growth in the number of students being admitted to various higher institutions across West African countries yearly. This has posed numerous accommodation problems to the stakeholders like school management and students. Some of the problems include the inability to manage student information accurately. This is as a result of the poor information management system that uses manual registers, cumbersome manual allocation system and so on which has resulted in the inability to give accurate information about the occupancy of rooms. This research study addresses problems encountered in the allocation of hostels (space) to students manually in universities. This work proposes and designs a system that is capable of managing a database which will automatically allocate space (Hall and Room) to students. The proposed system will automatically allocate Halls, rooms, and roommates by taking certain criteria into consideration and also keeps proper records of all the vacant lodges and its inhabitants. This automatic allocation method was developed using tools such as HTML, JavaScript, CSS, PHP, and MySQL. The system has been implemented and evaluated using a Nigeria private institution as a case study.

KEYWORDS: Allocation Space, Institution, Hostel Management, Student.

1 INTRODUCTION

In Nigeria, today and some other West African countries, hostel management has become more sophisticated than it used to be in the previous years. Hostels have been developed to solve the problem of accommodation for students, visitors and for reservation purposes. The manual technique of supervising and overseeing hostels lodging in institutions is not efficient. Due to the numerous problems experienced in manual techniques of managing hostels in higher institutions using paper documentation has turned out to be burdensome and unkempt most especially as the students' [Ubo07] population continues to grow and increase. This entire practice is timewasting as well as the person and material resources [A+14].

Automatic hostel space allocation technique for hostels is basically online software established for allocating rooms/spaces to students. The purpose of this research study is to propose a solution to the prob-

lems of space allocation by developing a computerized scheme, which is comprehensive, and with graphical user interface (GUI), which will be matching alongside the current manual methods [***17]. The software initiated will elucidate the difficulty of space allocation, and consequently, assisting to lessen difficulties connected with the manual hostel allocation scheme in West African institutions. Countries like the UK, Ireland, Asia, and Australia refer to the hostel as an organization delivering longer-term lodging where the hostel is occasionally being managed by Housing Associations and Charities [Per05]. Most part of Africa, including countries as India and Pakistan defines hostel as a boarding school or student dormitories in resident universities and campuses. Hostel refers simply to houses recommending shared lodging to vacationers or tourists in certain parts of the earth. Hostels for tourists are occasionally named 'travelers' hostels', especially in Australia and New Zealand, its frequently shortened to just "travelers" [F+17].

2 LITERATURE REVIEW

2.1 Hostel Allocation

Hostel space allocation is an immense apprehension for academies management in unindustrialized nations such as West African countries where the manual allocation system is still being used; the manual system of allocation is a tedious and time-consuming process with a lot of shortcomings like manually written records being prone to human errors, records tracing is tedious and stressful, difficulty in maintenance, updates of records, etc. Efficient management and allocation of hostel spaces will also aid concentration and academic performance of students [AA10].

Hostel allocation is done yearly, session after session and this bulky process are repeated at every session when students are resuming. The numbers of students being admitted to these schools increase rapidly. Therefore, in order to manage the hostel more systematically, an extra dependable method is required to confront the manual problems of hostel

allocation hence, the apportionment of hostels ought to be entirely automated [MR07].

2.2 Review of Related Work

[Alu16], in the study, the author noted that condition of student housing has always been one of the major challenges facing Nigeria higher institutions due to the fact that students admitted tend to exceed the available facilities provided by the institutions management. This problem facing housing is worthy of notice ranges from growing overcrowding of students that is actualizing to congestion and as a result, mounting to increase pressure because of its shortage of dwelling units whereby as many as 10 students shares a space allocated to 4.

[Ubo07], Hostel in most of the higher institutions has not been receiving adequate attention. He revealed in his study that, student’s population is rapidly increasing while infrastructural amenities are declining in supply and their housing stock depreciating.

[Alu11], in the study, the research was conducted by this board “Ministry of Education” in the country to establish the level of academic stress among the students of Nigeria Universities, bad condition of student housing facility was found to be one of the major causes of stress among university students. The

study revealed a very high level of perceived academic stress among undergraduate students which is dependent on inadequate provision of facilities to the student housing.

From the reviewed works, students’ hostel and facilities are seriously inadequate and the available ones are in bad condition. Student automatic hostel allocation is a potential way to reduce student stress and unrest and increase their productivities.

3 RESEARCH MODEL AND METHODOLOGY

3.1 System Design

The systems design, defines the structure, constituents, segments, interface and documents for a scheme that fulfills identified necessities. In this section, there are different and separate steps to be followed, which are ensured in the logical design process. The system’s design would also incorporate interface designs and UML diagrams used to explain the architecture of the system. The system’s design allows the user to gain a detailed understanding of how the system functions. This usage profile can be leveraged to develop future architecture changes.

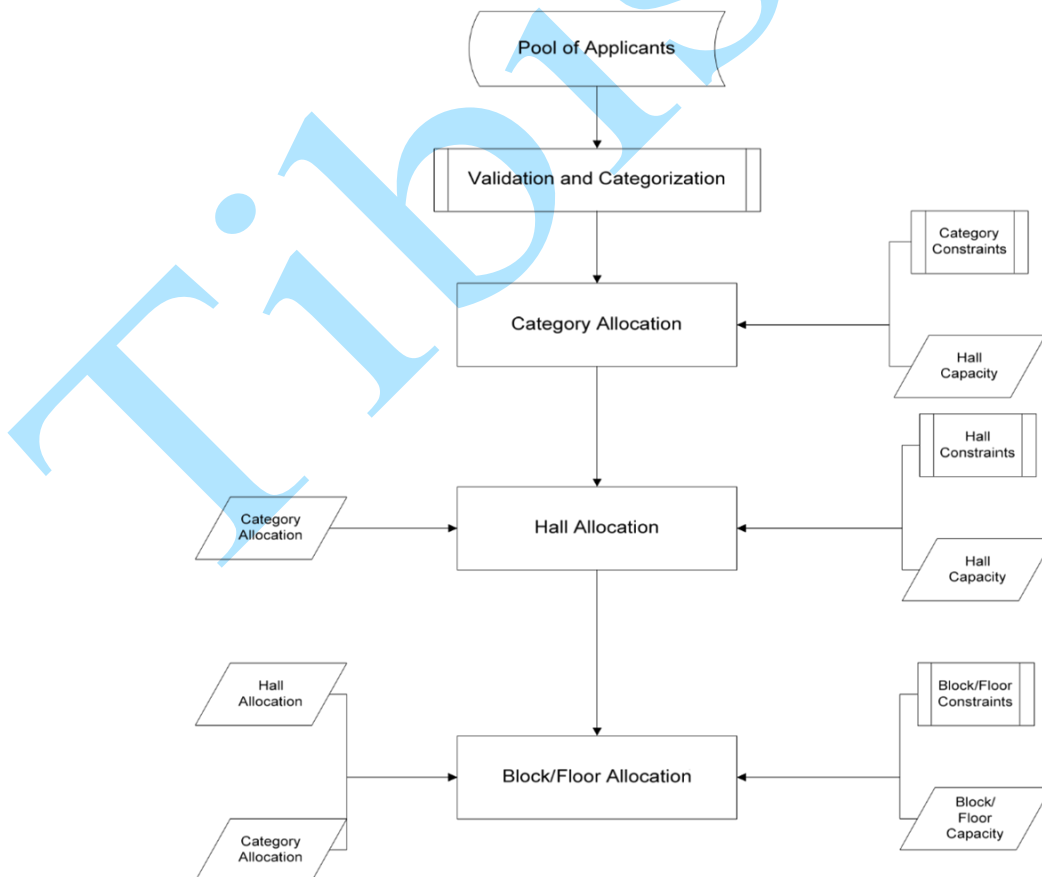


Fig. 1. The System Framework

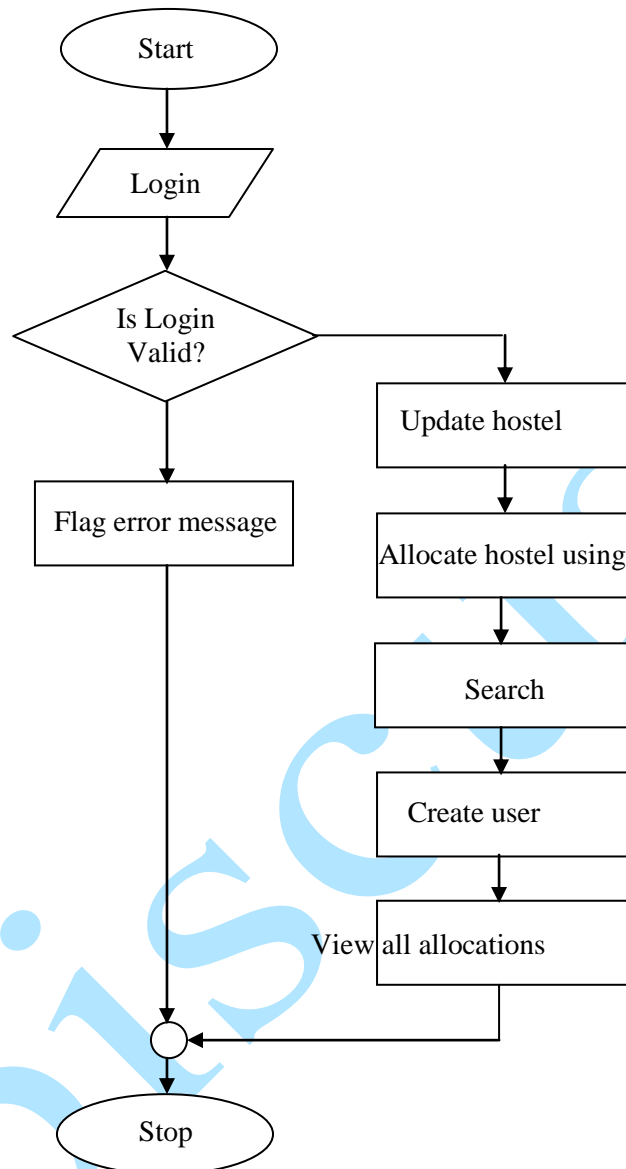


Fig. 2. The System Flowchart

Fig. 2 shows the diagrammatic representation of the system in terms of the process operations. The process begins with the user having to login. The login operation confirms both the validity and access rights of a user. The user is then offered the process operations of updating hostel information, allocating hostels, searching the database, creating new users and viewing all allocations. If the access is right that user is not valid, then an error message is flagged.

Fig. 4 showed that the system modeled 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.

4 RESULTS AND DISCUSSION

This section discussed the interfaces of the implemented system and displayed below are the various system interfaces.

Fig. 5 displays the overview of the system as a whole which includes the login page, allocation page, update hostel page and lastly the search page.

Fig. 6 displays the login page where the user enters their verification credentials to be able to have access to the system.

Fig. 7 shows the sign up page of the system where new person just visiting the site gets to register before having access to the system.

The Fig. 8 displays the interface where the database of the system was created.

Fig. 9 shows the view page where the hostel allocation status of persons was been displayed.

Fig. 10 displays the database having the user table contained in it.

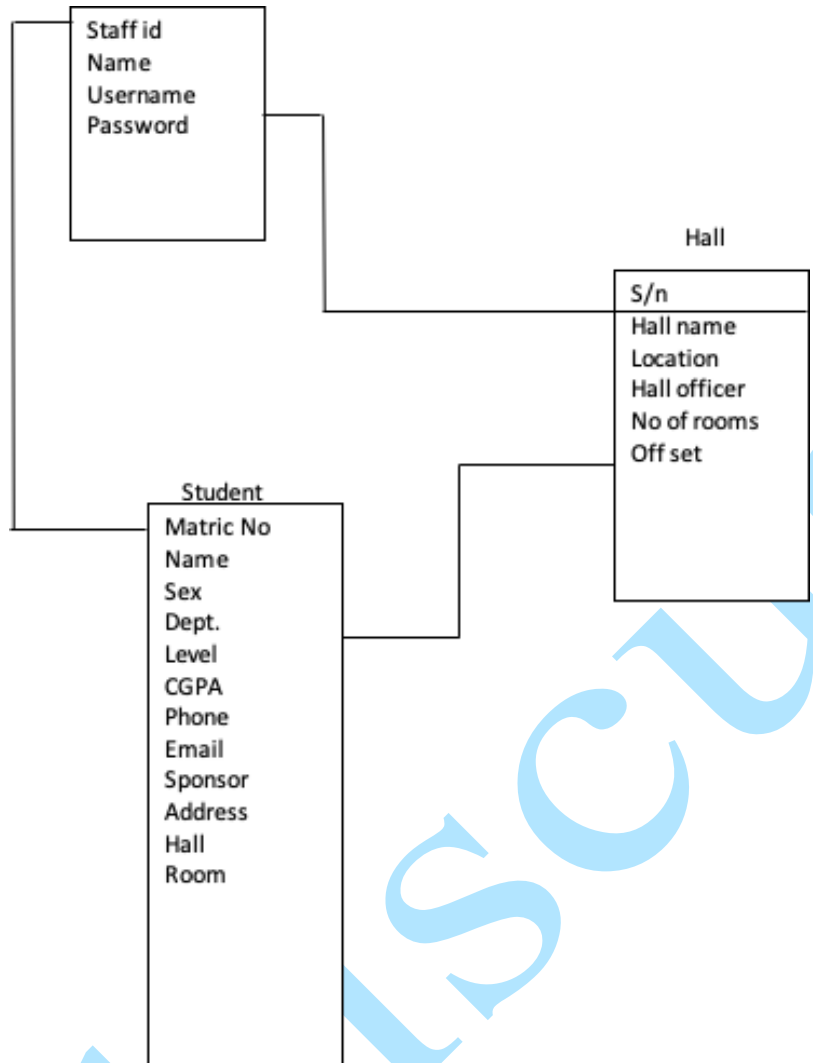


Fig. 3. Database Design

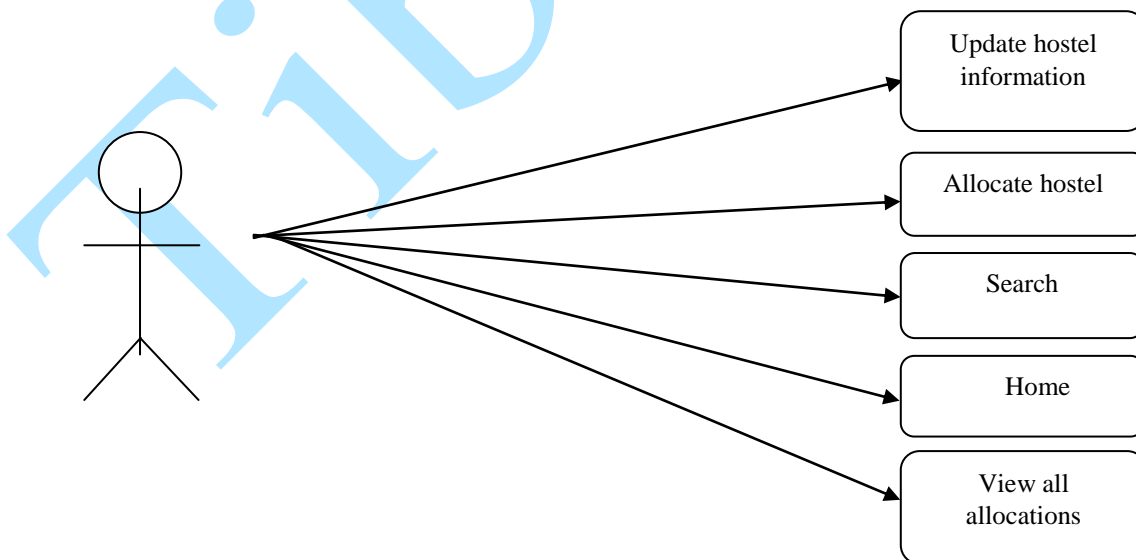


Fig. 4. The System Use Case

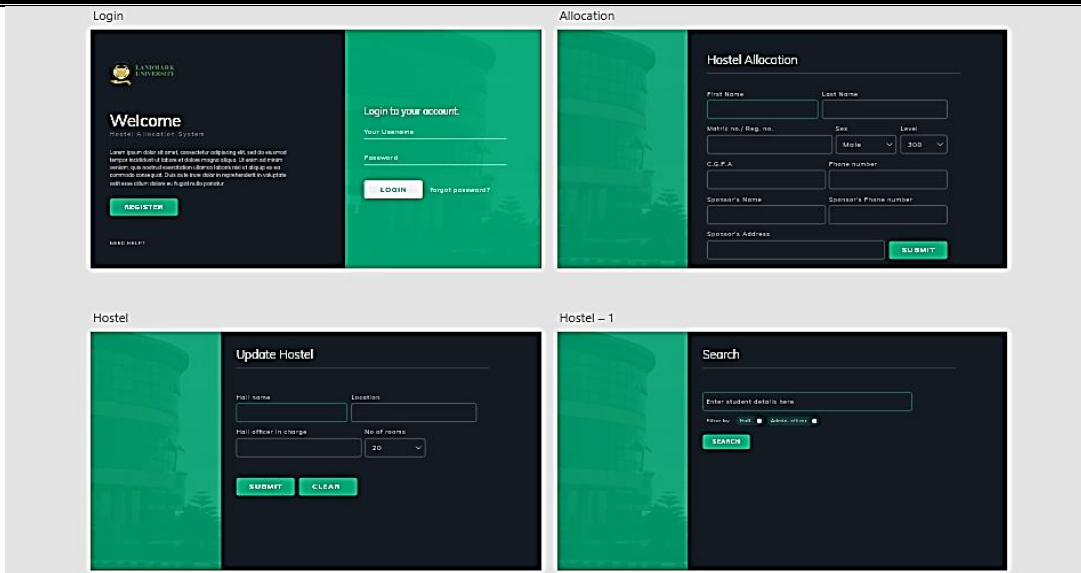


Fig. 5. Overview of the System

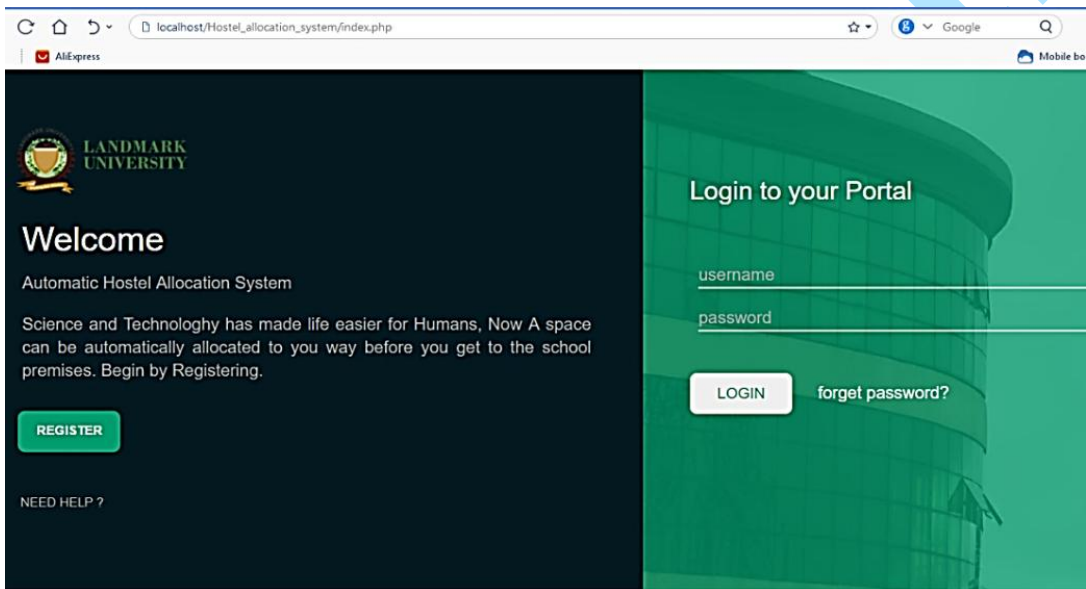


Fig. 6. Login Page

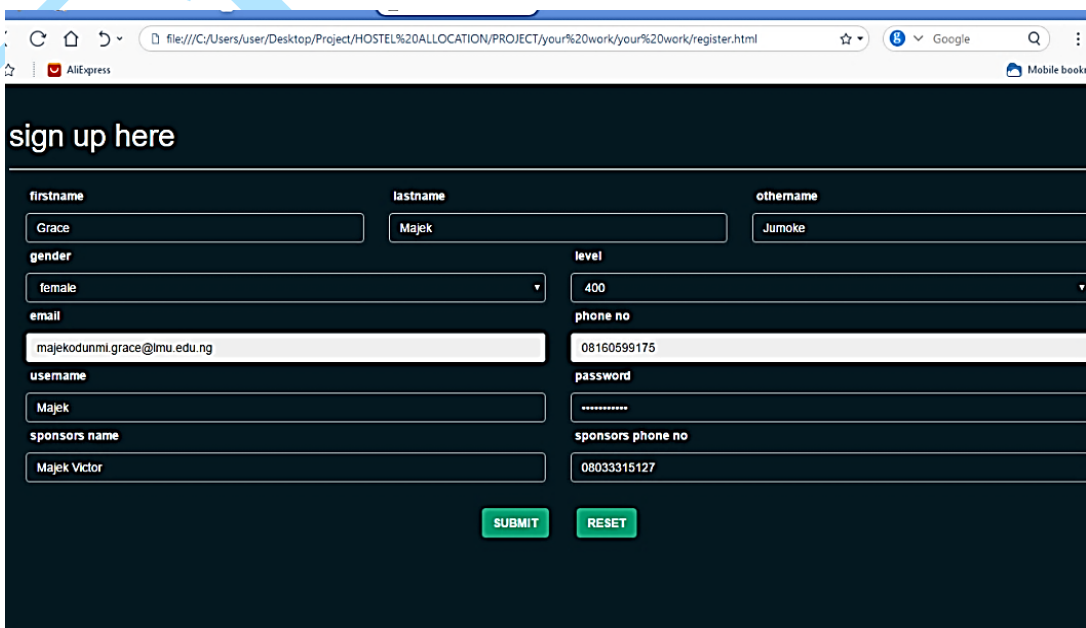


Fig. 7. Signup Page

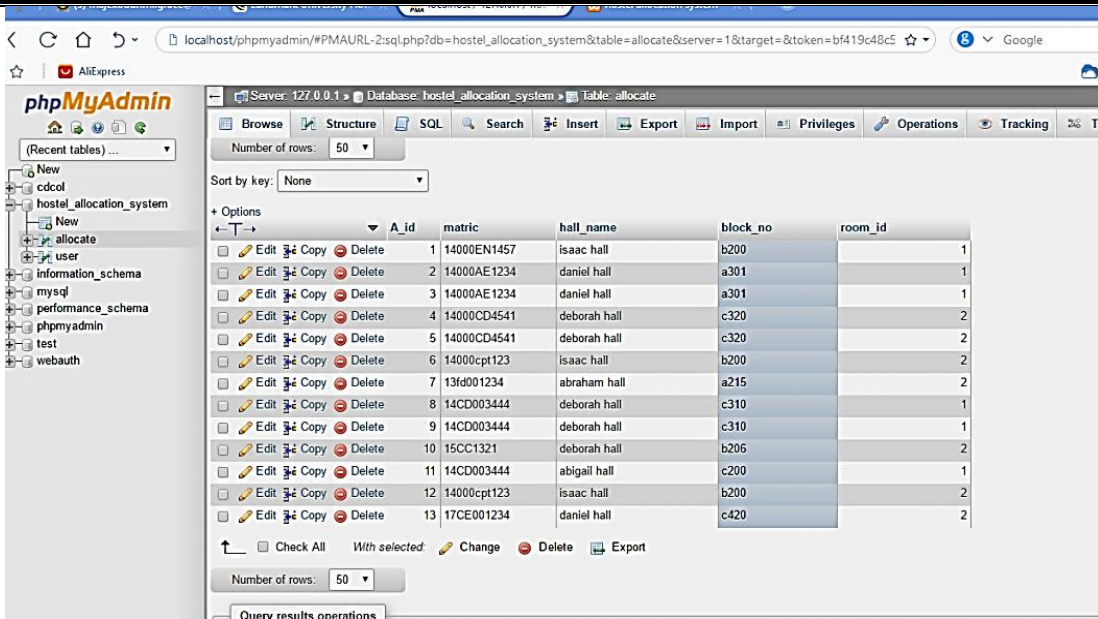


Fig. 8. Creating Database Interface

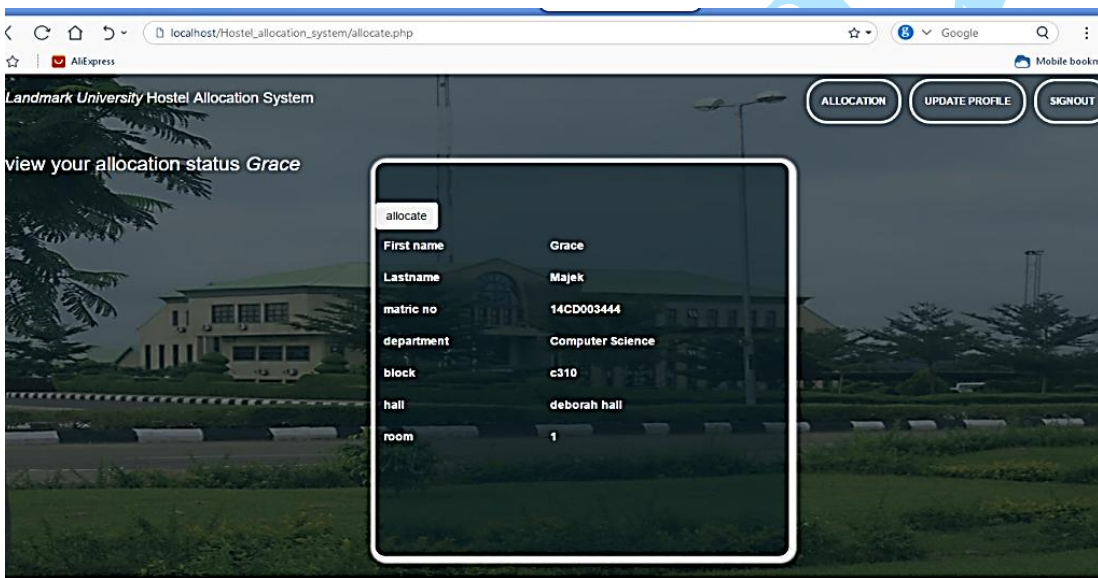


Fig. 9. View Page Interface

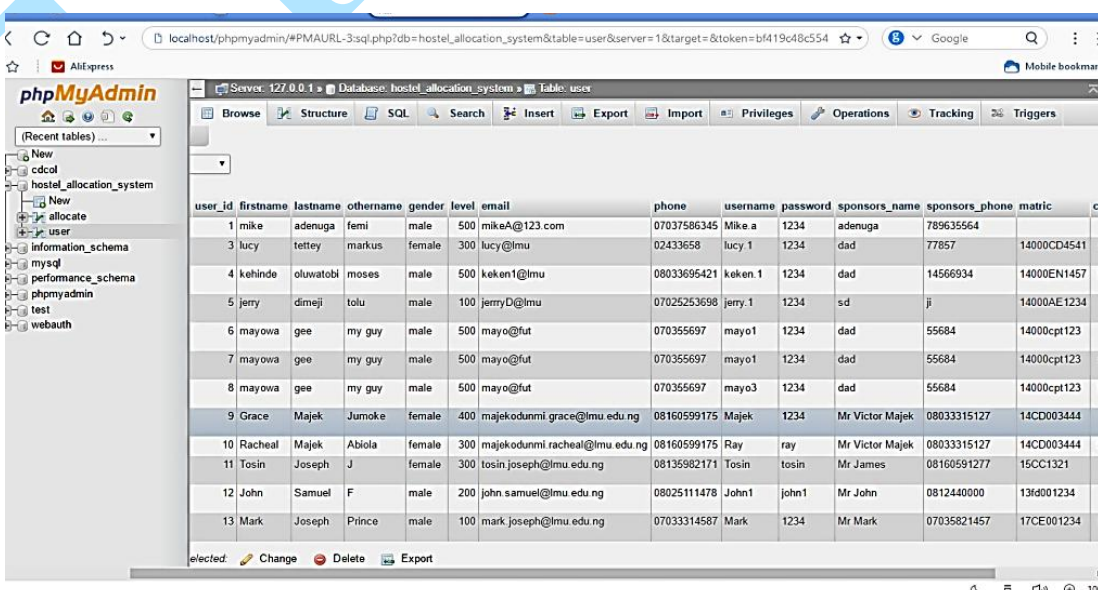


Fig. 10. User Table Database Interface

5 SUMMARY

This research work presents an Automatic allocation system using a Nigeria Private University Hostel as a case study. In summary, the objective of this study was to eliminate the anxiety connected with the prevailing manual method as previously specified in the problem definition in introduction, with the provision of a system that is readily available, portable in terms of disk size and provide Hall officers with ability to make entry in to the system as required.

6 CONCLUSION

This research allowed the Student Affairs' Department or room/hostel allocation Department to be able to allocate rooms to students without going through much stress. Hall Officers can now manage student record with ease giving such a robust system.

7 RECOMMENDATIONS

The following recommendations were suggested based on the findings of this research;

1. The Automatic allocation system is recommended for institutions that provide hostel accommodation for their students
2. The system is also for individuals or corporate firms that manage their own private hostels located outside the campus.
3. The system can also be used by a hotel manager to manage room allocation in the hotel
4. Also recommended for any high schools and primary schools dormitory where the matrons do not have to allocate room to students manually.

8 SUGGESTION FOR FUTURE WORK

In the further research, we intend to add intelligence to the system that will enable the students to request for a re-allocation and the system should be able to automatically perform reallocation in case of complaints arising from Health challenges.

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REFERENCES

- [Alu11] **Aluko O. E.** – *The Assessment of Housing Situation among Students in the University of Lagos*, African Research Review, 5(3), 20, pp. 104-118, 2011.

Retrieved from:
https://www.ajol.info/index.php/afrev/article/download/67345/55434&ved=2ahUKEwi1yZHd_KjlAhW2QkEAHY7tCIMQFjAAegQIBxAB&usq=AOvVaw2KnsfFnoKBeKzmEC0obWLu.

- [Alu16] **Aluko O. E.** – *Students' Accommodation in Nigeria: A case study of University of Lagos*. PAC Research, 2016.
- [AA10] **Adewumi A. O., Ali M. M.** – *A Hierarchical Heuristic Strategy for Hostel Space Allocation Problem*. South Africa, 2010.
- [A+14] **Ayanlowo K. O., Shoewu O., Olatinwo S. O., Olusegun O. O., Damilola B. D.** – *Development of an Automated Hostel Facility Management System*. Journal of Science and Engineering, Vol. 5(1), 01-10, 2014.
- [F+17] **Fletcher J., Fyall A., Gilbert D., Wanhill S.** – *Tourism: Principles and practice*. Pearson UK, 2017.
- [MR07] **Mat A. R., Rahman S. A.** – *A general framework design for e-Hostel allocation system: A case study of alamanda college, UNIMAS*. Sarawak Malaysia, 2007.
- [O+19] **Ogundokun R. O., Adebisi M. O., Abikoye O. C., Oladele T. O., Lukman A., Adeniyi E., Adegun A., Gbadamosi B., Oluwatobi A. N.** – *Evaluation of the scholastic performance of students in 12 programs from a private university in the south-west geopolitical zone in Nigeria*, F1000Research 2019, 8:154 (<https://doi.org/10.12688/f1000research.16762.1>).
- [Per05] **Perry J.** – *Housing and support services for asylum seekers and refugees: A good practice guide*. Joseph Rowntree Foundation, 2005.
- [Ubo07] **Ubong B.** – *Hostel Accommodation in Tertiary Educational Institution in Nigeria: to be or not to be*. Retrieved from www.bassejubong.com/Hostel, 2007.
- [***17] *** - *Design and implementation of a computerized hostel allocation system*. Retrieved from [researchClue.com: http://nairaproject.com/projects/960.html](http://nairaproject.com/projects/960.html), 2017.