

A Web-Based Real Estate Marketplace For Students In Public Tertiary Institutions In Nigeria

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ABSTRACT: This project is a step in the evolution of searching for and booking off-campus accommodation for students in government-owned universities. The main objective of this project is to design and implement a web-based solution that enables students to easily search and rent off-campus housing facilities. The solution is a web-based marketplace that acts as a meeting point for both the owners of off-campus accommodations and students looking to rent such accommodations. It would allow students to book and pay for an available hostel space online while also allowing owners, agents, and caretakers of off-campus hostels to advertise their hostels and the facilities available in those hostels. The system was designed using the Model View Controller architecture. The programming language used on the server side is php and the Laravel framework was used because of its robust features. MySQL was used as the relational database management system. The front end was designed using HTML and CSS, and JavaScript was used to make the page responsive.

KEYWORDS: Web-Based, e-marketplace, Online Booking System, Model View Controller (MVC) Architecture

I. INTRODUCTION

Housing is one of the basic human needs of individuals in any society. Nigerian students are not spared from the difficulty in getting housing, especially at universities that operate a non-residency policy [1]. Student housing is considered

to be one of the essential amenities that facilitates learning in an academic environment [2]. Traditionally Nigerian universities provided housing facilities on campus for their students.

Higher institutions across the world adopt one of three different models in providing accommodation for their students; residential, non-residential, and dual-residential. In the residential model, the institution houses all its students. In the non-residential model, students' source for their accommodation. In the dual residential model, the university houses its students for a particular period (probably the first and last year) while students source for their accommodation for the rest of their stay in the institution [1].

Over the years there has been a population boom in the number of students being admitted into universities. The sporadic increase in the number of students being admitted into public universities in Nigeria and the lack of corresponding growth and maintenance of the on-campus housing facilities for students, has resulted in overcrowding, and deterioration of these housing facilities. The continuous increase in the number of students in higher institutions across Nigeria has led to serious issues with accommodation as on-campus hostels are no longer able to meet up with demand [3].

The current condition of the student housing facilities provided by public universities in Nigeria is appalling. Overcrowding is a major problem in these hostels. According to a report on the critical needs of Nigerian universities, only

about 111,509(8.9%) of the total number of students of 1,252,913 across 61 public tertiary institutions are housed on campus [4]. Only a handful of universities in Nigeria can accommodate up to half their student population and in some universities, as much as 90% of the student population has to reside outside the campus [5].

The problems associated with the current method of searching, reserving, and renting off-campus accommodation include difficulty in searching for hostels, a limited amount of information concerning hostels, a lack of price transparency, and an increase in rent due to the involvement of multiple middlemen. For students who have opted for off-campus accommodation, the process of finding a suitable accommodation is an uphill task. Students have to manually reach out to the caretakers or real-estate agents managing a property to inquire about the availability of space and price of the space. This becomes a very big issue for students, especially students who do not reside in the same geographical location of the school. Students who just gained admission into a university and do not reside in the same State as where the school is located are faced with a lot of uncertainties.

The overall aim of this project is to design and implement a functional web-based real estate marketplace for off-campus student housing around universities in Nigeria. The specific objectives of this project are to design and implement a web-based real estate marketplace that enables students to conveniently find, compare prices, book, and rent off-campus accommodation while eliminating the activities of multiple middlemen. This work will also enable private developers, real estate agents, and property caretakers to reach a wider range of potential customers.

This paper examined the existing method of searching for and renting off-campus accommodation in Nigerian public tertiary institutions and then used the information in designing and developing a web-based marketplace. The project is focused on public tertiary institutions in Nigeria. The reason for limiting the design consideration to public tertiary institutions is because the problems of lack of adequate hostel facilities, squatters, and overcrowding are more severe and intense in public institutions and sometimes non-existent in some private universities. Most private tertiary institutions provide accommodations for all of their students.

This research is significant in several aspects. It is hoped that the outcome of this paper will be a system that alleviates the pain of students

in finding off-campus accommodation and also helps private developers and real estate agents access a wider customer base. Given the need for a better system for connecting students to possible off-campus accommodation, this project attempts to develop a real estate marketplace for student housing.

II. LITERATURE REVIEW

The use of an online booking system ensures that a business is always open 24/7 days per week, meaning that the reservations are readily available for students to make at any point in time [6]. The availability of a product on demand promotes sales and meets the user's demand [7].

A market or marketplace is a location where people regularly gather for the purchase and sale of provisions, livestock, and other goods. [8] defined a marketplace as "as the place of exchange between buyer and seller. Once one rode a mule to get there; now one rides the internet". An online marketplace (or e-marketplace) is a form of e-commerce website where the information about the available products and services are provided by multiple third parties, while all transactions are handled or processed by the owner or operator of the marketplace. Usually, the operators of a marketplace do not own any inventory, they present other people's inventory to users on their platform and facilitate a transaction. [8].

Figure 1 below shows the interconnections between traders and buyers. According to [9], by connecting to the e-marketplace, each participant is connected to all other participants to support transactions, share information and documents as well as enable cooperation. There is competition between suppliers and buyers, but the e-marketplace provides a space that also facilitates cooperation.

E-marketplaces can be divided into three categories; horizontal, vertical, and global. A horizontal marketplace sells various kinds of products but they must share a characteristic. Horizontal markets are functional and facilitate the purchase and sale of goods and services used by many industries. "To a great extent the goods and services bought and sold via horizontal e-marketplaces are standardized in nature" [9].

Vertical marketplaces offer products and services that are specific to a particular industry-for example marketplaces designed specifically for the construction industry, and telecommunication industry. They tend to extend the scope of the products and services offered along the value chain. Designing a vertical marketplace for a specific industry that optimizes buyer-seller

relationships requires an in-depth understanding of the industry [9]. A good example of a vertical marketplace is ‘TrueFacet’ which sells only jewelry and products related to jewelry.

The global marketplace offers a wide array of products across different sectors and

industries. eBay is an example of a global marketplace, eBay has one of the largest product listings in the world, and this in turn draws in a large number of users, according to [8] “eBay has 167 million users, over 1 billion items for sale, more than 80% of the items are new”.

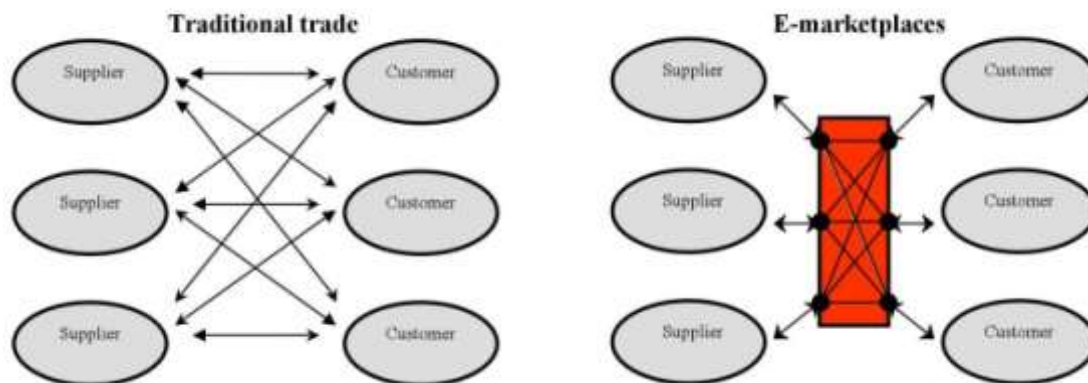


Figure 1: The e-marketplace as an electronic intermediary between suppliers and customers(Source: [10]).

III. METHODOLOGY

The current system of finding and renting off-campus accommodation would require students to manually search for hostels in the areas that surround the school compound either by physically searching the areas or getting recommendations from friends. Once the student has identified hostels in a particular vicinity, he has to contact the owner of each hostel to make inquiries about the availability of living space. Once availability has been confirmed the student has the option of going to inspect the space. Once the student is satisfied with the details of the accommodation, payment can be made.

In the current system, the fact that off-campus living spaces are often being offered by private entities implies that information on the location and availability of spaces is not centralized. A potential student has to contact multiple individuals to get information about multiple spaces. This makes the process of searching for hostels manual and laborious. Obtaining information about the state of the hostels usually involves visiting the hostels in person.

The developed system brings together owners, agents, and caretakers of off-campus student housing facilities and students seeking off-campus housing. The system would allow students

to find hostels around different schools. It would also allow a student to book and pay for an available hostel space. It would allow owners, agents, and caretakers of off-campus hostels to advertise their hostels and the facilities available in those hostels. It would serve as an aggregation of off-campus student housing. The authenticity of each hostel would be verified before users would be allowed to see the offerings from that particular hostel. Each hostel would be verified by ensuring that the person putting up any hostel on the platform has the legal right to do so. We would verify hostels by requesting documents that show proof of ownership, or proof that the owner of the hostel has given the individual putting up the hostel the right to represent him or her.

The Model View Controller (MVC) architecture was adopted to develop this web application. The MVC architecture breaks an application into three separate logical entities: Models, Views, and Controllers as illustrated in Figure 2. In the MVC architecture HTTP requests are routed to a controller, the controller then interacts with the model to perform any necessary user actions and/or retrieve the results of queries. The controller also determines which view to display and provides it with the required Model data.

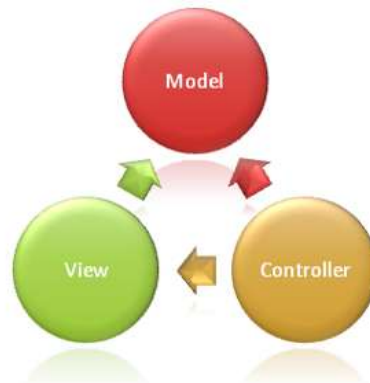


Figure 2: Visual Illustration of the MVC architecture

Figure 3 below shows the user booking module where the user can perform various actions as illustrated in the figure.

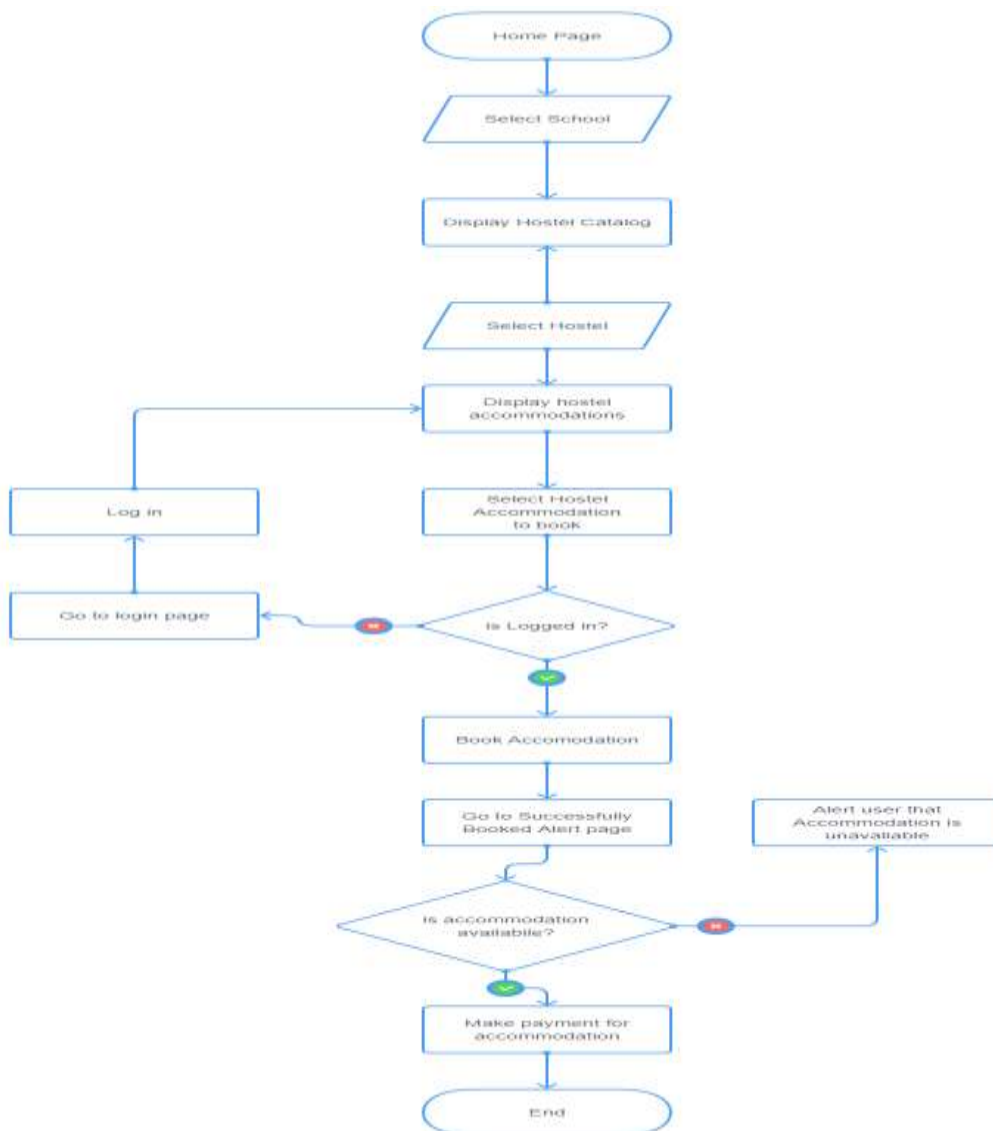


Figure 3: User booking flowchart

IV. IMPLEMENTATION

The implementation of various pages under the user sections is discussed as follows.

HOME PAGE

The home page shown in Figure 4 is the first page the user sees when he visits the website. It consists of a header text that describes what the site can be used for and a simple form that allows the user to select a particular school from several options.

HOSTELS PAGE

Once the user selects a school and clicks the search button, it goes to the hostel's page shown in Figure 5. This page displays all hostels near the selected school. The hostels page shows a list of all hostels around the school selected on the homepage. It displays the name and image of each school listed as well as the lowest price for renting accommodation in the hostel. Hostels can be selected by clicking the image of that particular hostel. Once a particular hostel is selected, it displays the hostel accommodation page.

HOSTEL ACCOMMODATIONS PAGE

This page shown in Figure 6 displays more information about the hostel. It displays a list of the facilities available in the hostel and a list of the different types of accommodations available in the hostel along with the price.

SUCCESSFUL RESERVED PAGE

This page shown in Figure 7 comes up once a user has successfully reserved an accommodation. The body of the page contains a message that confirms that the accommodation has been reserved and two links. The 'Back to home' link is linked to the home page, and the 'View Bookings' link is linked to the booking page where the user can view all reservations.

BOOKINGS PAGE

The bookings page shown in Figure 8 allows the partner to view and manage all bookings in the hostels the partner is managing. This is where the partner confirms the availability or unavailability of the accommodation type that has been booked by a user.

PARTNERS PAGE

The partners' page shown in Figure 9 displays a list of all the partners registered on the platform.

HOSTELS PAGE

The hostel page shown in Figure 10 shows some basic information about the hostel on the top left of the page. The top right side of the page houses a table that contains all the hostel documents. Each document can be downloaded and viewed. At the bottom of the page is a drop-down that can be used to update the status of the hostel.

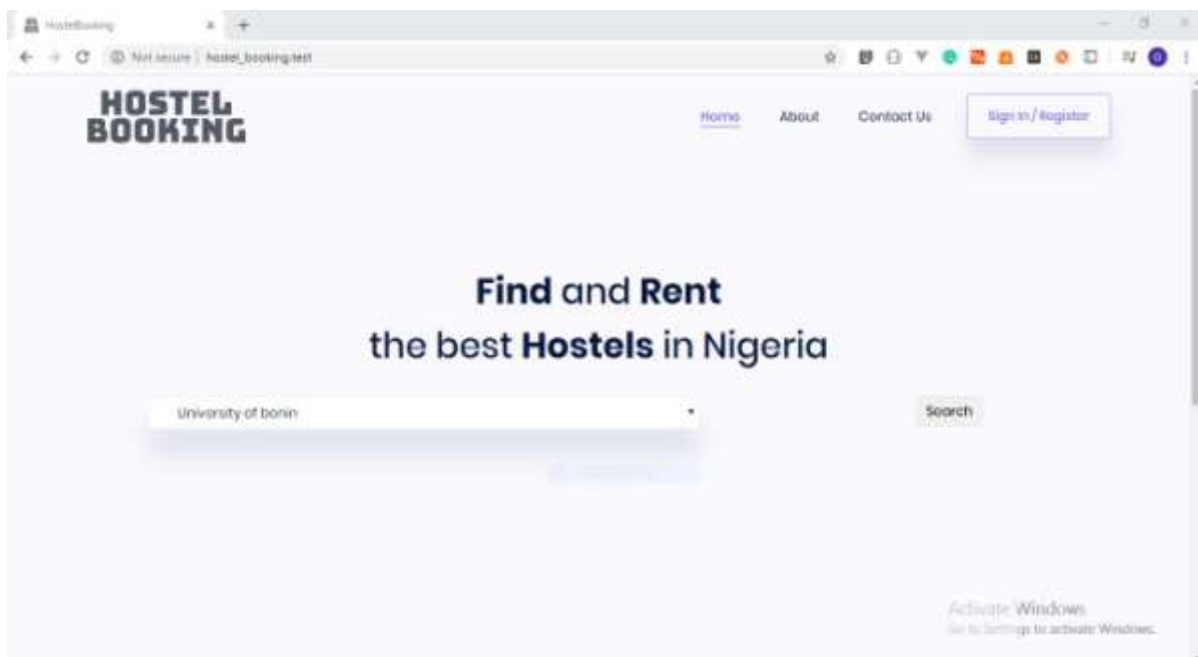


Figure 4: Screenshot of the Home page on the user section

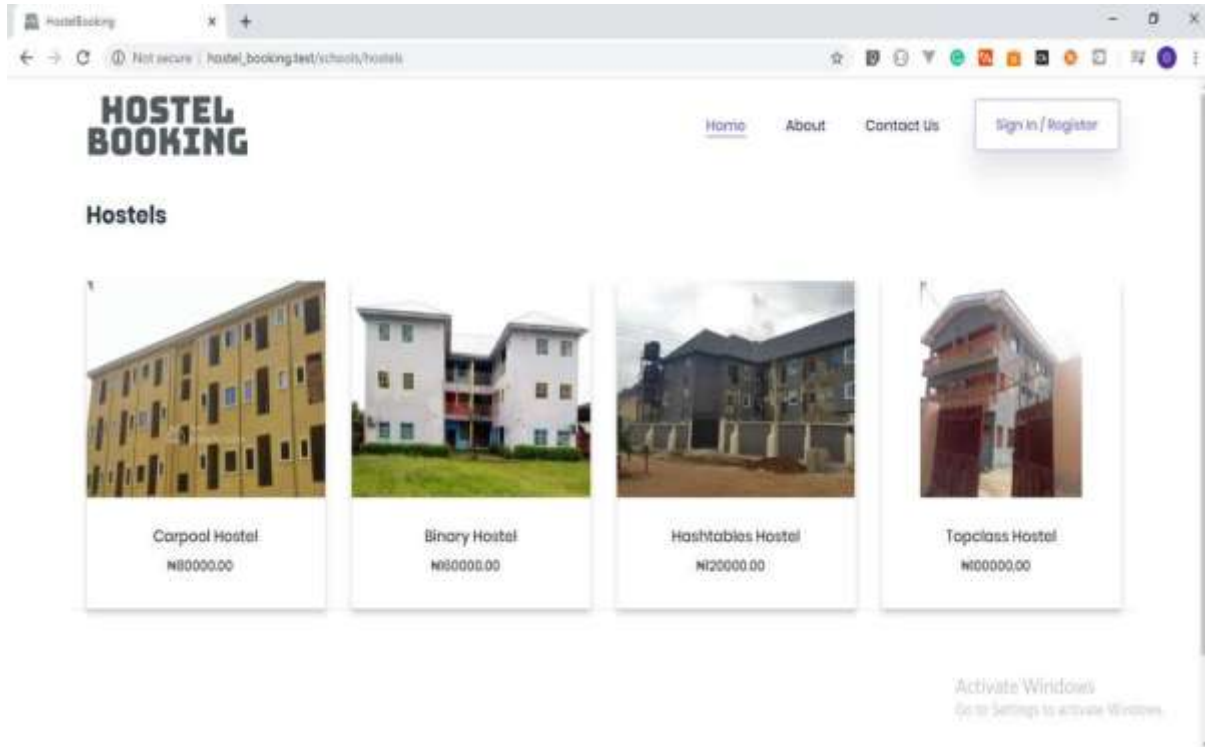


Figure 5: Screenshot of the Hostels page on the user section

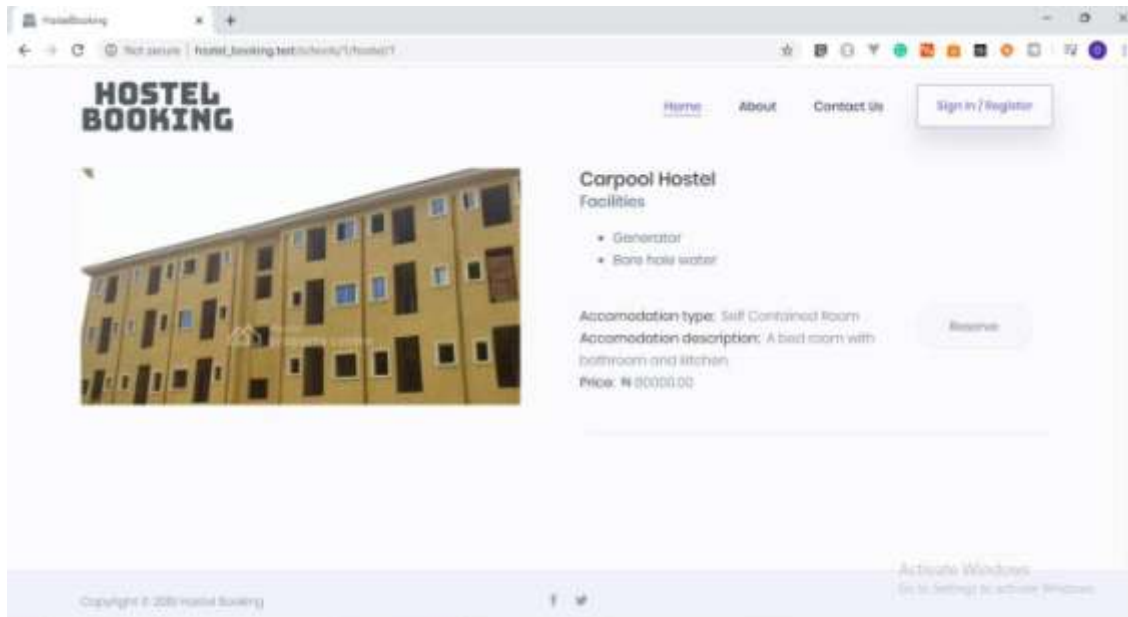


Figure 6: Screenshot of the Hostel Accommodation page on the user section

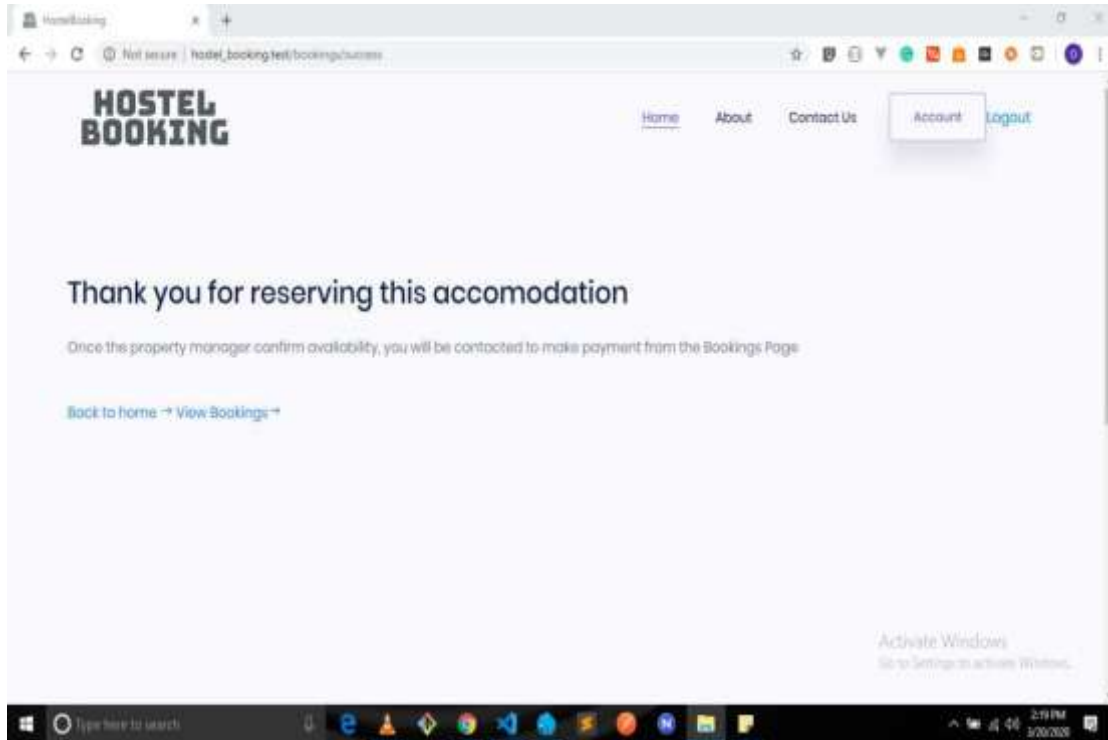


Figure 7: Screenshot of the reservation success page on the user section

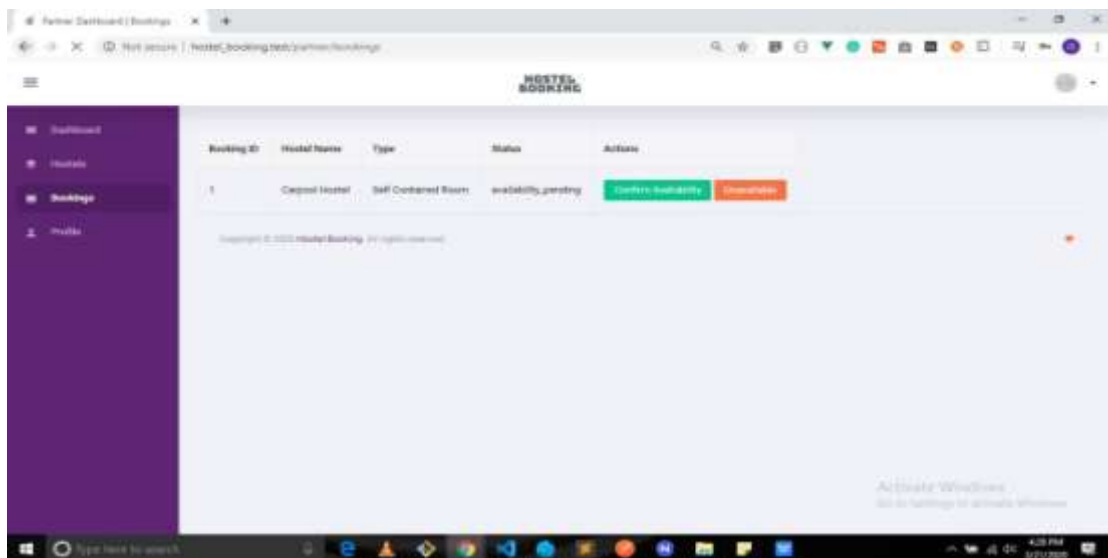


Figure 8: Screenshot of the Bookings page on the partners section



Figure 9: Screenshot of the Partners page on the admin section

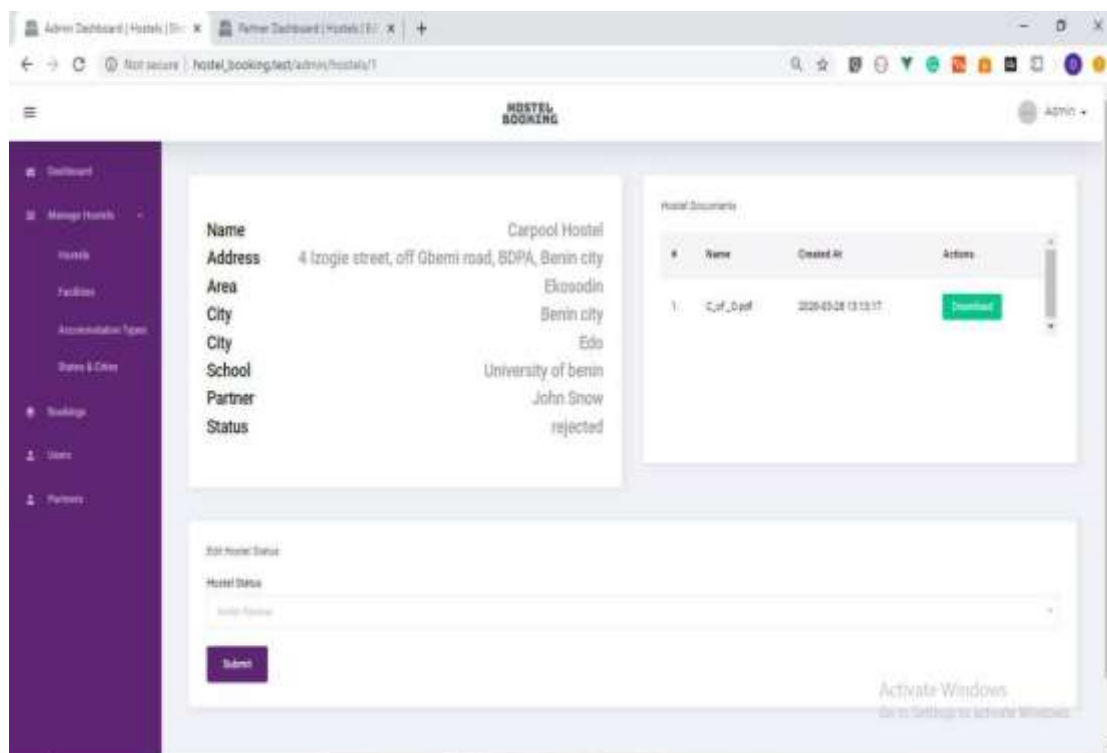


Figure 10: Screenshot of the Hostel page on the admin section

V. CONCLUSION

The web application was designed based on the analysis of the existing system. The drawbacks of the existing system led to the design and implementation of the new system. The new system which is a web-based real estate market has been carefully designed to cater specifically for the needs of students in search of off-campus hostels as

well as the owners or caretakers of off-campus hostels.

The new system was designed and implemented in a way that enables students to conveniently find and compare prices and facilities of verified off-campus hostels. It allows students to book and rent off-campus accommodation. It enables private developers, real estate agents, and property caretakers to reach a wider range of

potential customers. It also aids the platform administrator(s) in verifying the authenticity of properties before they are made available to the public.

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