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Student Industrial Work Experience Scheme (SIWES) Online Interactive Platform For Students And School Supervisors

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ABSTRACT
The SIWES online interactive portal has been able to highlight majority of the problem the existing system has and also clearly defined the proposed system if integrated into the existing system will offer a lot. The proposed SIWES System has been implemented using HTML, CSC, BOOTSTRAP, SQL, and JAVASCRIPT. The implemented system, students can update their logbook at any time via a paperless, environmentally-friendly method as well as submit their logbook and final report online. Supervisors can access the student's logbook at any time; therefore they can evaluate and grade the student at their own pace. The SIWES coordinator may also access the grades at any time to monitor the progress of the industrial training process. Each stakeholder is classified into user sub-groups of a specific kind whose permissions and functionalities are pre-defined. Users of different kind are allowed to interact among themselves and also with users from different sub-groups in order to achieve common objectives or mutually beneficial tasks.
Keywords: SIWES, Online, Platform, Student, Supervisors

INTRODUCTION

The continuous quest to bridge the gap between industrial work practices and the knowledge gained in institutions has remained the major driving force in supporting Internships. This as a result of the fact that students graduate with little or no working knowledge of the industry practices there by finding it difficult to cope once employed (Abdullahi, 2009). This is especially true for science and technical oriented courses. Therefore, the need to acquire the relevant experiences from industries before graduating from institutions becomes a necessity before graduating from institutions. Due to this fact in 1973, Nigeria government developed an internship program, Students' Industrial Work Experience Scheme (SIWES) to be headed and managed by Industrial Training Find (ITF). ITF as a body was charged with such responsibility and with backing from the Nigerian constitution of Decree 47 of 1971 to judiciously utilize the funds that would from time to time be allocated to it for ensuring that students of tertiary institutions in Nigeria acquire good working experience before graduating (Adetiba *et al.*, 2012). The result of such scheme was hopefully to train self-reliant Nigerian students who would bring the positive impact and change in the economic situation of the nation. In 1979 the Industrial Training Fund, withdrew from the managing the scheme due to problems of organizational logistics and the increased financial burden as a result of rapid expansion of SIWES (ITF, 2016). The scheme is a tripartite programme that incorporates the students, the institutions, and the industries. In Nigeria SIWES is financed by the federal government

(through the ministry of commerce and industry) and managed by the Industrial Training Fund (ITF) aiming at making education more relevant and also to bridge the yearning gap between theory and practice of Engineering, Technology and other related disciplines in tertiary institutions in Nigeria. SIWES is a form of cooperative industrial internship programme among all its stake holders. Mafe (2009) stated that all stakeholders are involved in the operation of SIWES but that students are the key actors that are directly involved in its implementation, all other stakeholders have lesser role to play in the actual training process. Mafe (2010) citing Crag (1987) stated that, SIWES is generic because it cuts across more than 60 programmes in the universities, over 40 programmes in the polytechnics and about 10 programmes in the colleges of education. Students who participate in this training programme include those studying Library and Information Science, Engineering, Vocational, Technological and related courses in higher institution of learning. Other courses involved in SIWES include Agricultural science, Forestry, Industrial Chemistry, Microbiology, Geology and Mineral Science, Physics and Mineral Science, Plant and Environmental Biology, Computer Science, Tourism and Hospitality, Business Education, Industrial Engineering, Enterprise Creation and Management. The success of the scheme requires collaboration between ITF, Industries, and the Tertiary institutions of the country and the constitution provided for such.

The extent of objective realization and acceptability of SIWES in Nigeria has been described in several researches that assess the impact and challenges of the scheme. Ukwueze, (2011) shows that the scheme has positive impact on students as they showed employability skills after participating in the SIWES; also Oyeniyi, (2012) shows that graduates demonstrated the significant impact of the scheme in terms of skills acquisition and utilization; research also shows that students, having participated in the scheme, show acceptability of the scheme and encourage continuous support of it by the relevant bodies and Government (Nse, 2012). However, the scheme is still faced with several challenges that inhibit the full realization of the objective of the scheme. Among many are challenges associated with proper supervision and coordination of the process, non-compliance by industries to accept such students (Nse, 2012); fuzzy job specification for the different courses, students' interest in participating in a skill oriented projects, and inadequate supervision (Olabiyi and Okarfor, 2012); other challenges included finances, students' placements, irregular academic calendars (Ojokulu *et al.,* 2015). These and several other researches show that coordination and supervision has remained the biggest challenges towards the full realization of SIWES scheme in Nigeria. There are lots of problems with the traditional logbook that justify the quest for a better way of handling internship experience logbook. Perhaps the most outstanding of this reason is the bridging of the gap between supervisors and interns. The Nigerian academic curriculum has witnessed a lot of disruptions in recent times mostly because of massive industrial actions to drive home a demand. Only recently, the Nigerian universities, Polytechnics and Colleges of Education embarked on an over six month's nationwide strike. The students who were undergoing IT training at that time will have to depend solely on their industry supervisor and instincts. With information technology and the gains associated with it, most nation of the world has successfully migrated from the paper method of keeping records. It is therefore a worthwhile venture to affirm the already introduced practice of modernity since we have much to learn/do if we are to be able to be able to rub shoulders with our counterparts elsewhere.

Presently, an internship student needs to make their logbook in a physical paper which is only visible for him or herself view. Then after their internship program is done, they need to come back to their various institutions in order to submit the logbook to the lecturer for grade and graduation purpose. Therefore Supervisors have to wait till the end of the training scheme to assess the performance of the students. As a result of this problem, supervisors find it very difficult to monitor the progress of the student regularly. It is against this backdrop that this study, sort the way to bridge the gap between the student on IT and the supervisors.

System Analysis and Design (SSADM)

SSADM uses a prescriptive approach to software development because it specifies in advance the modules, stages and task which must be carried out in order to produces befitting software, and the

techniques and deliverables needed for the job. It adopts a waterfall model of software develop, which states that the phases are organized in a linear order. First of all the feasibility study is done. Once that part is over the requirement analysis and project planning begins. The design starts after the requirement analysis is complete and the coding begins after the design is complete. Once the programming is completed, the testing is done. In this model the sequence of activities performed in a software development project are: -

- Requirement Analysis
- Project Planning
- System design
- Detail design
- Coding
- Unit testing
- System integration & testing

Here the linear ordering of these activities is critical. End of the phase and the output of one phase is the input of other phase. The output of each phase is to be consistent with the overall requirement of the system. Some of the qualities of spiral model are also incorporated like after the people concerned with the project review completion of each of the phase the work done.

Design Model Used

A Modified Waterfall model was used in this work. Instead of the six major phases of the waterfall model, it was reduced into 5 different phases. This is because all requirements were known beforehand and the objective of our software development is the computerization/automation of an already existing manual working system.

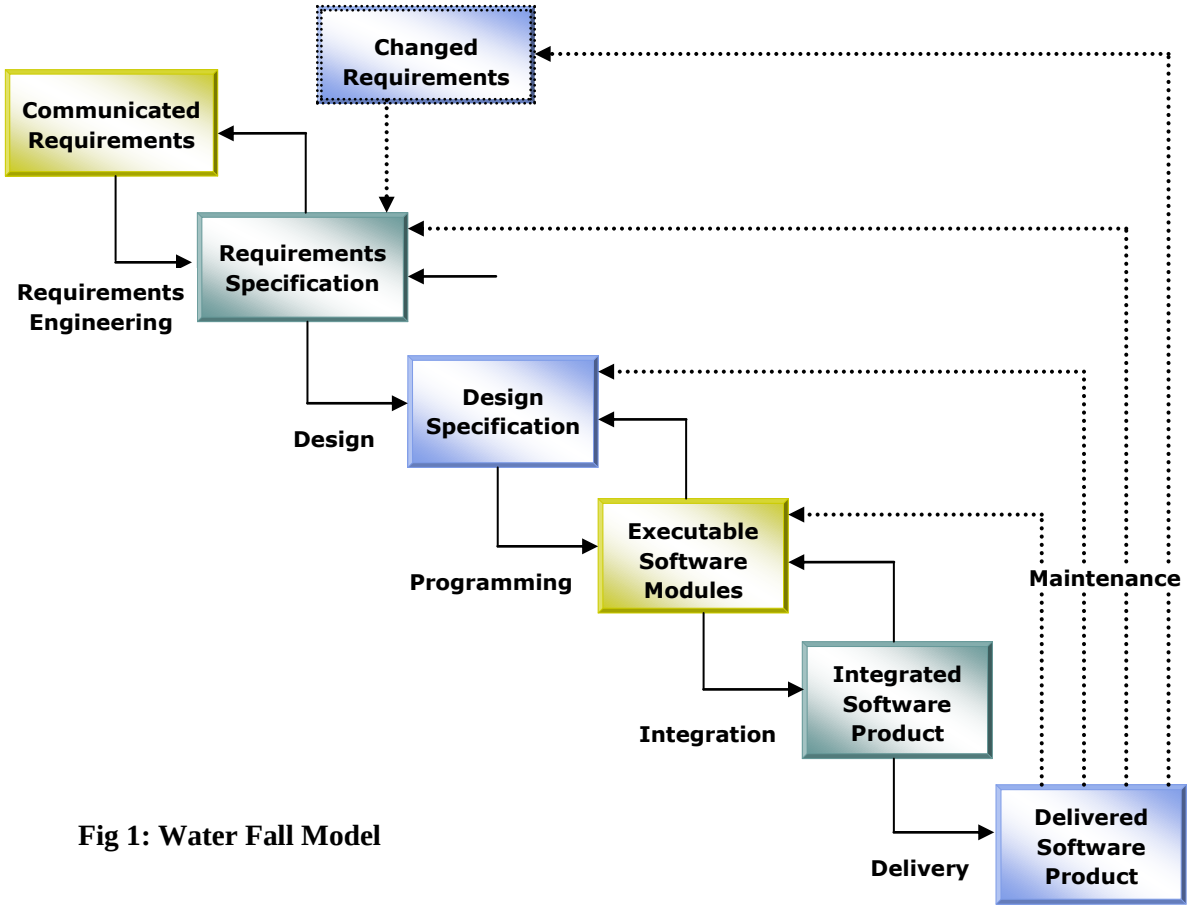

Fig 1: Water Fall Model

These phases are:

- Analysis
- Tool Evaluation & Selection
- Design
- Implementation
- Post-Implementation

This approach is a more straight forward waterfall model. It starts with an analysis. Once this phase is completed the input can be used in the next phase, the tool evaluation and selection phase. Here is where this model differs from the waterfall model because the design phase will be implemented differently than is custom and there is no need for a develop phase, since the product will be an existing one. The design phase will also be more about the integration of the product with existing infrastructure and how the system will be filled in, instead of the design of the system itself.

Analysis phase

During the analysis phase, the high level needs, goals and objectives of the Obong SIWES will be determined and the requirements of the Obong SIWES will be gathered. In this phase the needs for Obong SIWES Portal will be made clear. During this phase, interviews, Observations and collection of relevant documents were done. At the end of this phase a complete functional requirements specification, which outlines all facets of the system were produced. A series of profiles, which will document the information gathered, which supports not only the functional requirements specification but also the tool selection and design phase will also be produced. The profiles to be created are:

a. Organization profile
b. Document profile(s)
c. User profile(s)

System Design

System design is a task that focuses on the specification of a detailed computer-based solution. It is the process of defining the architecture, components, modules, interface and data for a system to satisfied requirements. The major factor taken into consideration in the design of the new system is the issue of a strong and reliable database for effective collection and processing of data. Also the purpose of the system is to produce specification, which will enable a complete, accurate and specialized implementation of the new system. The new system designed after a detailed analysis of the existing system. The design is a solution that is, the translation of requirements into ways of meeting them system design has three levels; the architectural, logical and physical level.

Use Case Diagrams

The purpose of use case diagramming technique of waterfall is to consider and design the dynamic aspects of a system thereby helping in the gathering of requirements and getting better understanding of systems while identifying the external and internal factors that influences system as well as to show the interaction between the various actors/users of the system and the different functionalities provided in the system.

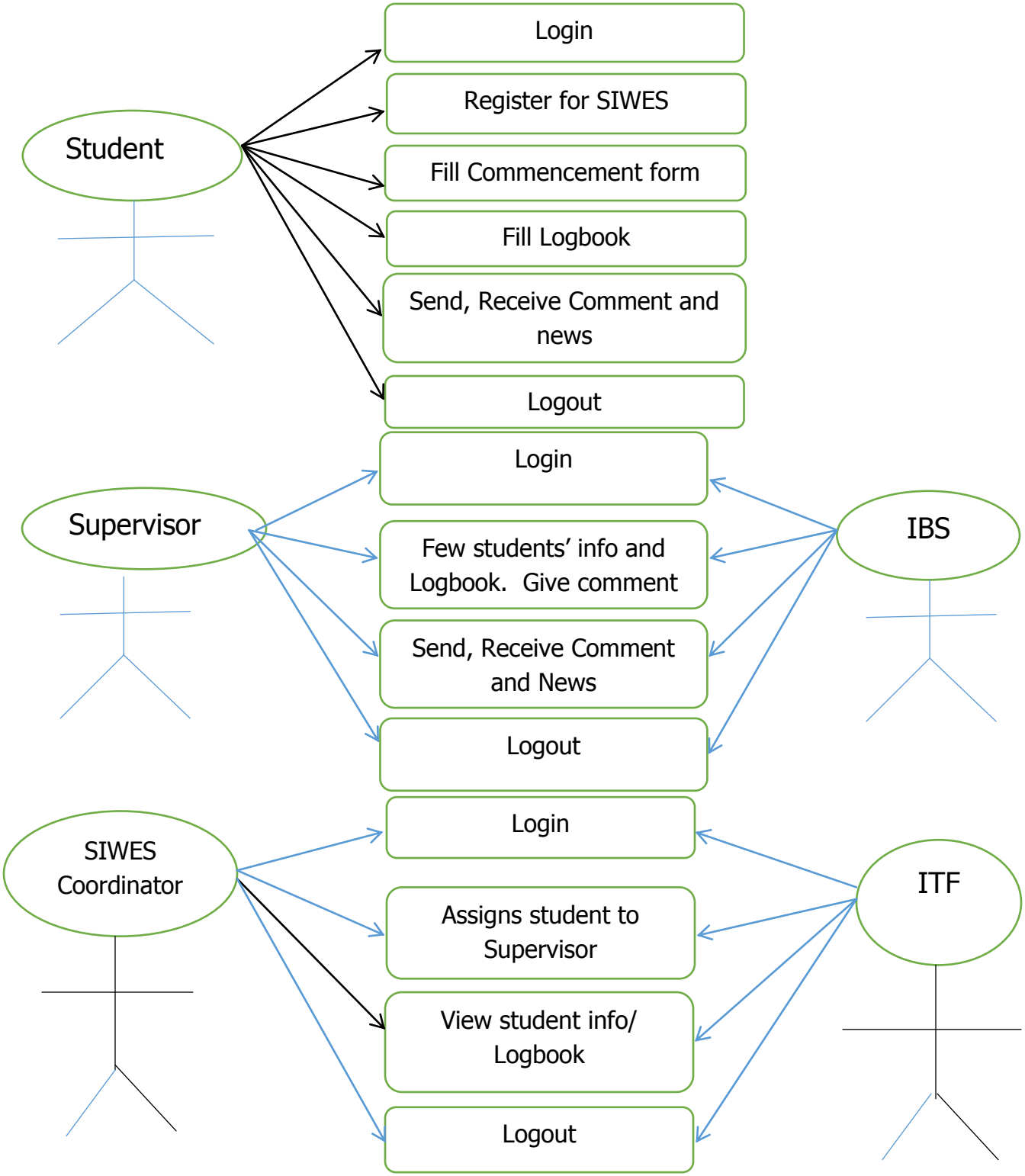

Fig 2: Use Case Diagrams

User or Web Interface Design

The Web portals are primarily made up of dynamic web pages. Dynamic means that the user interacts more with the web site, beyond just reading the pages and the web site responds accordingly. Usually, a web server delivers the web pages that have been built and hosted on the server, has an IP address and might have a domain name The SIWES portal contains about a total of 26 web pages ranging from the Home page, Student page, Lecturer login page, Industry-Based-Supervisor login page, SIWES coordinator page and so on. The pages are designed using a text editor known as Notepad++ which both provides PHP, HTML and CSS capabilities.

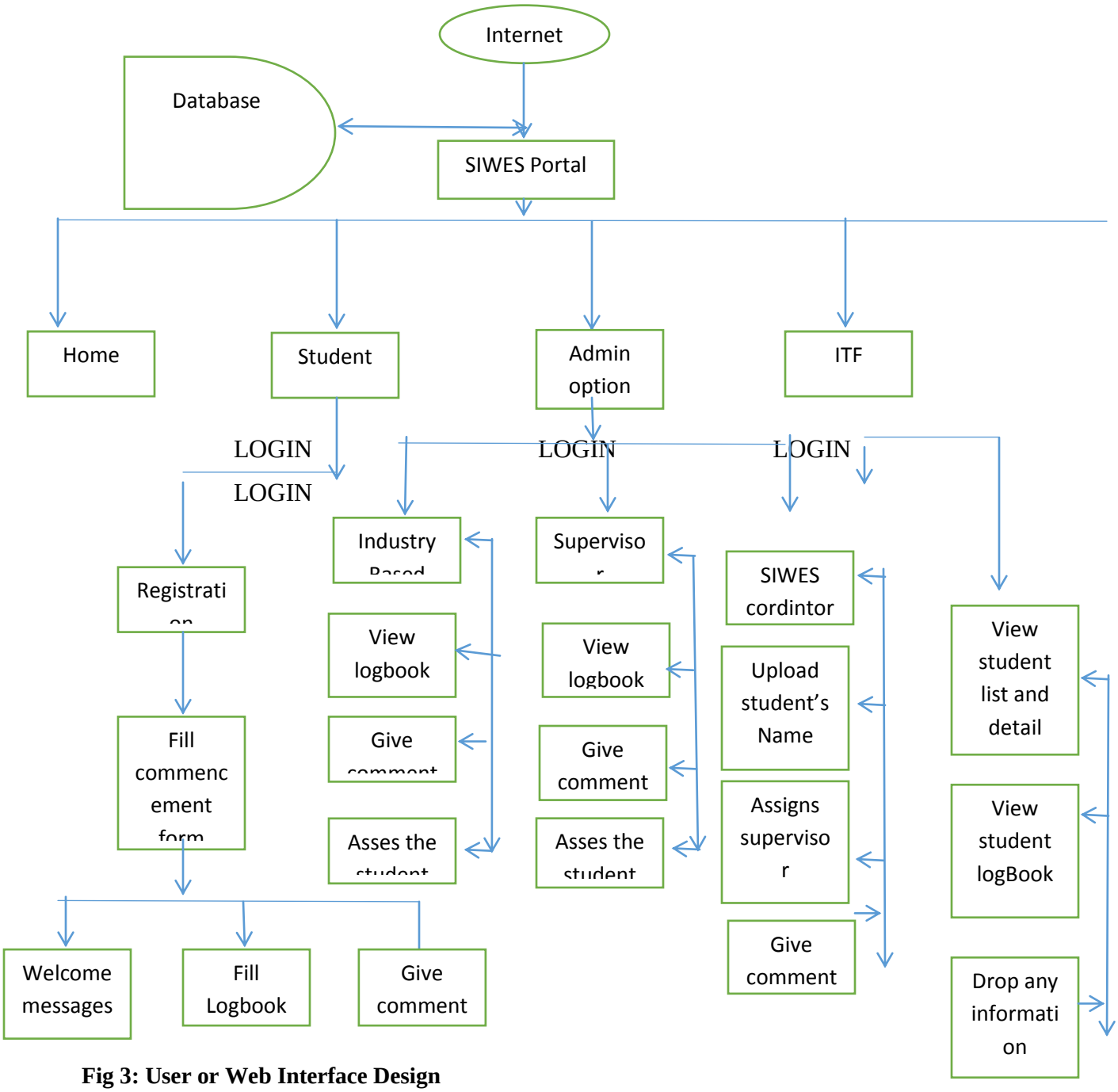

Fig 3: User or Web Interface Design

Activity Diagram

Activity diagrams are graphical representations of work flow of stepwise activities and actions with supports for choice, interaction and concurrency. In the unified modeling language, activity diagrams can be used to describe the business and operational step-by step workflows of components in a system. An activity diagram shows the overall flow of control. In this study, we have a separate activities diagrams for the student, industrial/Departmental based coordinator

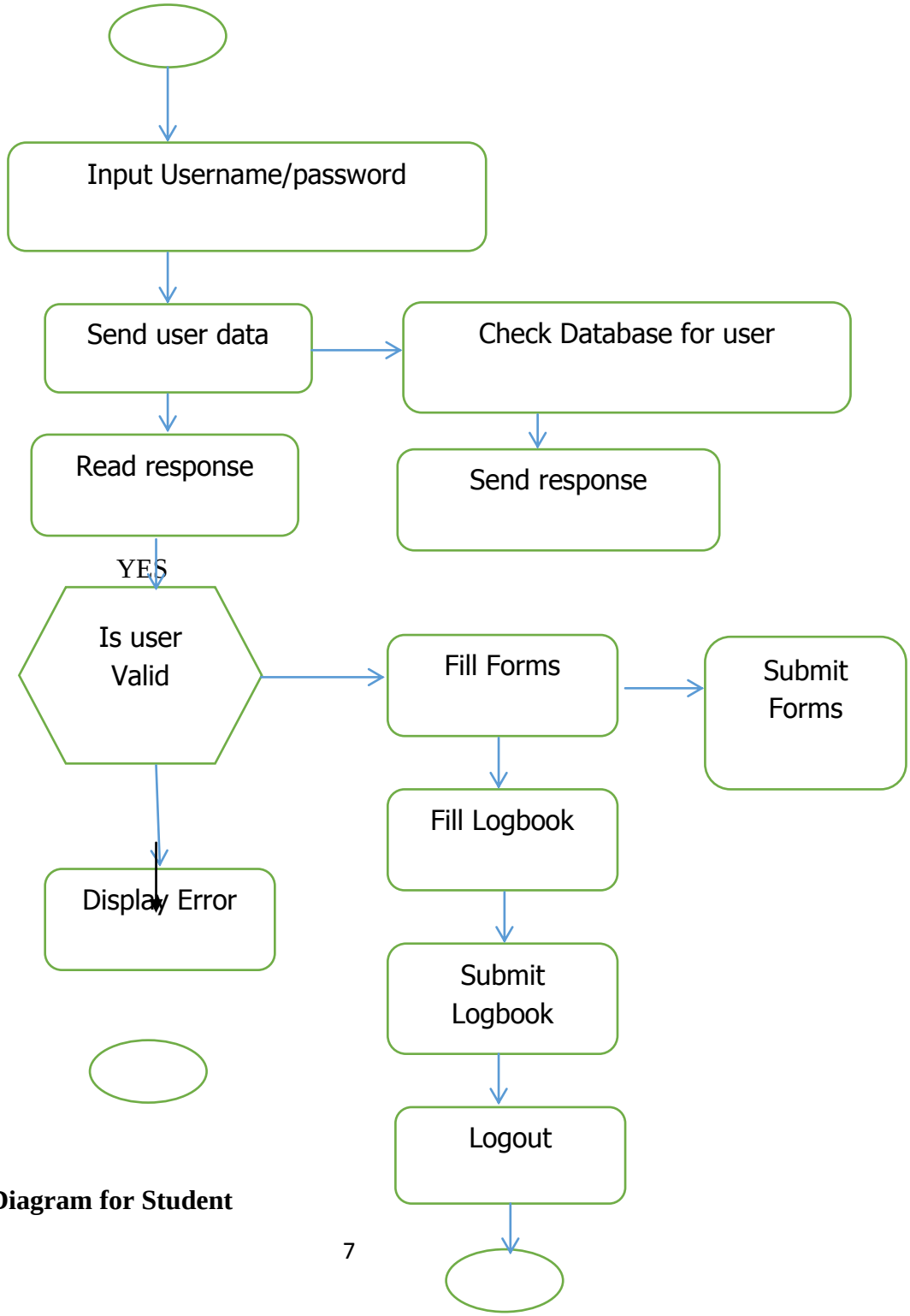

Fig 4: Activity Diagram for Student

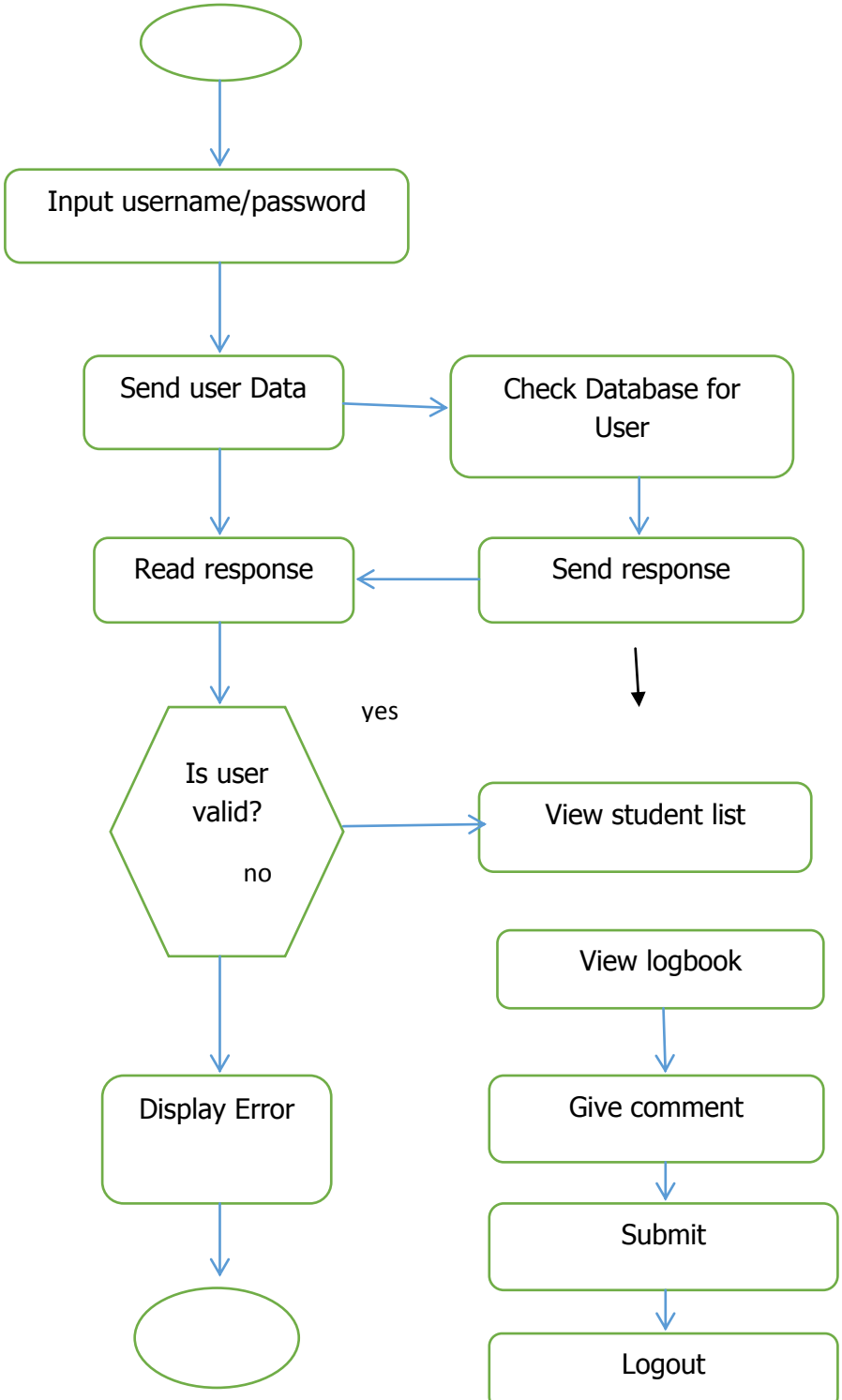

Fig 5: Activity Diagram for IBS and Supervisor

Database Design

The general theme for a database is to handle information as an integrated whole. Database is a collection of interrelated data stored with minimum redundancy to serve many users quickly and efficiently. Its objective is to make information access easy, quick inexpensive and flexible for the user. Database design is the creation of a conceptual model of a database that caters for the present as well as future information storage need of an organization; its aim is to improve the existing situation. The new system is developed by taking input from existing system and supplied to the proposed system.

SYSTEM IMPLEMENTATION

The current implementation of Obong SIWES portal is built for three stakeholders: IT Students, Supervisory unit (which include the supervisor, industry-based supervisor, SIWES coordinator) and ITF. Users in the system can communicate with each other and access member information based on their classification. The implementation deals with the collection of interdependent physical devices, together with their programming, which provides functionality and performance for which the system was design. The implementation of this online Obong SIWES system software is made concise to make it friendly to user in terms of accessibility and availability.

Screen Shot for the Interface

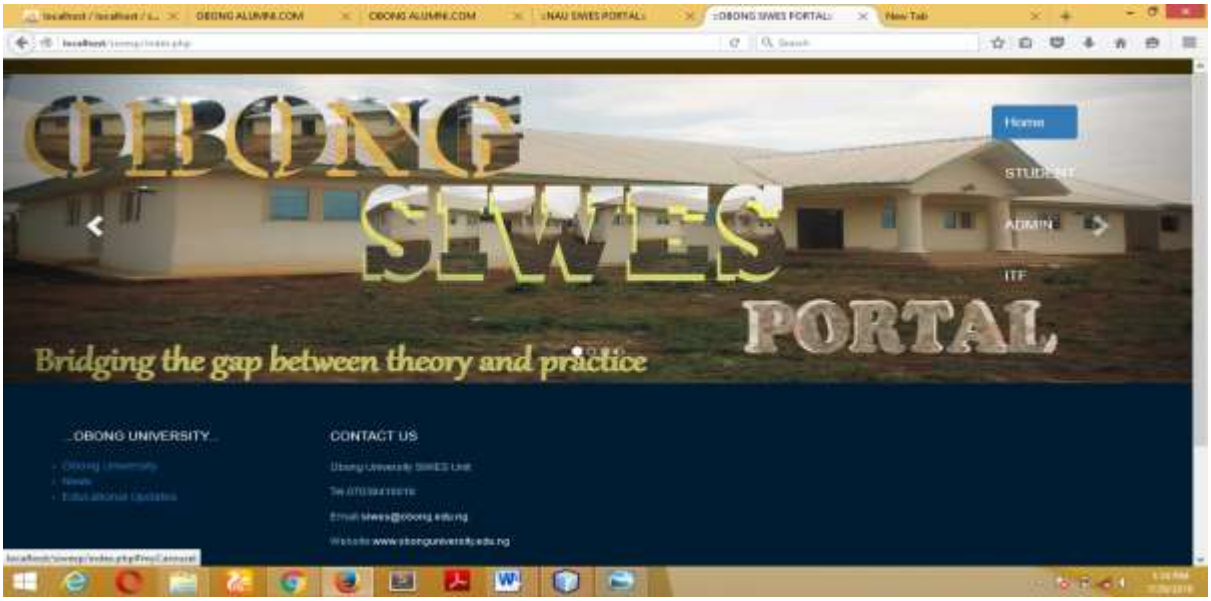

Fig 6. Home Page

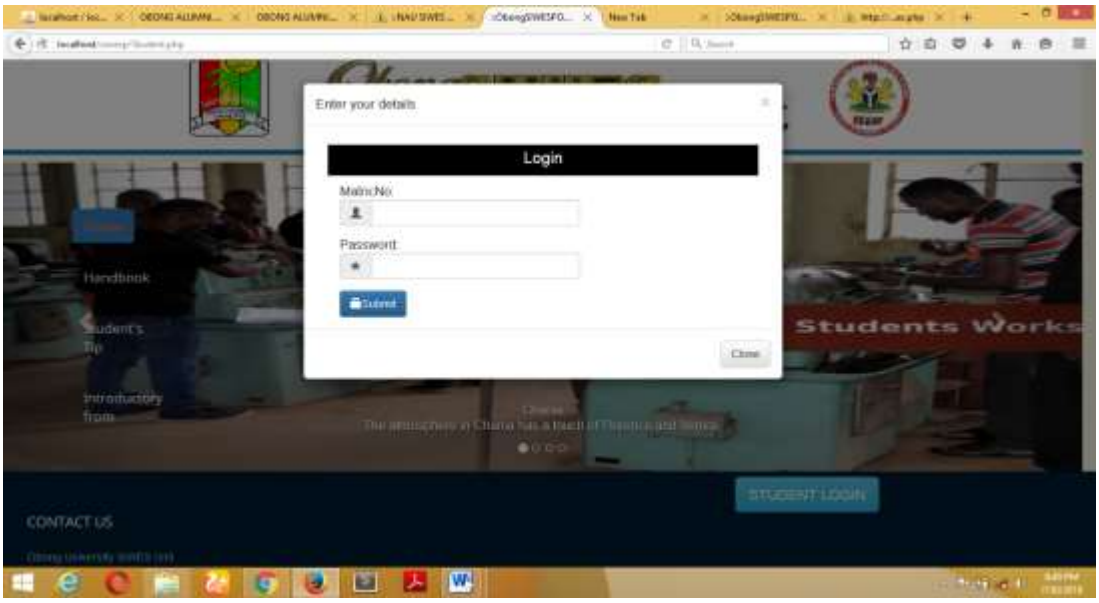

Fig7. Student Login Page

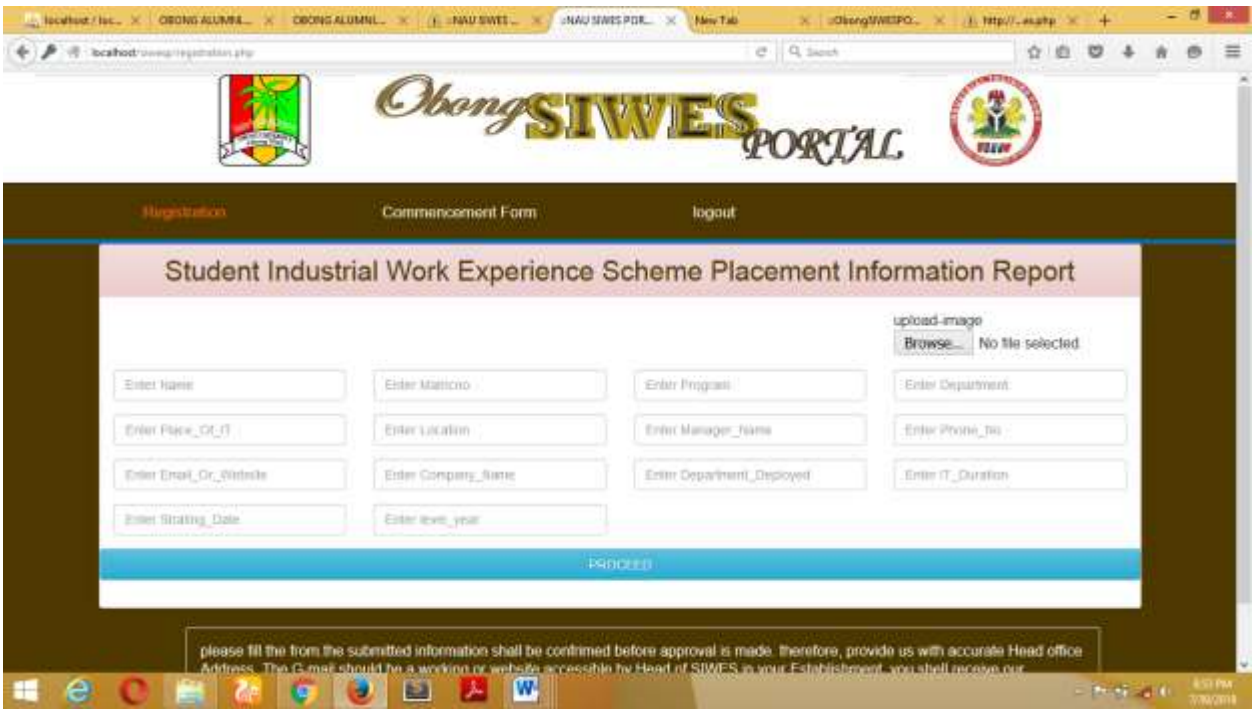

Fig8. Student Registration Page

Fig. 9 Admin Login Page

Fig 10 Logbook Page

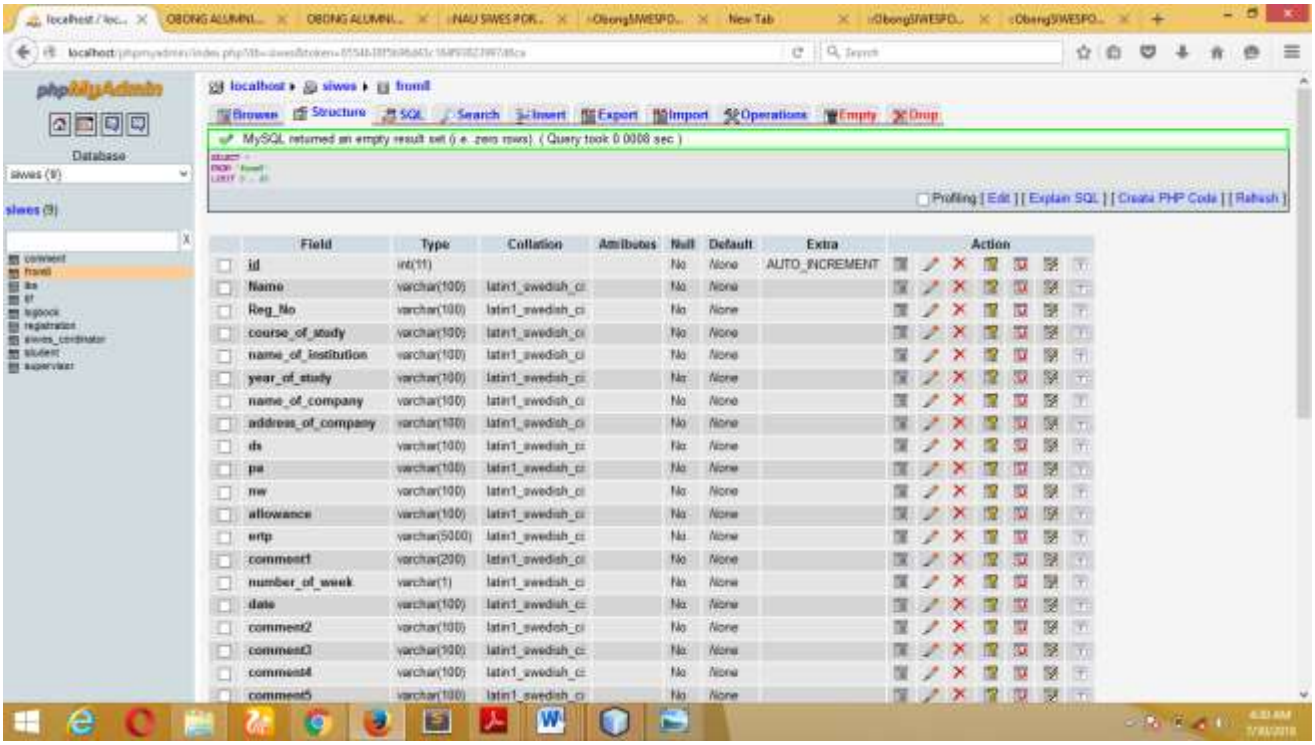

Fig 11. Form 8 Table Design

CONCLUSION

Quite a number of students in both public and private higher institutions currently travel abroad to undertake the SIWES program. This is actually a very good development both for the country and for the students. However, monitoring such students has always been a very tedious task. The newly developed SIWES portal is a timely and adequate solution to this problem and host of other administrative based challenges that have bedeviled the SIWES program over the years. For the next phase of this work, the portal will be deployed and an extensive usability evaluation will be carried out. This will help us to undertake a comparative evaluation of the existing manual approach and the electronic approach to SIWES management using the portal.

RECOMMENDATION

1. SIWES portal should be implemented in all tertiary institution.
2. Industry based personal should be properly trained on the use of ICT devices to facilitate communication with institution based personal.
3. Institution should ensure that their personnel and student are knowledgeable in the use of ICT.

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