IMPROVING STUDENT PRODUCTIVITY THROUGH A WEB SUBMISSION FRAMEWORK WITH A P LAGIARISM DETECTOR IMPLEMENTATION

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Abstract

The current rapid adoption of information and communication technology in virtual learning around the world due to the outbreak of infectious diseases that spread around the globe needs the creation of a model that will boost student productivity, which will encourage appropriateness and timely submission and also add originality to the assignment at their disposal. The model would further reduce printing costs, remove the manual process, and also allow the examiner to retain the repository of all assignment submissions. The research framework is divided into three sections: the first section allows students to sign up securely to the system via the internet; the second section allows students to upload and send their assignments via a plagiarism checker; and the last section allows the administrator to add students, add classes and show submitted assignments. The implementation of this design is based on carefully selected 3-tier architecture models: a client running Windows operating system, the application server built with Hypertext Makeup Language (HTML), Cascading Style Sheet (CSS), and the Hypertext Preprocessor (PHP), and database server built with MySQL. However, the creation and implementation of this web submission framework with plagiarism detector would promote the systematic collection of assignments, enhance originality, and further increase student productivity.

Keywords: Application Server, Assignment Submission, Database Server, Framework, Virtual Learning.

Introduction

In today's educational systems, test, examination, and assignments submission are the criteria to evaluate the student's ability. The evaluation process can either be made possible through a classroom environment or via distance learning. But the recent outbreak of infectious diseases around the globe has hindered the physical approaches. This had encouraged people with advancement in information and communication to adopt the positive impact of virtual learning in educational systems.

Over the years, there are problems of time delay in assignment submission by students. Some students make direct copy of authors' work without proper referencing. Some of them faced with the issue of high cost of printing a hardcopy for submission. Also the loss of a submitted hardcopy by the examiner as a result of traditional approaches previously adopted. However, the growing of web technologies and the features in the web browser (Zhang, 2019) has currently allowed the development of a web submission framework with a plagiarism detector. Although, all web submission framework has some of these features in common which include: user must assess the web application through a web browser, it must have at least one or more clients or servers, and clients must communicate with the server via a Hypertext Transmission Protocol (HTTP). But a web submission framework must state two most important components of client-server architecture with their subcomponents and the communication link supporting their relations. These include the browser contains all its subcomponents, a server with its components providing runtimes of many programming, and the communication link supporting the relations (Gervasi, Börger, & Cisternino, 2014).

Furthermore, our research work is not the first model of its kind. Earlier works have focused on beyond adoption: barriers to an online assignment submission system continued use (Orit, & Nitza, 2008), a module for online assignment submission (Quteishat, Al-Mofleh, Al-Mofleh, & Al-Batah, 2011), design and implementation of online submission and peer review system (Karwan, 2015). But this particular work implemented has additional features that permit a certain level of acceptable plagiarism value of 15% to be set. By doing so, the framework will not only improve student productivity but also encourage appropriateness and timely submission, allowed the examiner to

have a repository of all the assignment submitted, but will also enhance originality to the assignment at the student's disposal.

Literature Review

The previous work implemented by various researchers that focus on a different aspect of online assignment submission processes were briefly reviewed in this section. According to Palmer (2005), the adoption of information technology has important effects on the valuation of assignment submission automation. An efficient valuation to survey student opinions of a new design on-line application that has features of marking and return was designed. He observed that virtually everyone participated in the process knew how their work could be submitted. Over eighty percent could retrieve their marks, but fewer could figure out remarks/responses about their works. Similarly, over eighty percent believed the feedback on their works online come faster. Most people participated accept the speedy, easy use, promptness, and suitability of the technology but also complained about the illogical file size limits. This has prevented them from the use of a larger file.

Orit and Nitza (2009), in their curiosities on online assignment submission process further investigated and implemented a unified distance learning University. The designed system has two users of which some students can choose to submit their assignment through the system or via regular mail and then also the lecturers that will access the assignment submitted by the students. Based on the implementation, the lecturer's view was evaluated whether to continue with the use of the system. They observed that students submitted through the system, half of the given work through the data collected from analysis from 98 lecturers after nine years of operation. The result obtained was based on its compatibility with the process of checking the assignment, obvious suitability, the advantages, and the approach of the lecturers towards the adoption of the system.

Seetohul, Karim, and Amir (2012), in order to further appreciate the usefulness of Web technology. They considered the adoption of a web-based application system for the University of Mauritius student submits their assignment. The implementation of their system was based on XAMPLTE to eliminate the traditional approaches of giving an assignment to the students and also the submission of assignments by the students. With this process, lecturers were able to create a computerized assessment in order to assess the student's work online. The system was preset with a feature to remind the student of the assignment closing date. They however finalized that the system implemented was easy to use, useful to the University of Mauritius, and acceptance degree was very great among the students and lecturers.

Domenach and Portides (2015), also investigated online submission mechanism that helped teachers to properly manage their time and also helped them in student assessment processes. An interactive web-based framework was created with available tools for research and design for computer science students for submitting their programming assignments and get a response in real-time. Permission, submission, and review are the features of this mechanism that has been considered and developed within the possibility of the article as further concluded.

Furthermore, this research work a Web Submission Framework with a Plagiarism Detector offered obvious advantages over the previous designed by several researchers. Aside the promptness in the submission of the assignment offered, it also ensured the originality of the work been submitted as the plagiarized file higher than 15% will not be submitted through the application. Hence, students will be discouraged from copying the file directly from someone else's work for submission thereby improve their ability and make them more productive

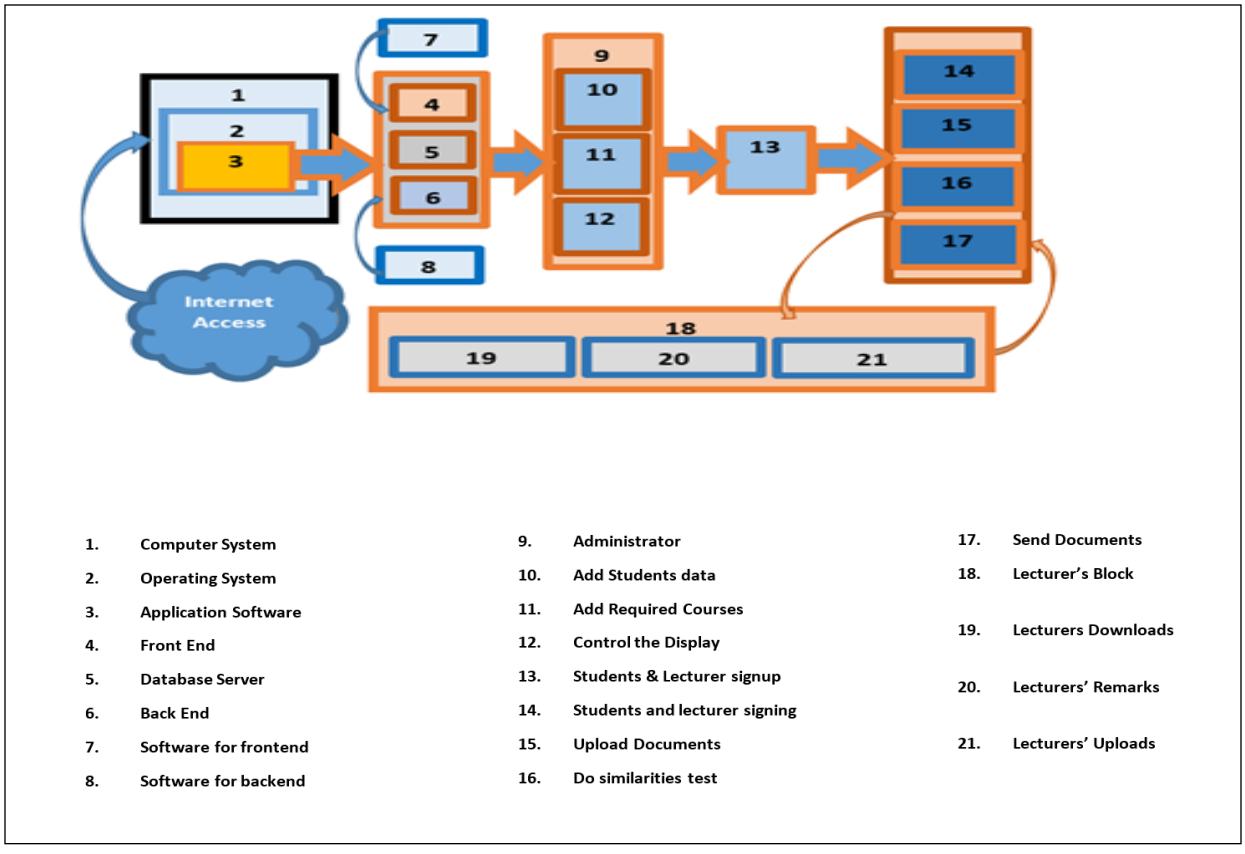
The remaining part of this research work is organized as follows: section one consist of the introduction where the problem of the research and motivation for the work were discussed, section two momentarily discussed previous work on online assignment submission system, section three clearly state details technique for the methodology, conceptual framework, design and work implementation. Section four presents and discussed the results obtained with an illustrative diagrams. The research was concluded in section five, some recommendations were presented for further research.

Methodology

The implementation of Web Submission Framework with a Plagiarism Detector is based on the hardware and software. The only hardware is the computer system and software requires all applications and necessary programming languages to actualize the conceptual framework of the design implementation shown in figure1 and details requirements are shown in table1. The process was broken into the design and implementation. The conceptual framework already revealed how it will behave and possibly, necessary components for its implementation.

Conceptual Framework of the System

The framework below shows the interoperable components and numbering system of labeling is adopted. The each block has a specific functional name and this is also defined below the framework. According to the framework, the computer system has the operating system window7 or above, on the window7, the required application software are installed for the task. The installed applications software have direct link to the Web Submission Framework with a Plagiarism Detector. This system is divided into the three tiers, and these are: frontend, backend and server according to 4, 5, and 6. The application of programming languages PHP, SQL, Java Script, HTML and CSS were deployed to implement the system. The administrator controls the function ability of the users by adding the students' data, required courses and also, responsible for the display information at the user end. The first time user will have to sign-up and subsequently sign-in once the account has been created. The student or any user can now upload the document or assignment, do similarity check, and therefore submit if conditions for the check were fulfilled. At the lecturer's end, he will access the document and give remarks and then return comment to the platform for students to act on the given remarks and comments. The entire system is internet based because, any user can submit any given assignment remotely and also, the database resides with the owner of this application.



System Development Design

The system and its implementation goes down the inclined plane from specification stage, through design stage, implementation and down to the evaluation, when it is matured for deployment. These process are discussed as demonstrated below:

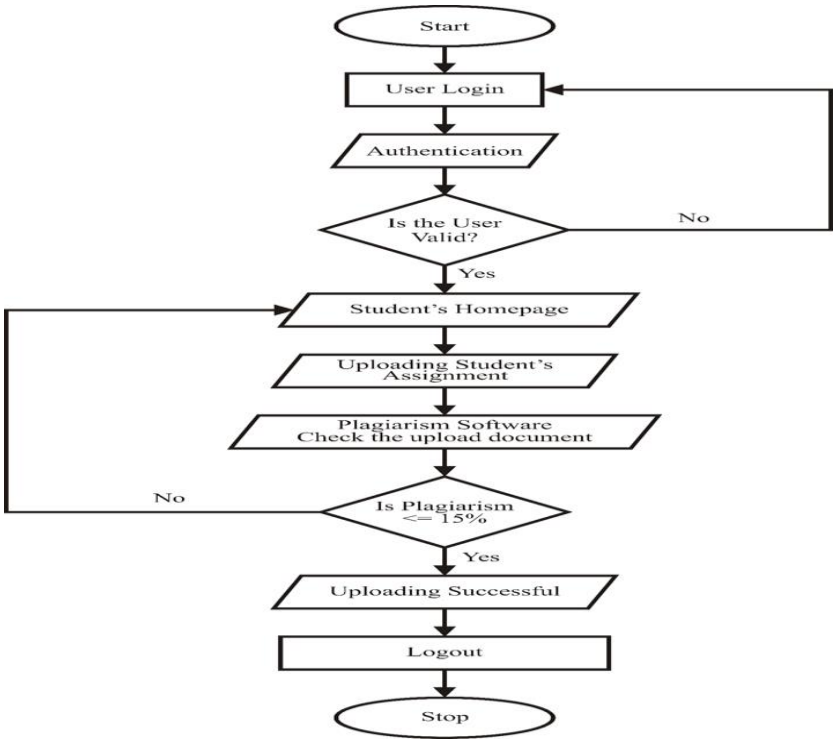
Specifications: this application software was designed to allow users and I this case, students and lecturers to interact through the interface known as " Web Submission Framework with a Plagiarism Detector" this application allows students to submit their pdf and word format documents and also, allow the assessor that is, lecturers to access the work and score the students and also, give remarks and comment based on the students' performance. Both the students and lecturers in this case will have to sign-up for the first time and sign-in for subsequent visit to the platform. At the administrator's end, data of students and lecturers, courses to be taken by students, and other sensitive information would be controlled by the administrator in charge. The submission will depends on the 15% similarity results.

Algorithm and Flowchart for Operation

The algorithm and flowchart (Figure 2) below described its mode of operation and of course, with this system, the operation is simple and straight forward. The first action is to start the system and the student log-in for the authentication, and from there have access to the home page where the student will upload the assignment or document and similarity check would be carried out to establish the percentage of such check does not go above 15%. Once this stage is passed, such assignment would therefore be submitted for the lecturer to access and submit his own remarks.

Algorithm:

01 Start the system
02 Log-in the user
03 Check to verify that the user is valid
04 View the user homepage
05 Upload the assignment
06 Confirm the plagiarism is $\leq 15\%$
07 Confirm the upload is successful
08 End



System Implementations

After a successfully designed system, the system was realized as proposed in the aim and objectives of this study. The followings diagrammatic illustrations show its full implementations and interactive windows to make its use friendly and flexible. Figure3 is the home page where the students and lecturers will sign-up and for signing-in as to take care of the authentication. Figure4 is for the uploading, where the similarity check will take place. Figure5 shows the page where administrator will add bio-data of students and Figure6 is where all courses to be taken would be added.

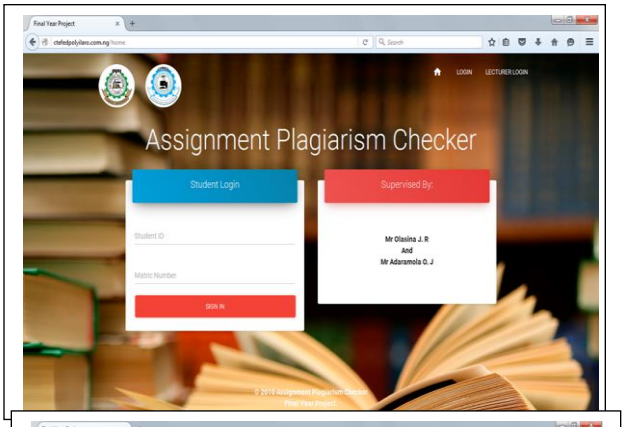


Fig. 5: Page where the Administrator will add Students' Bio Data

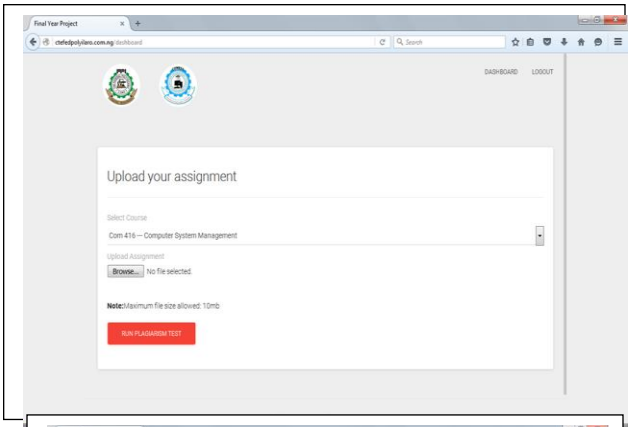


Fig 6: Page where the Administrator will add the Courses Students will Offer.

Results and Discussion

The results obtained are presented diagrammatically and appropriates discussion are said of each diagram. Figure7 shows the results obtained for the similarity check where the submission was successful due to 6% similarity result which is less than the default value of 15%. Figure8 shows unsuccessful document submission due to the similarity percentage of above 15%. Figure9 therefore show result of where the lecturer can have access to view, download, and attend to the students' submitted documents

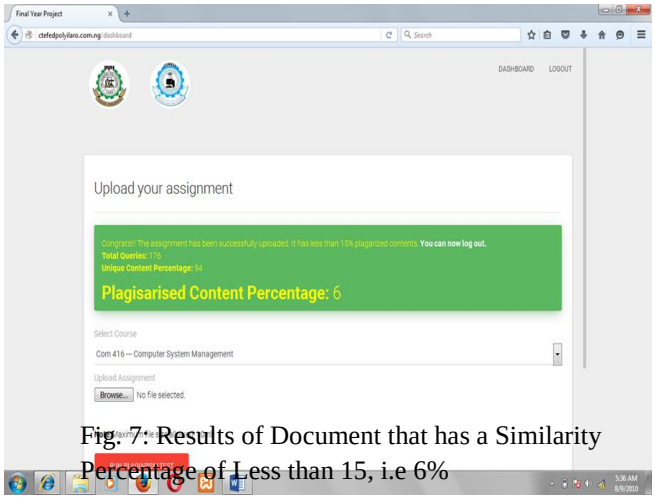


Fig. 7: Results of Document that has a Similarity Percentage of Less than 15, i.e 6%

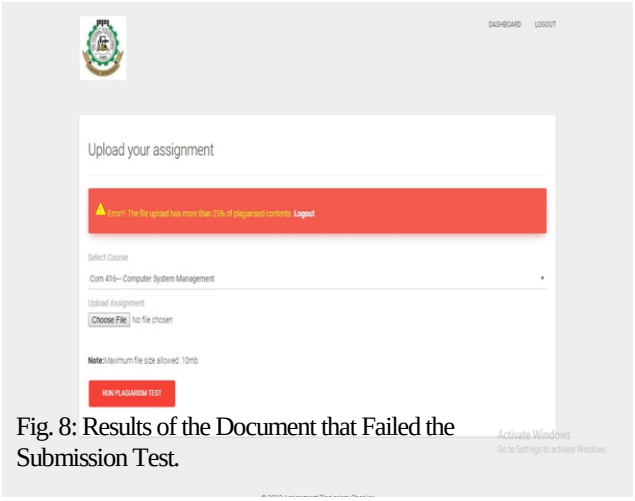


Fig. 8: Results of the Document that Failed the Submission Test.

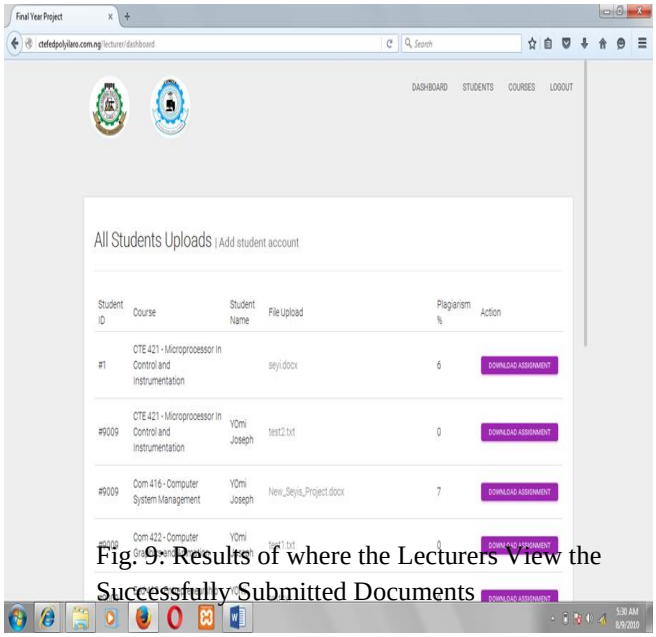


Fig. 9: Results of where the Lecturers View the Successfully Submitted Documents

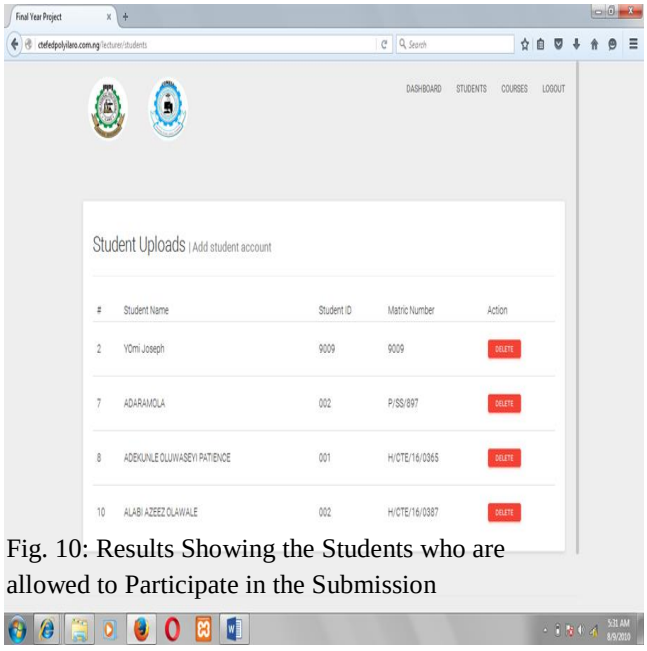


Fig. 10: Results Showing the Students who are allowed to Participate in the Submission

The generated results proved successful implementation of the designed application and the students will not be able to reverse the submission after the documents have been submitted and also, once the deadline for submission is activated, no students will be able to submit and this orientation will help student to adhere strictly with time and will also help lecturers to attend to the mass submission of the assignments by the students.

Conclusion

The conclusion of this study stands the test of academic integrity by ensured what was proposed as aim and objectives of the study were all met. That is, the app designed can accept any student whose data has been captured by the administrator and only such student can sign-up for the first time and sign-in for subsequent action. Such student will be able to upload his or her work and also be able to submit the document as soon as such document passes the similarity test of not greater than 15%, and otherwise the system will not accept such document. Apart from all that, once the stipulated time frame for the submission is exceeded, no student will be able to submit any work anymore for that particular course. The system has successfully delivered at its point of deployment and one tremendous thing about this system is that, the server resides with the owner which is the school or department that owns the system.

Recommendations

The following recommendations are also recommended for further studies:

1. Design a mobile app for the same system that will be android and window based.
2. Design same system to be able to accept any documents format, not only the pdf and ms-word format.

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