DEVELOPMENT OF WEB APPLICATION FOR UNIVERSITY OF UYO POST UTME EXAMINATION TIMETABLE

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ABSTRACT

In this paper a web application for Post Unified Tertiary Matriculation Examination (Post UTME) timetable for University of Uyo (UNIUYO) was presented. The system includes a web-based mapping system for visualizing the Post UTME examination venues on a Google base map. The system interfaces with the Google map server using a comma separated version interface file that contains the spatial data of the items to be visualized on the Google base map. An evolutionary software development model was used in the development of the web application. The system was implementation using Macromedia Dreamweaver, Cascaded Style Sheet (CSS), MYSQL Database Management System, HTML language, PHP server-side scripting language, Apache web server and Google Maps application programming interface. The application was hosted locally and sample Post UTME examination timetable data from UNIUYO were used to demonstrate the effectiveness of the Post UTME timetable web application.

Contribution/Originality: This study is one of very few studies which have developed a map mashup timetable web application for the Post Unified Tertiary Matriculation Examination (Post UTME). The web application uses Google base map to visualize the Post UTME timetable venues on a map and also gives direction for the users.

1. INTRODUCTION

Prior to the establishment of Joint Admission and Matriculation Board (JAMB) in Nigeria in 1978, each university was responsible for the conduct of its own concessional examination and admitted its own candidates [1, 2]. This system had serious limitations and was inefficient. The committee of Vice-Chancellors was concerned about this problem. Consequently, the government set up a National Committee on University Entrance Examination which eventually recommended setting up JAMB. However due to some problems identified with JAMB results the federal government of Nigeria introduced the policy of Post Unified Tertiary Matriculation Examination (UTME) otherwise known as Post-UTME screening by universities in 2005 [3-7]. This policy made it mandatory for all tertiary institutions to screen candidates after their JAMB results and before giving admission.

Since its introduction in 2005, the Post-UTME for undergraduate admissions, universities have resorted to publishing their timetable on their notice boards and in some cases on their website [8-11]. However, given that the majority of the Post UTME is not familiar with the university environment, it becomes necessary to add a venue location tool to enable the candidates to locate their examination venues with ease. Remarkably, in recent

years, advances in Information and Communication Technology (ICT) and Geographic Information System (GIS) have made it possible to develop map mashup web applications that can enable web applications to render spatial data generated locally on an online base map [12-16]. Particularly, Google maps have readily available Google Maps Application Programming Interface (API) that makes it easy for client web applications to interface and map their spatial and non-spatial contents on Google map. This capability is utilized in the web application presented in this paper to visualize the Post-UTME examination venues on Google map. As such, apart from enabling the university to develop and present their Post-UTME examination timetable on the web, they can also capture the geographical coordinates of the examination venues and map those venues on Google map. The interface also enables the users to utilize other functionalities of Google map to track the examination venues from wherever they are. Also, the pictures of the examination venues are provided along with some descriptive information which will enable the users to readily identify the venues once they approach the location shown on the Google map. The web application is particularly useful since the Post-UTME examination is for candidates who are seeking   admission into the university and hence most of them are not familiar with the university facilities.

2. METHODOLOGY

The Post-UTME timetable and web-mapping system are developed using an evolutionary software development model (ESDM) of Figure .
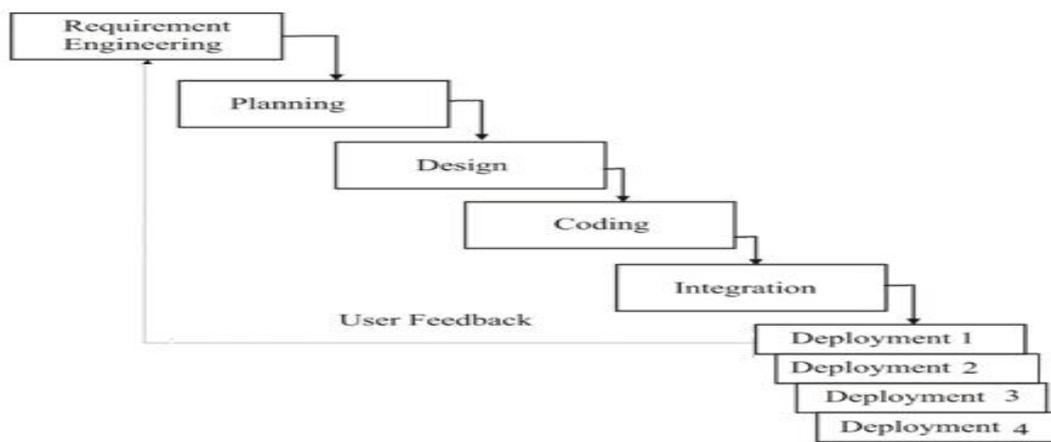

Figure-1. The Evolutionary Software Development Model (ESDM)

In the design phase top-down stepwise refinement approach is used to decompose the system into its modules and submodule (Figure 2).
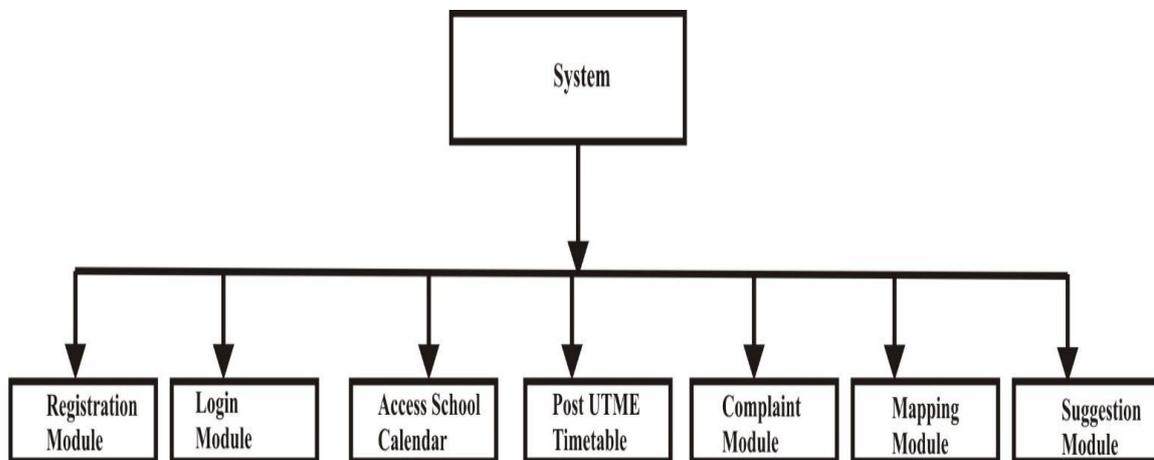

Figure-2. System Functional Decomposition

The usecase diagram of the system is given in Figure 3 while the detailed descriptive usecase for the system is given as follows:

Actors: Post-UTME Candidates, Candidate s, Visitors, Staffs, IT personnel.

Condition: a user must register and obtain valid login details in other to use the system. On login, the user based on privileges can access the system functionalities.

Basic flow:

- A user can access the registration module and register on the system;
- The login details obtained after registration are used to log into the system;
- A user can lay complaints on the post-UTME examination venues of any area within the campus;
- A user can visualize complaints, verify them on the map and respond to these complaints;
- A candidate can post on discussion forums, view other people post and respond to them;
- A user can make suggestions using either the suggestion form provided on the system or write in the suggestion field for cases not enshrined in the suggestion form.
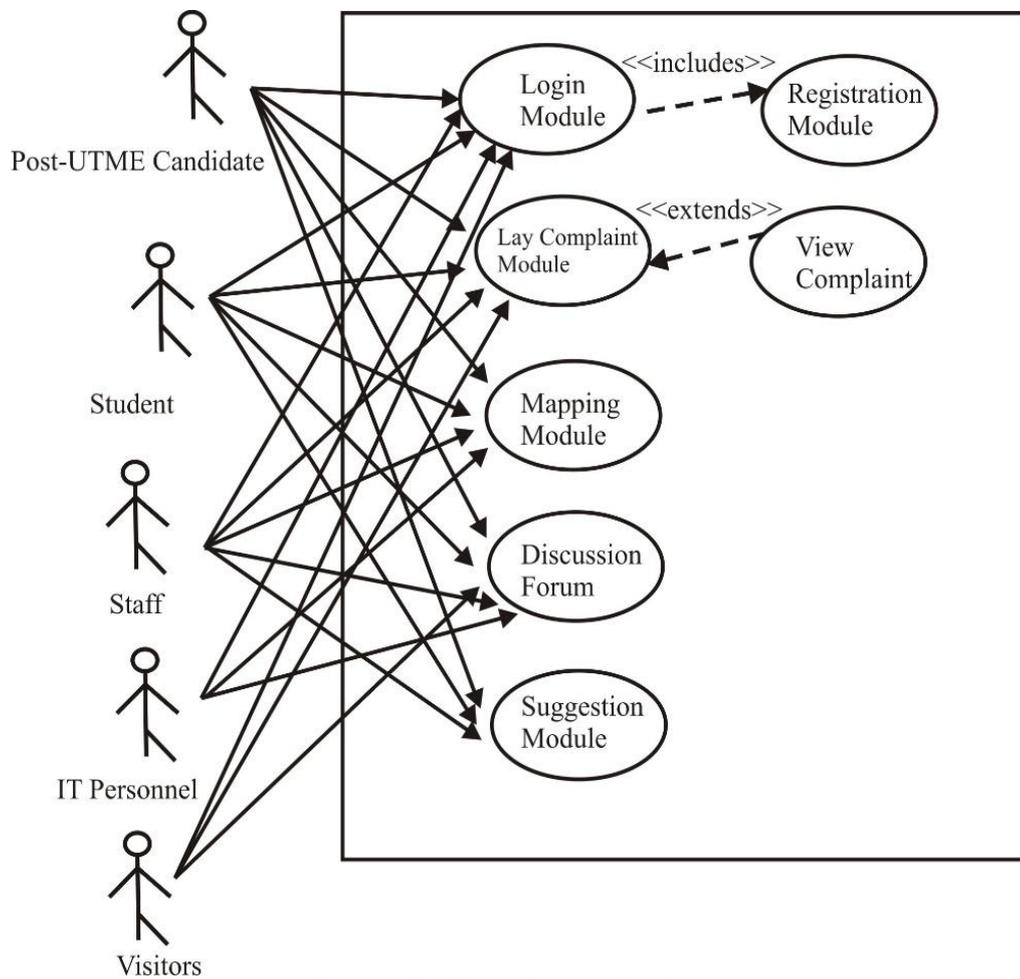

Figure-3. The Usecase Diagram of the System

The system modules as well as the respective system stakeholders and their interactivity on the system are provided in the system context diagram (SCD) of Figure 4.
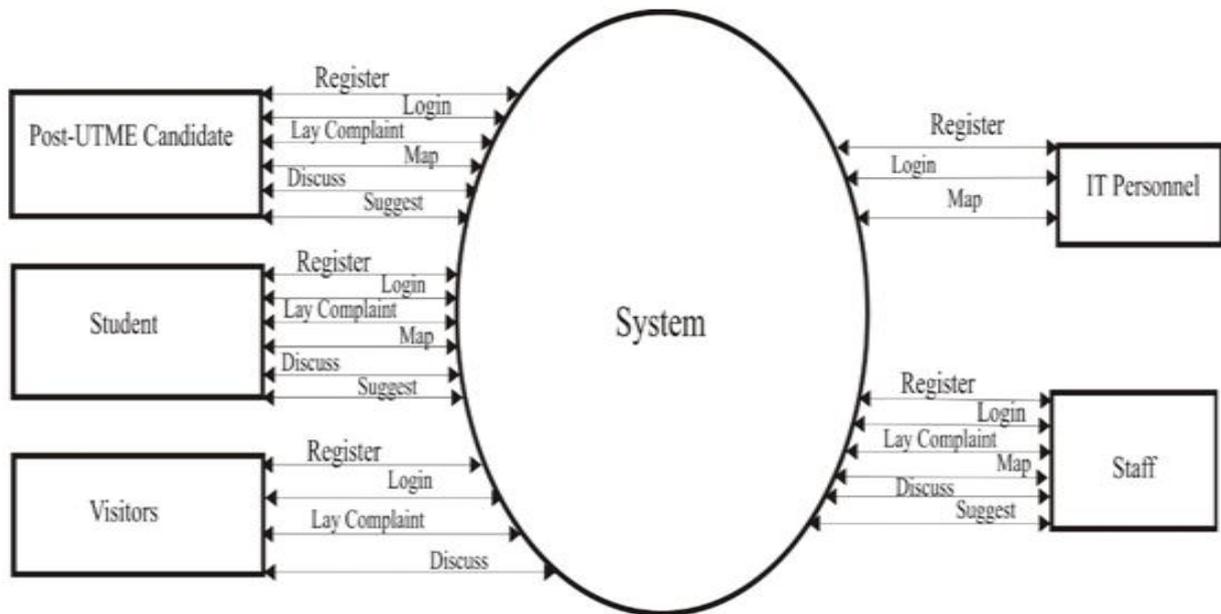
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Figure-4. The System Context Diagram for the System

The system is a web application that is designed based on three (3) tier architecture (Figure 5) consisting of a web server (Apache), a database (MYSQL) and a client-side (web-browser). As shown in Figure 5 the client side which is a web browser is used to send a request through Hypertext Text Markup Language (HTML) to the web server. The web server – Apache processes this request and subsequently passes it as HTML back to the browser; essentially, the browser only understands HTML. In a case where data needs to be retrieved or stored in a database (MYSQL), the web server uses the 'POST' method to store data and 'GET' method to retrieve data or to perform other data manipulation and definition operations. The coding of the system was done using Adobe Macromedia Dream Weaver which is a suitable editor for HTML languages as well as CSS for the front-end user interface and PHP for the back-end server-side scripting.
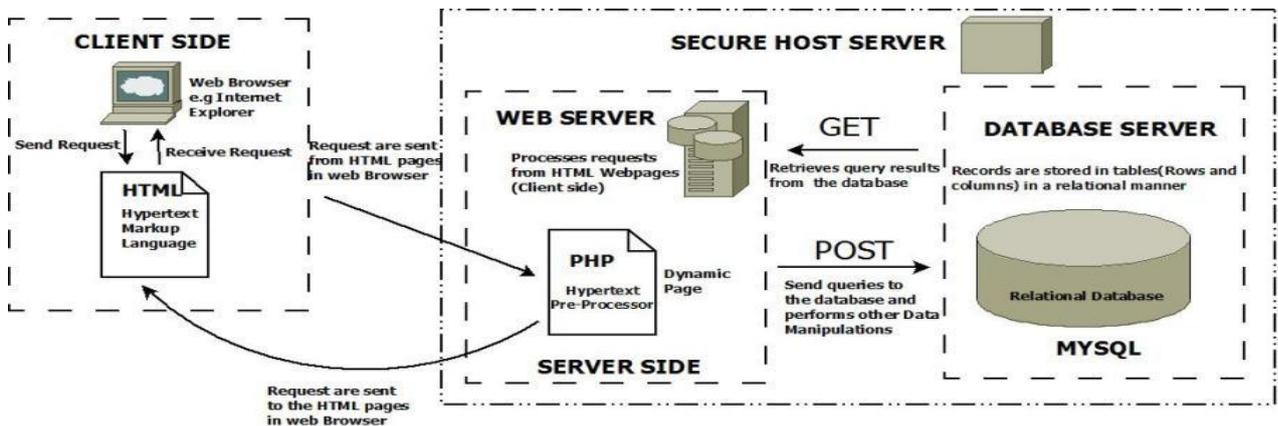

Figure-5. The Detailed 3 Tier Architecture of the Web Application

3. RESULTS AND DISCUSSION

The screenshot of the signup form or registration form for new candidate s is shown in Figure 6. All the fields in the form are mandatory.   The login page is shown in Figure 7.
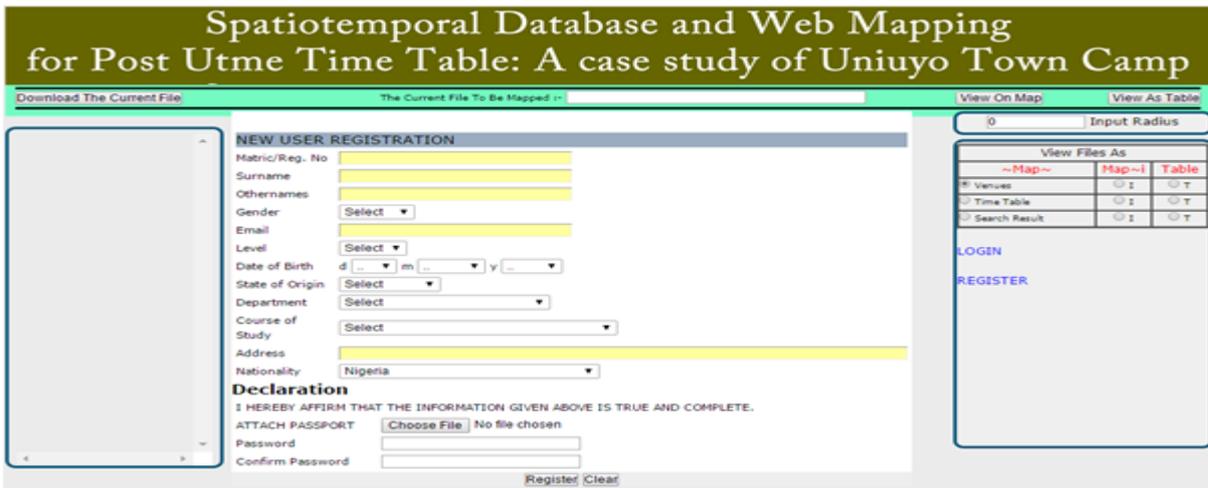
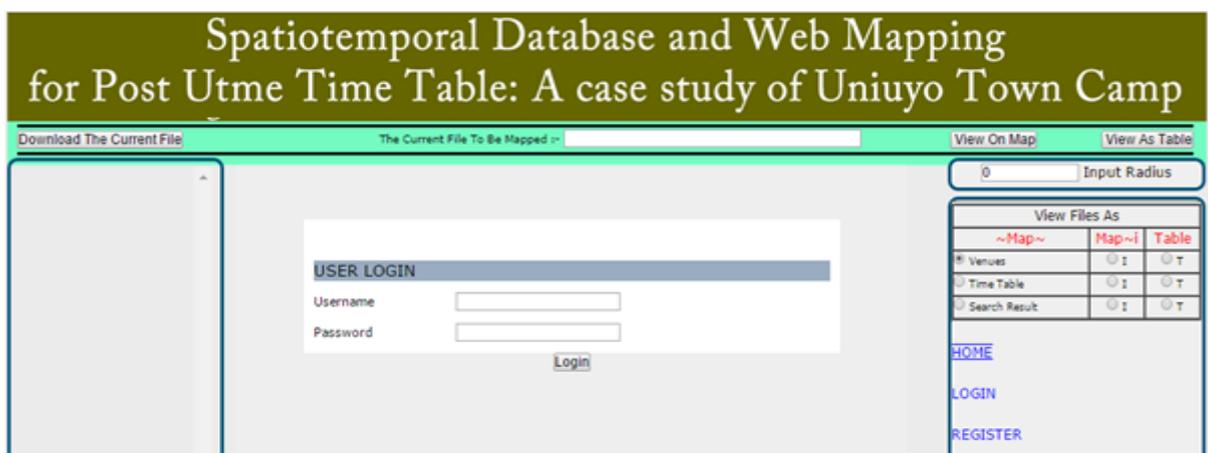**Figure-6.** The screenshot of the signup form or registration form for new candidate s

Figure-7. The signup page for new candidate s and login for registered candidates.

The system opens to member homepage (Figure 8) when the registered user logs in. The member homepage shows essential user navigation links and user details.
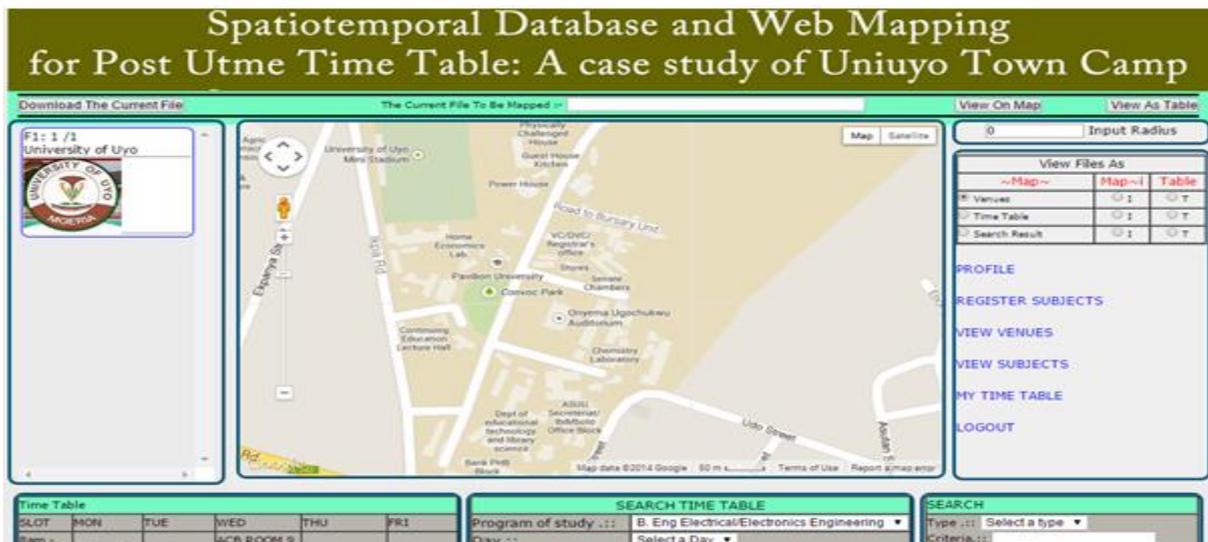

Figure-8. Candidate homepage.

In the candidate page, the candidate can register subjects, check personal profile, view exam timetable and the venues. In Figure 9, the screenshot shows a view for candidate profile.
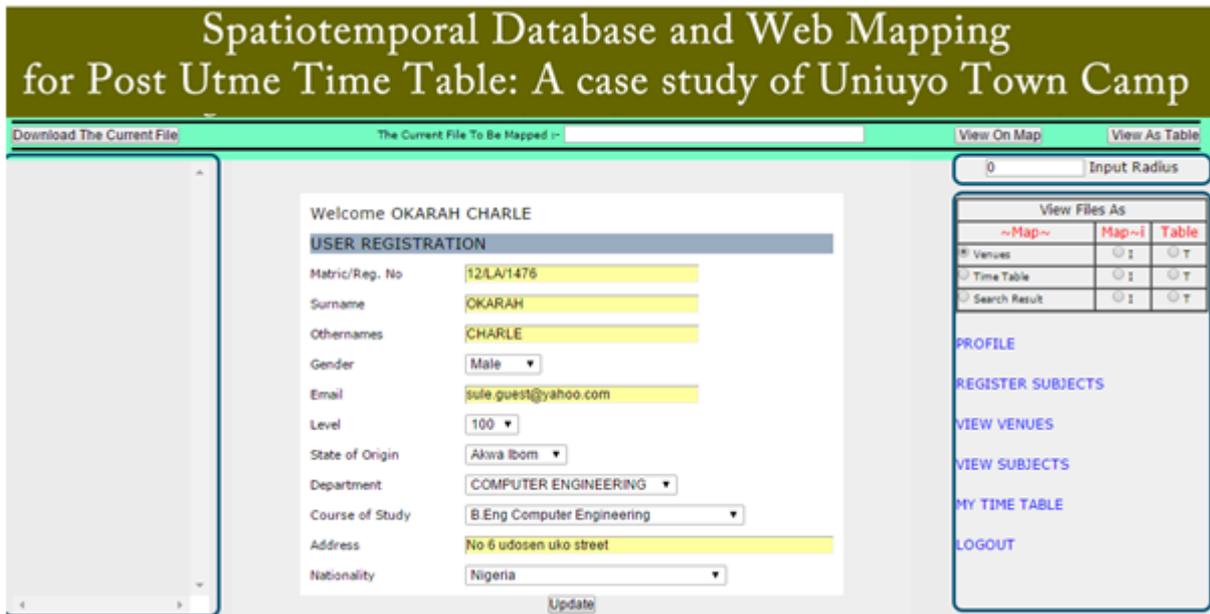
Figure-9. Candidate Profile Page

The screenshot in Figure 10 shows how to register for subjects. Furthermore, Figure 11 is a screenshot that shows the list of available Post UTME examination venues. Screenshot in Figure 12 shows some examination venues and venue allocations for examination.
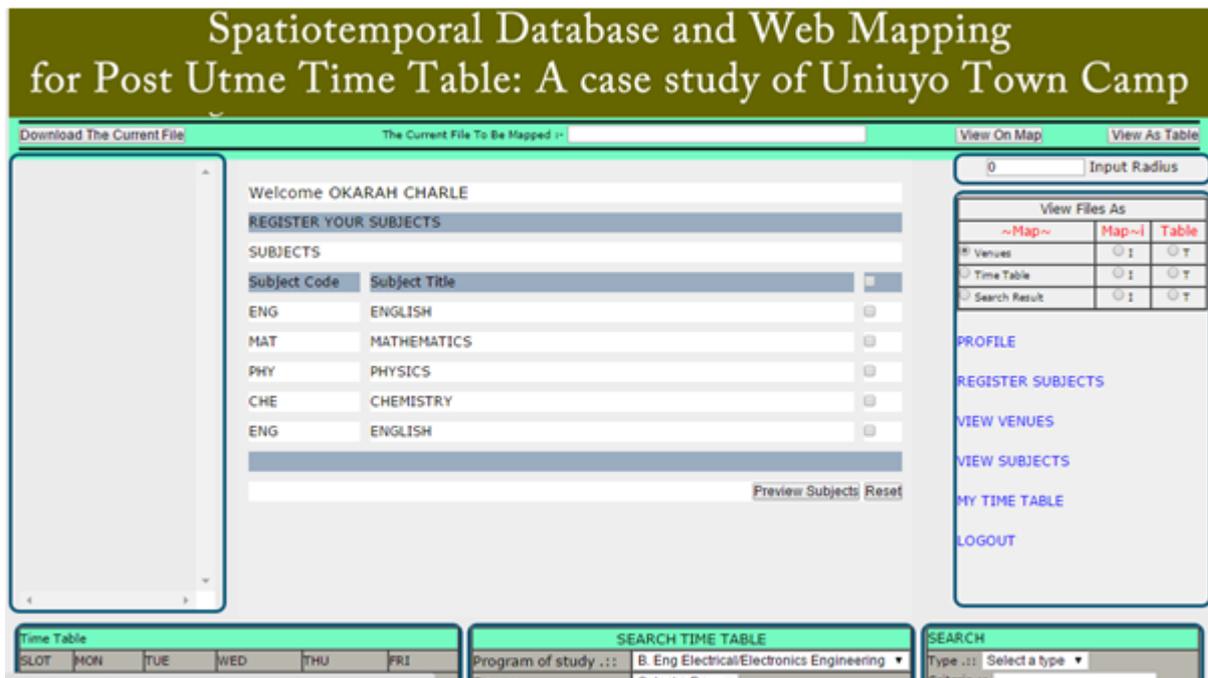

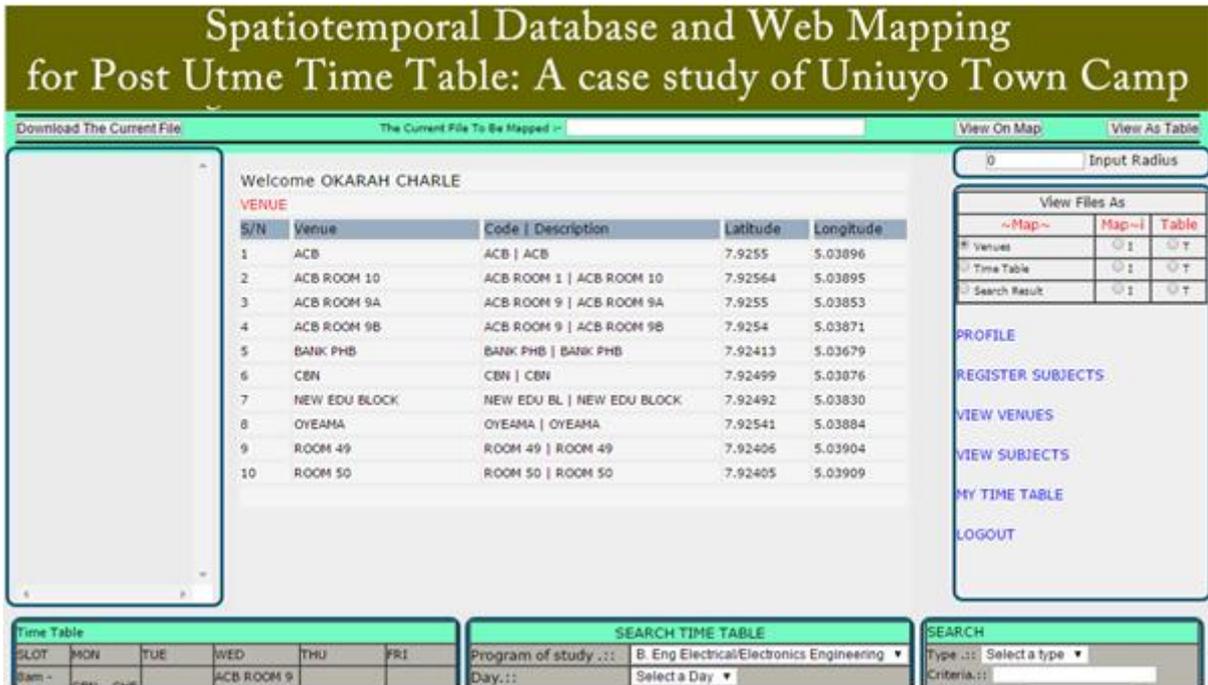**Figure-10.** Registration of subjects.

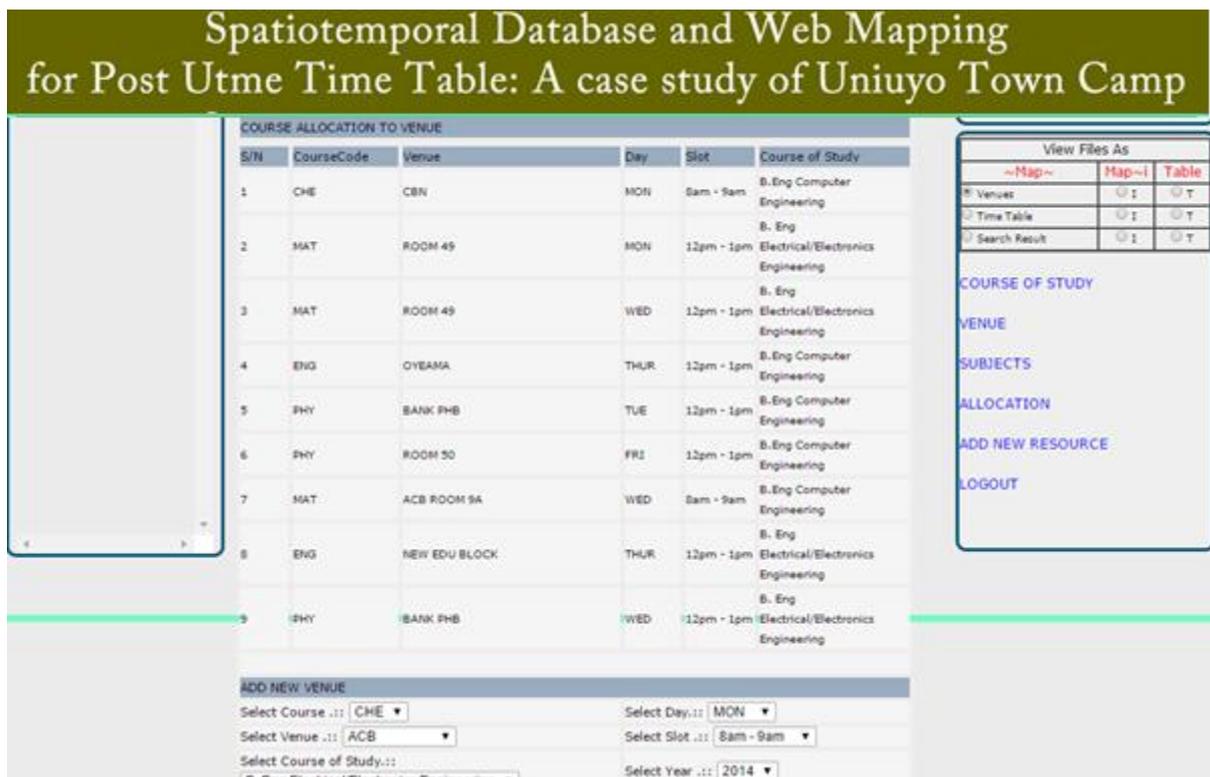**Figure-11.** The List of Available Post UTME Examination Venues

Figure-12. Screenshot showing the venue and venue allocations for examination

The candidates after registering for the Post UTME examination (by selecting the subjects that apply to him in Figure 10) can also extract the aspects of the timetable that applies to him alone. A sample screenshot is given in Figure 13.
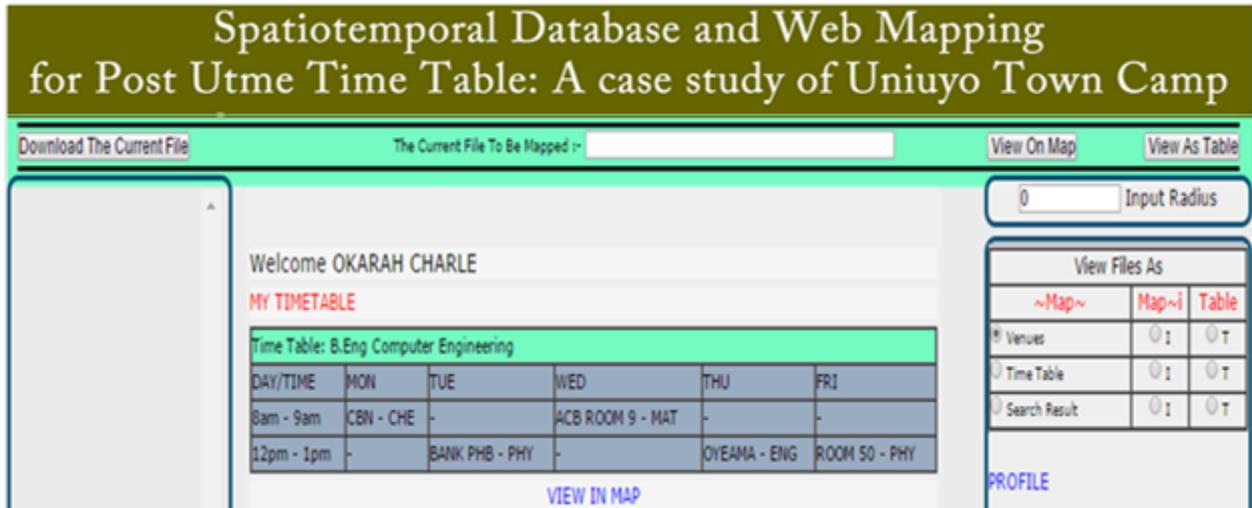
Figure-13. Screenshot showing the candidate personal timetable

Candidates can search for the venue of any of the examination and also view the venue on Google map. The screenshot showing an info-window of the venue on the Google map is shown in Figure 14 and Figure 15. The info-window of the venue on the Google map shows other non-spatial information about the venue including the picture of the building where the venue is located.
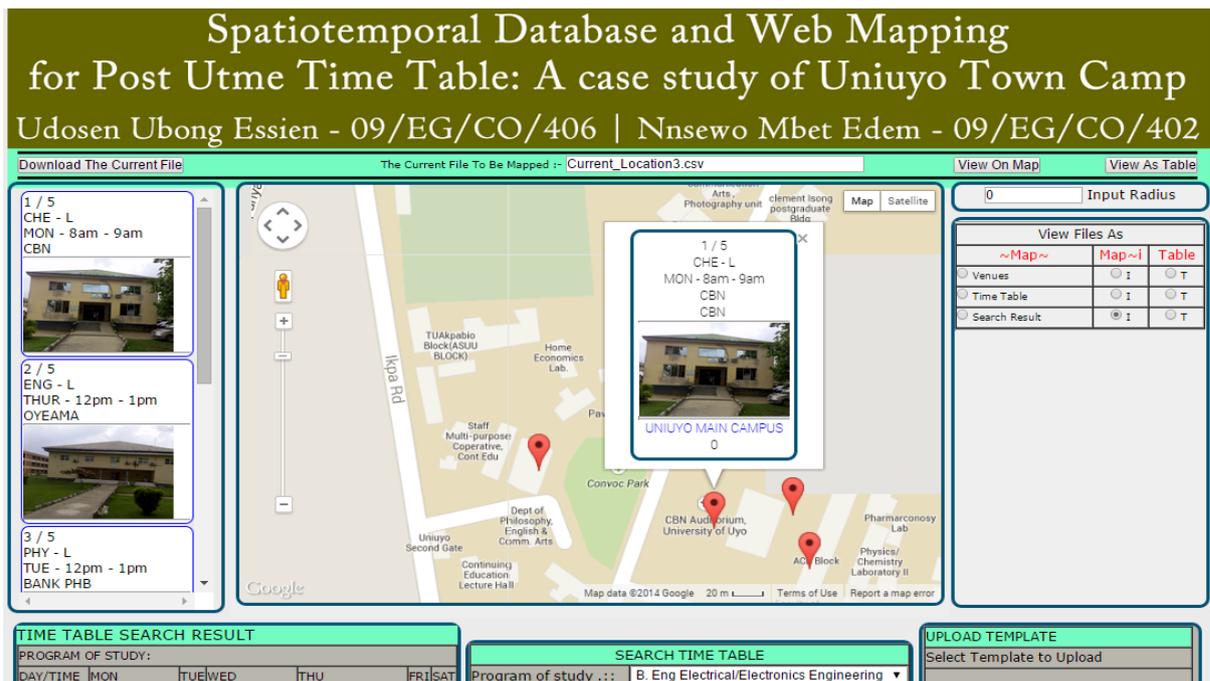

Figure-14. Screenshot showing an info window of the venue on the Google map
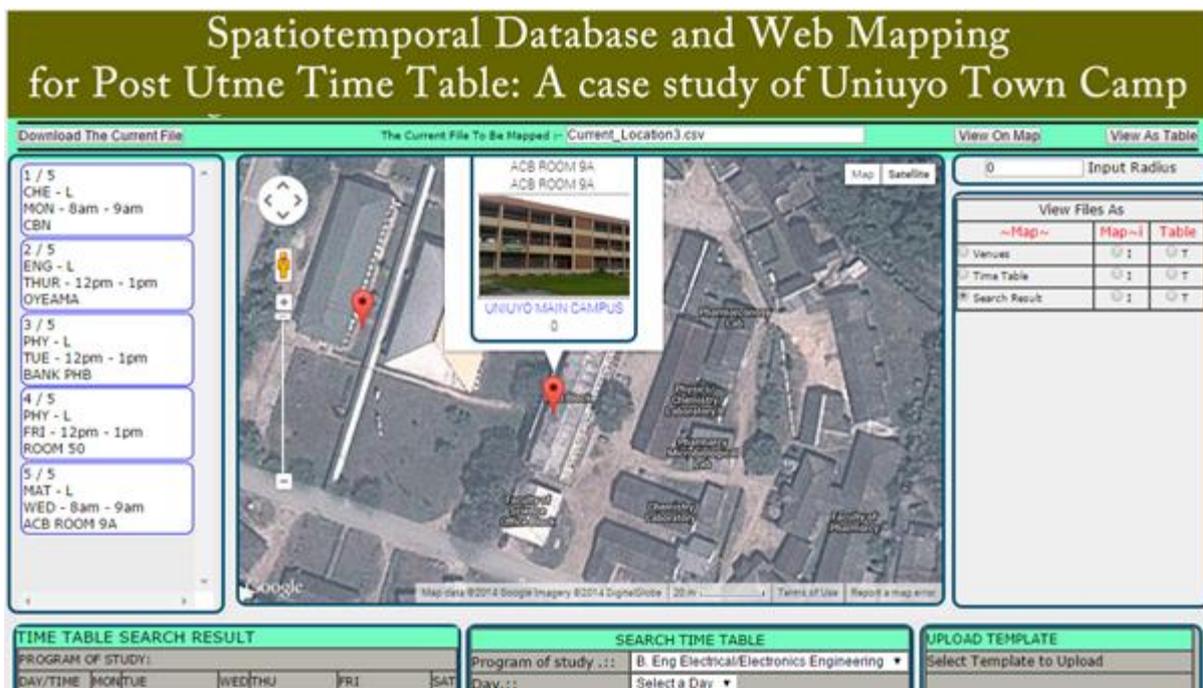
Figure-15. Screenshot showing a venue in the school on Google satellite map

In all, the developed web map mashup application can effectively be used to schedule the subjects for the Post UTME examination in UNIUYO, display the examination schedule on the web and also enable candidates to view the examination venues on Google map. The application allows the candidates to use other Google map features to track the examination venues from wherever the candidates are located.

4. CONCLUSION

The design and implementation of online software for Post Unified Tertiary Matriculation Examination (Post UTME) timetable were presented using University of Uyo (UNIUYO) as the case study. The online application uses Google Maps Application Programming Interface (API) and a comma separated values (CSV) file to interface with Google map and thereby enable the Post UTME examination venues to be viewed on the Google map. The web application was implemented using Macromedia Dreamweaver, Cascaded Style Sheet (CSS) , MYSQL Database Management System , HTML language, PHP server-side scripting language , Apache web server. The application was hosted locally and sample Post UTME examination timetable data from UNIUYO were used to demonstrate the effectiveness of the Post UTME timetable web application.

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