

## **DEVELOPMENT OF AN E – SUBMIT PLATFORM FOR PROGRAMMING ASSIGNMENT IN TERTIARY INSTITUTIONS**

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**ABSTRACT**

This paper presents the development of an E-submit platform for programming assignment in Nigerian Universities. The world is fast moving into the clouds and most applications are gradually becoming Internet-based. The development of an E-submit system is a need to overcome problems encountered while using the manual method. The system is a web-based application using HTML/CSS for front end development, PHP for backend development and MYSQL as Data Management System which allows for easy retrieval of data in the system.

**Keywords:** Programming, Submission, Assignment, System

## **1.0 INTRODUCTION**

Programming is an essential part of computer science program in any Nigerian tertiary institution and therefore takes the form of all other courses in the tertiary system. Programming courses in Nigerian tertiary institutions also conform to the credit-course system. In most Nigerian universities, most assignments are hand-written/typed on pieces of paper and submitted to the lecturer for onward marking. This style of submission might be useful in submitting assignments in management sciences or the natural sciences. However, the normal style of submission might be problematic when it comes to submitting programming assignments.

The use of an automated system for the management and submission of assignments will reduce the stress encountered by programming languages course lecturers and the students offering the courses, hence the need for the creation of the online submission system for programming assignments.

## **2.0 LITERATURE REVIEW**

Computer Science has gained a significant role in technology education as a result of rapid evolution of Information technology and computers, therefore the basics of computer science is needed in several curricula (Ala-Mutka & Hannu-Matti, 2004).

In programming courses, students should learn to solve problems producing compatible working and efficient program code (Auffarth, Lopez-Sanchez, Miralles, & Puig, 2008)

Computer programming is a creative skill, requiring deep learning, and one which student must practice in order to master (Joy, Griffiths, & Boyatt, 2005; Kurnia, Lim, & Cheang, 2001).

The art of programming includes knowledge of programming tools and languages, problem solving skills, and effective strategies for program design and implementation (Shah, Edwards, & James Arthur Mary Beth Rosson, 2003). It is important that the students solve

enough discipline-specific problems in order to understand and remember certain concepts (McCracken et al., 2001) . The discipline-specific problems for Computer Science are usually presented to students as programming assignments(Dafoulas, 2005) .

Programming assignments mean assignments where students write a code and submit for assessment(Ihantola, Ahoniemi, Karavirta, & Seppälä, 2010)

Traditional paper based submission had introduced various problems to academic staff and students. Online submission provides flexibility for submission regardless of physical location, save up physical space by using electronic copy of submission and ease evaluation process of academic staffs. Email provides a solution towards proposal and other documents' submission online. However, organizing submissions in email system is time consuming and inefficient. A online web content management approach to handle the activities of creation, submission and approval will be more beneficial (Saeed, Pong, & Sukumaran, 2011). Online submission system ensures timely submission and adherence to deadline. By dealing with assignment submission electronically over the internet, all students, wherever they are in the world, can operate to the same time schedule. (Cascade, 2012).

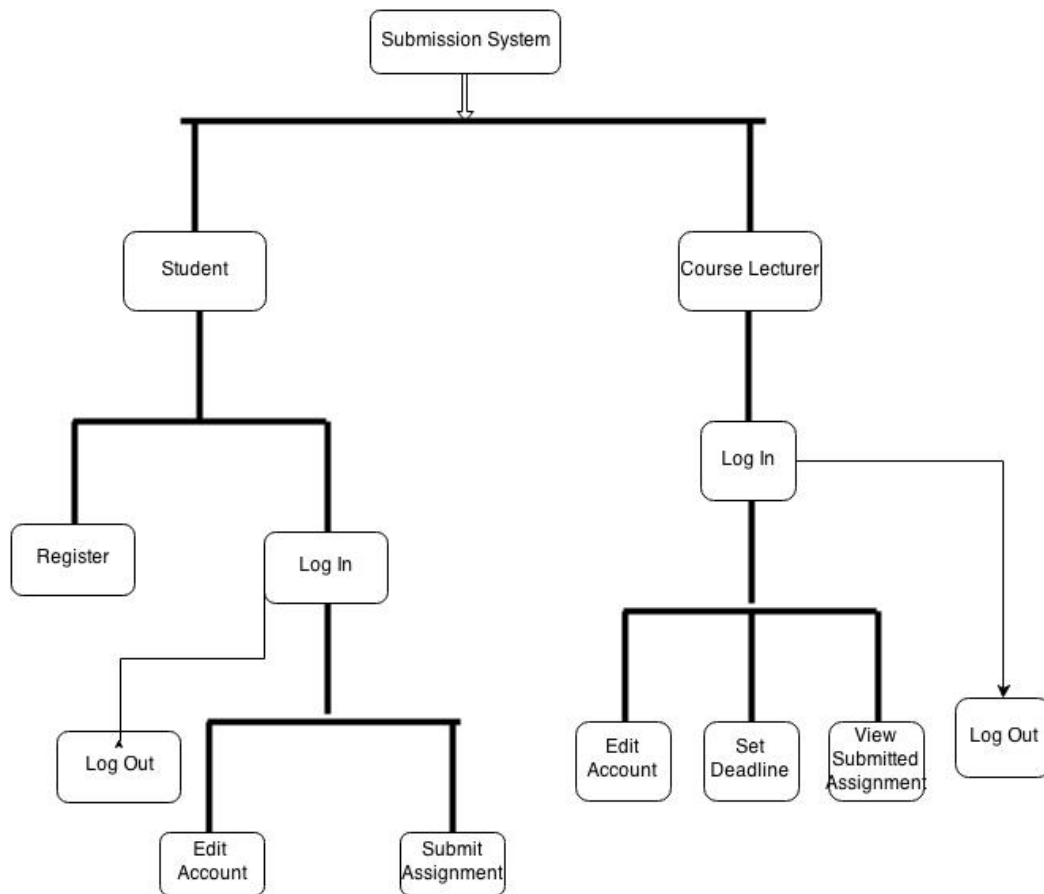
Online submission system also allows students, wherever they may be in the world, to turn in their assignments as at when due. Here, all aspects of dealing with assignments are maintained in a single location, accessible from anywhere with an internet connection.

(Cascade, 2012)

### **3.0 METHODOLOGY**

The system uses a top-down design which is a software design technique which aims to describe functionality at a very high level, then partition it repeatedly into more detailed levels one level at a time until the detail is sufficient to allow coding. The system is a web-based application. It involves the development of an application using Hypertext Markup language(HTML)/ Cascading Style Sheets (CSS) for frontend development and PHP

HyperText Preprocessor a server-side scripting language designed for web development used for backend development. It also uses a data management system (MySQL) which allows for easy retrieval of data in the system. The set of tools chosen for the development were carefully chosen to ensure effectiveness of the new system.



**Figure1: The System Flowchart**

The system comprises of six (6) separate but interconnected subsystems such as the Register Account, Log In/Log Out, Edit Account, Submit Assignment, Set Deadline, and View Submitted Assignments subsystems as follows:

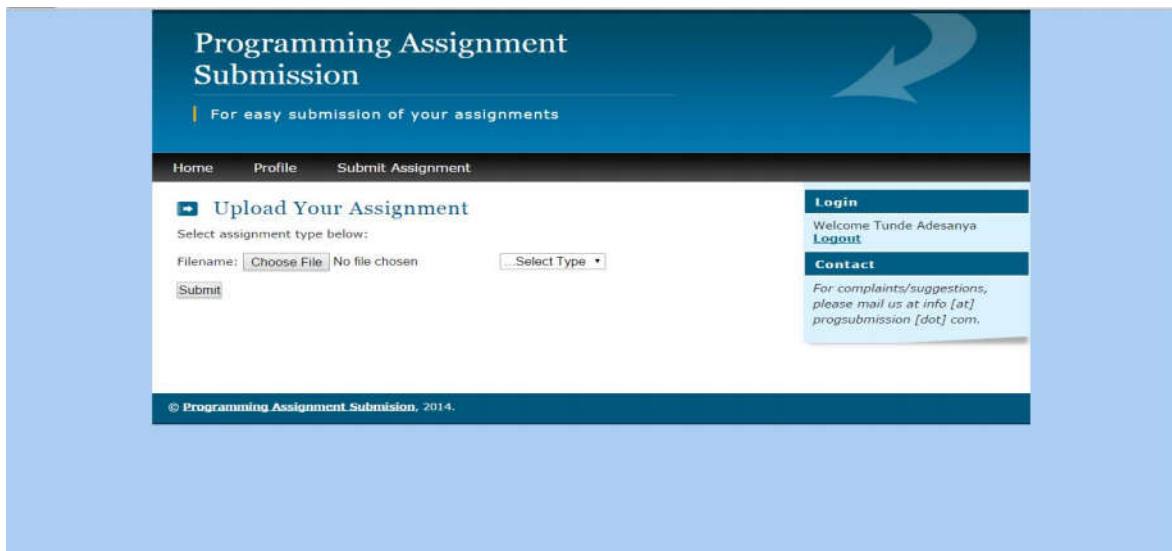
- i. **The ‘Register’ sub-system:** that allows students to register for submission of their assignments. Course lecturers using the platform have to be manually added by the system administrator.
- ii. **The ‘Log In/Log Out’ sub-system:** allows registered course lecturers and students to log in and log out of the submission management system.
- iii. **The ‘Edit Account’ sub-system:** allows course lecturers to update their profile and log in details (such as password).
- iv. **The ‘Submit Assignment’ sub-system:** allows registered students to submit their assignments. This subsystem allows a student to submit a particular assignment only once. It also stores the details of submitted assignments and the assignment files.
- v. **The ‘Set Deadline’ sub-system:** allows course lecturers to specify submission deadline for the assignments. The deadline specified here is used by the ‘Submit Assignment’ subsystem to control submission.
- vi. **The ‘View Submitted Assignments’ subsystem:** allows course lecturers to view and manage submitted assignments.



*Figure 2: The Profile page*

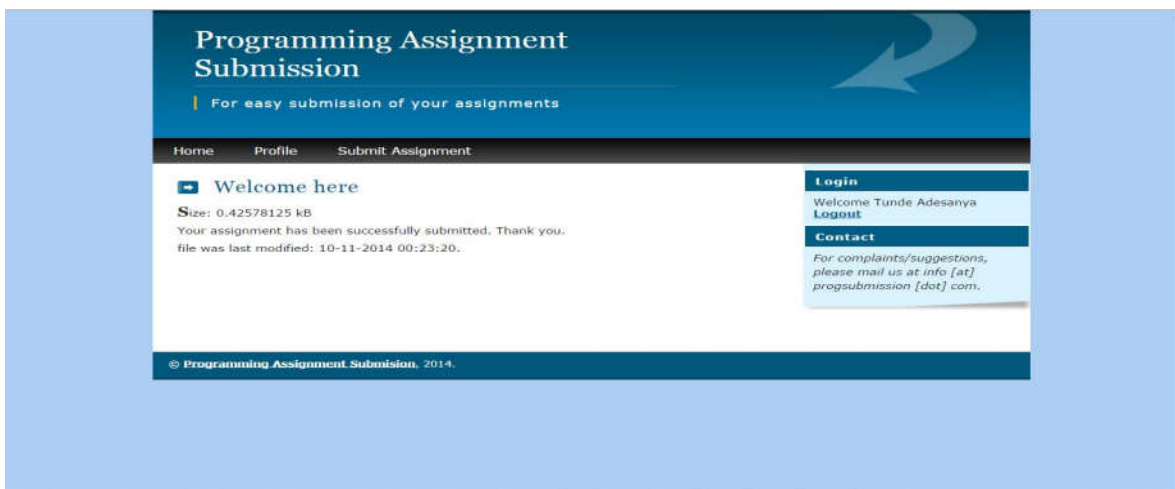
The log in/home page allows both course lecturers and students to log in to their respective accounts. Provision of wrong credentials will be automatically detected by the system here.

The register section allows students to register for submission of assignments through the system. Course lecturers cannot register through this medium as they have to be specially registered by the system administrator.



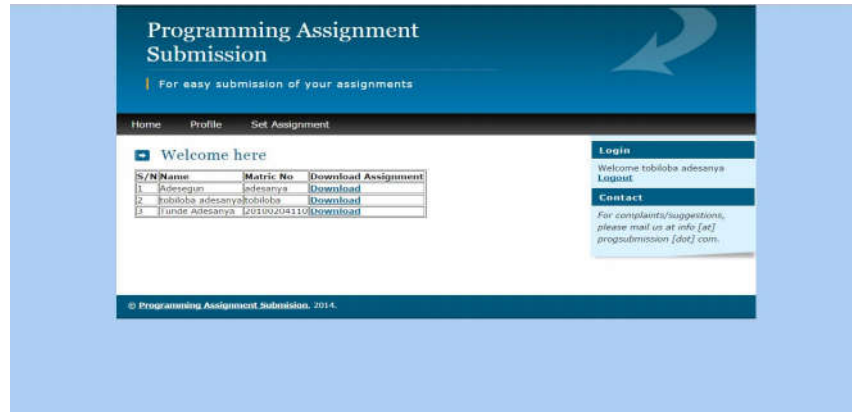
*Figure 3: The Assignment Submission Page*

This page provides the actual interface that allows students to submit their programming assignments



*FIGURE 4.: The Submission Response Page*

This page shows the student if his/her submission was successful. If the submission is not successful, it shows the student the type of error that might be causing the submission failure.



**Figure 5: Submitted Assignments Page**

This shows the students that have submitted an assignment and the links to download the submitted assignments. This page can only be accessed by the course lecturer.

## CONCLUSION AND FUTURE WORK

The world is fast moving into the clouds and most applications are gradually becoming Internet-based. Developing nations such as Nigeria have started embracing the concept of moving applications to the web, hence the development of this online submission system for programming assignments. The system can efficiently overcome most of the problems encountered while using the manual as is currently used. The system, if and when it is finally deployed by relevant authorities in a secured environment can safely keep and manage assignments submitted by students.

An automatic grading module for programming assignments can be added to further lessen the workload of course lecturers.



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