Development of Centralized Transcript Processing System

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Abstract

Transcript is an academic record that details all the academic performance of a particular student throughout the years spent in the higher institution of learning. It can simply be seen as a copy of student's academic record in higher institution of learning. Hence, any system used for managing students' academic records is referred to as transcript system. A transcript system is a student information management system for processing and managing students' academic data. Till date, many tertiary institutions in Nigeria still use the manual system to process and file students' transcripts. This system is time consuming, prone to errors, encourages wrong manipulations of students' academic records and it very tedious to use. Due to the nature/challenges of this manual system, significant number of students has been discouraged to study in Nigeria. In addition, due to unnecessary delay, some students' academic records have been wrongly manipulated and computed, some students have lost their lives to accident while travelling to their tertiary institutions they graduated from. This motivated the need to employ information communication technology (ICT) in processing students' academic transcripts. A well-deployed application will eliminate most of these challenges in the current system. Therefore, this paper presents a web-based architectural framework suitable for implementing a centralized transcript processing system in Nigerian tertiary institutions. The system allows students to process their transcripts at the comfort of their homes without considering the location, and the transcript will be generated and submitted to the designated address either electronically or by post.

Keywords: Framework; Transcript; Centralized; Tertiary Institutions; ICT.

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1. Introduction

Transcript is a copy of academic record of a particular student. Studying in a particular institution, it is a great expectation to document all the academic performance of the students since this helps to ascertain the different grade by each student. When a report is generated on the entire performance of a student at a particular point in time, such a record is called transcript. A transcript is an academic record detailing a student's academic performance while at the University or higher institution of learning [1]. It includes details of all programs/courses in which the student has had an effective enrolment and the marks/grades achieved in the courses undertaken. It also lists University prizes and conferring details where applicable. In other words, transcript simply refers to a copy of a student's academic record. Reference [2] noted that, if you have ever attempted to secure academic transcripts from any Nigerian University, or from other institutions of higher learning, you will know how difficult and frustrating it can be. Similarly, apart from the official fee to be paid to the school, facilitators within the university system would need their palms to be greased. Moreover, friends and relatives who spent their time going back and forth must be compensated [2]. The major problem faced by Nigeria tertiary institution in processing transcript is the used of the manual method. This method is frustrating, time consuming, prone to errors, unnecessary bureaucracies etc. Some of the common challenges posed by this existing system of processing transcript in Nigerian tertiary institutions are: Lack of System Security: Security is one aspect that must be guarantee in any task. We have noticed that sometimes because of the large work available for transcript officers, the students have to submit their transcript request form. In most cases, some student may not find these forms again mainly when large number of forms are been submitted for processing. There are cases of student that could not access their transcript request form after submission. Similarly, transcript supposed to be a confidential document, but because of the kind of transcript processing system that is in operation in Nigeria tertiary institutions, students, staffs and parent always access this record. Stress: Stress is a common occurrence during used of the manual system in processing transcript. This factor affects both the students and the officers involve. The existing method is such that the students/representative must be physically present during the transcript and sometime, the large number of student involved in this exercise makes the exercise to be back-breaking, cumbersome and rigorous for the officers. Some students always get frustrated by moving from one office to another in submission of their transcript request form. Lack of System Efficiency: if you have ever attempted to secure academic transcripts from any Nigerian university, or from other institutions of higher learning, you will know how difficult and frustrating it is [2]. This is due to the high level of human involvement in the system. In most cases, the staff that would have process the transcript might involve in other pressing job, this will end up delaying the transcript for a long time. Lack of system Accuracy: In most cases, some transcript generated will not be a true reflection of the student academic record. Most of these transcripts thus, lack system accuracy. Every system that involves pen and paper is subjected to human errors, thereby encouraging poor system accuracy. In the light of the above, Nigerian tertiary institutions needs a better transcript processing system that is stress free, secured, accurate, and efficient. Hence, there is need to employ Information Technology (IT) in managing and processing transcripts in Nigerian tertiary institutions. It is true that IT has improved the way we carry out task in all sector. It was observed in [3] that the quickest route out of economic stagnation is information technology skills acquisition. The author noted that Japan, South Korea and currently China represent the clearest modern examples of countries which changed their fortunes by investing

massive in IT. This point to the fact that, information technology could be successfully applied to processing transcript in Nigerian tertiary institutions. This paper therefore presents an implementation of a centralized transcript processing system in tertiary institutions. For Nigerian tertiary institutions to achieve best practices in this regard, there is need for such to be in strong alignment with the existing method of carrying out this exercise in many tertiary institutions. However, this exercise varies from one institution to another but their tasks and goals are always the same. Hence, we present the traditional and manual ways of carrying out transcript processing task in most Nigerian tertiary institutions.

- The applicant request for transcript by paying some money in the bank.
- Take the teller to the bursary and collect official receipt of payment.
- Take the receipt to exams and records to collect the transcript processing form and pay for postage.
- Fill the form with the matriculation number, Name, Department, Faculty, Session, Degree, Mode of delivery
- Submit the form to the department with evidence of payment.
- The transcript is created by a staff of the department and verify by another staff before the HOD can authorized it and send to the exams and record for further processing.
- The exam and record unit prepare the transcript using the university address and send by posting to the appropriate recipient.

Following from the above steps, there is no doubt that this method appears cumbersome, particularly when there are many students requesting for their transcripts. The stress is, however experienced by the students, and also by the officers of the university. Hence, there is a need for the development and deployment IT based system to replace the manual and cumbersome system discussed above.

2. Related Work

The students' transcript management system allows the department/exam and record to collect and analyze more accurately and comprehensively information about students' academic records. It provides accurate, consistent, timely, reliable and complete students' academic records. Also, it provides the means for effective decision-making in the department and forwarding of students' transcripts to requesting institutions for further studies. As noted in [4], organizing and managing students' records into a cohesive and efficient system seems to be difficult. However, one of the largest investments in many organizations is the creation, maintenance, and retrieval of information. It has been estimated that in an organization such as tertiary educational community, information is highly essential for correct students' records and examination data. It was observed in [5] that Nigerian university education system needs reformation for it to meet the societal needs. Nigerian universities must seek to remove the constraints that prevent them from responding to the needs of rapidly changing society. Meanwhile, one of the top challenges for institutions and students of higher learning in Nigeria today is the issuance and collection of transcripts. Students sometimes apply for transcripts from their respective institutions and it takes several months before such transcripts could be generated and forwarded to the applicants institutions [6, 7, 8]. There are have been evidence that intellectual capital and technology rule the world and that natural resources such as gold, diamond, oil, etc. are no longer the primary determinant of wealth. In light

of this, almost all businesses and organizations, especially in the developed countries are fully that they must adapt to the changing technology or be left behind. It is in this note that all tertiary institutions in Nigeria must adoption IT in managing students' transcripts. Though many tertiary institutions today are trying to change from the traditional and manual methods of carrying out some tasks to the electronic based system, however much have not been achieved except few universities which have Portals where some critical tasks of admission and course registration on the Internet [10]. This has brought about some improvements in those areas covered, while students' transcripts processing is being neglected. In [11], Microsoft Excel spread sheet program was used to build an intelligent knowledge-based system (IKBS), making use of various programming facilities provided by that application (Excel). The central issue here is that the programming is hard coded into the cells, and cell referencing is used to monitor and track students' performance. The system has been reported to be working fine. However, it appears to be rather restrictive, and calls for substantial expertise in programming. Similarly, in [12], an integrated development environment was used to create the Graphic User Interface. MYSQL Server, a relational database management system (RDMS), was used to create the database tables. However, this application, though tested and found to be working as expected, but cannot generate accurate transcript. An application for processing students' results was presented in [13, 14]. Though the system was tested and found to be working but could not generate students' transcripts. In [10] a framework for mobile college portal was developed. However, the framework could only handle students' registration, result computation and result checking without a module for transcript generation. In this paper, the framework presented concentrates on implementation of transcript generation system.

3. System Architecture

In this paper, we present a comprehensive model that is suitable for implementing a centralized transcript generation system (Figure 1). Figure 1 shows the components of the model, which include the modules, Transcript, Bursary, Exams and Records, and Department module. Each of these modules interacts with different offices while processing students; transcripts. In a typical student's transcript request, the process is carried out as followings;

- Through transcript unit, the applicant requests for transcript after paying a fee online.
- The transcript unit, records the student's academic details such as matriculation number, name, department, degree, session and payment information.
- The transcript unit processes the student's request information to the bursary unit to confirm the student's payment data.
- After the payment data is confirm, the student's request is processed to the exams and records for the processing of the student's transcript.
- The exams and records unit sends student's details student's department for the generation of the transcript.
- The department generate the transcript, verify it and sent it back to the exams and records unit.
- The exams and records unit, authenticates the transcript, puts in the university letter head and sends it back to transcript unit.
- The transcript unit, packages and posts the transcript using the mailing address supplied by the student.

It is important to note that at every point, since the framework can be implemented as a web system, the student can always track the progress of the transcript. Also, every module retains the ability to locally save its processes about a particular transcript request for future purpose. This model is implemented using the client/server architecture. In this architecture the system composes of; **Front end (Client):** This is the interface with which the user interacts with the application. This interface is used by the user to make request to the system server. This interface has the working technology to interact with the system server of the centralized transcript system. This part of the application was implemented using ASP.NET. **Middleware (server):** This serves as the gateway through which the application interface communicates with the database. All Web transactions take place on the middleware (servers). The web server is responsible for communicating with the browser while the database server is responsible for storing the required information. The web server takes all requests from the clients, responds to the requests and serves the appropriate web pages back to the clients. **The back end:** This is the database server that contains the application data. A database server is the storehouse that provides database services to other client on request. Some database management systems (.e.g., SQL SERVER) rely exclusively on the client server model for database access. Such a server is accessed either through a front-end running on the user's computer which displays requested data or the back end which runs on the server and handles task such as data analysis, data collation and data storage. In view of this discussions, this model can help software developers to build a centralized transcript system that can be efficient, convenient and reliable.
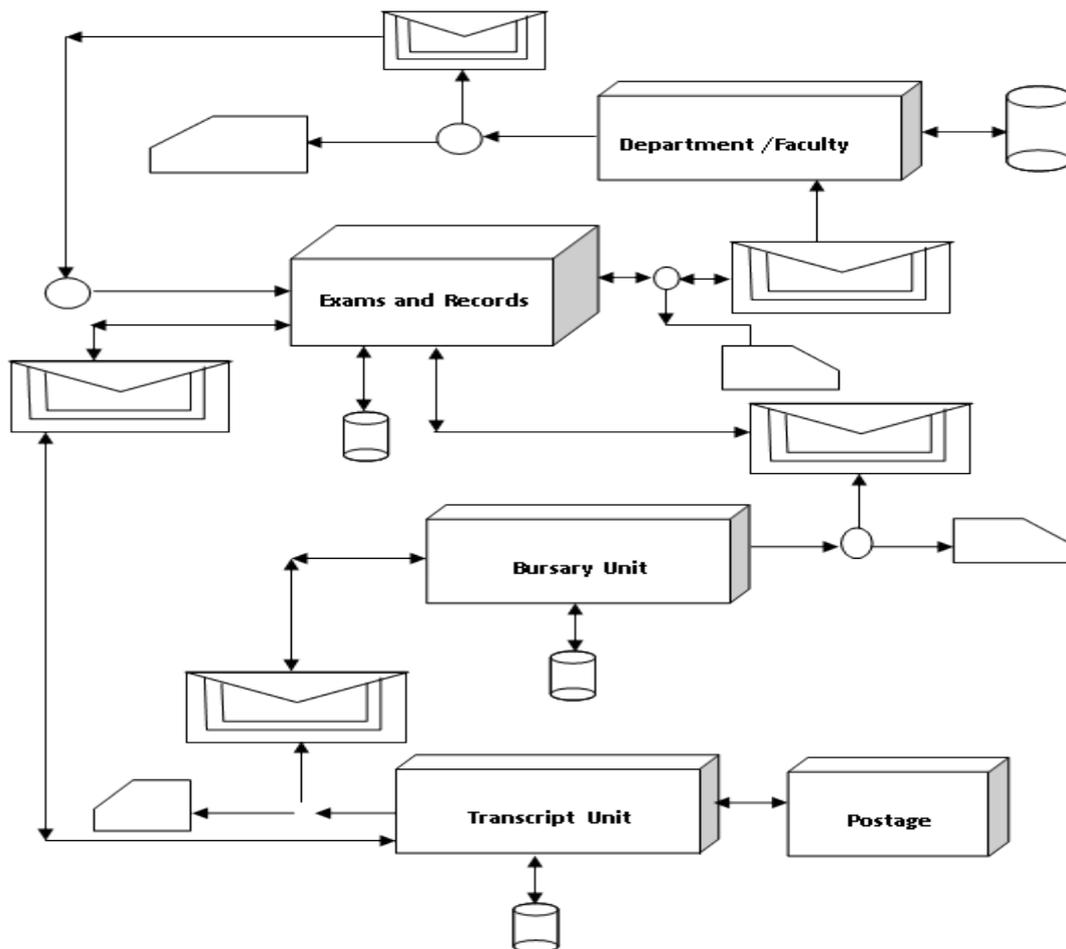

Figure 1: System Architecture

3.1 System Flowchart
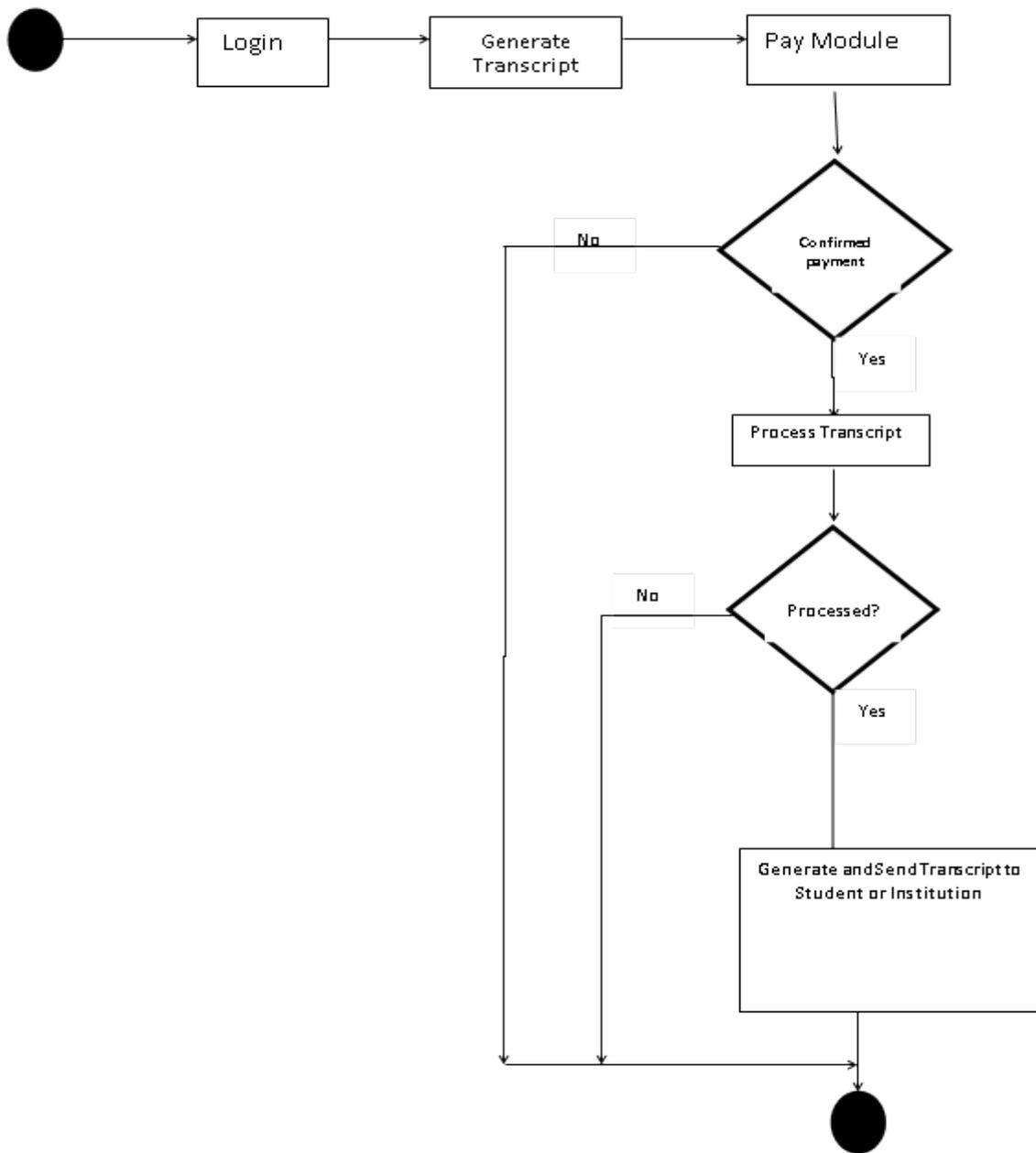
Figure 2: System Flowchart

4. Implementation

The system was implemented using C# programming language. SQL server was used to implement the back end. The interface of the application was developed using ASP.NET while cascading style sheet was used to maintain the application colours. The Figures 3, 4, 5 and 6 are the outputs of the application.
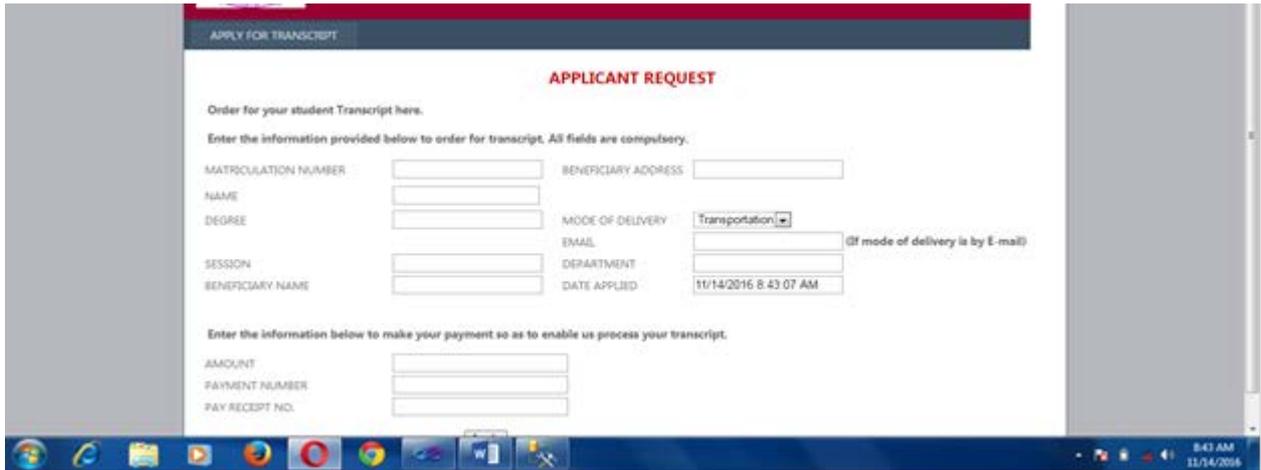
Figure 3: Transcript Application Interface
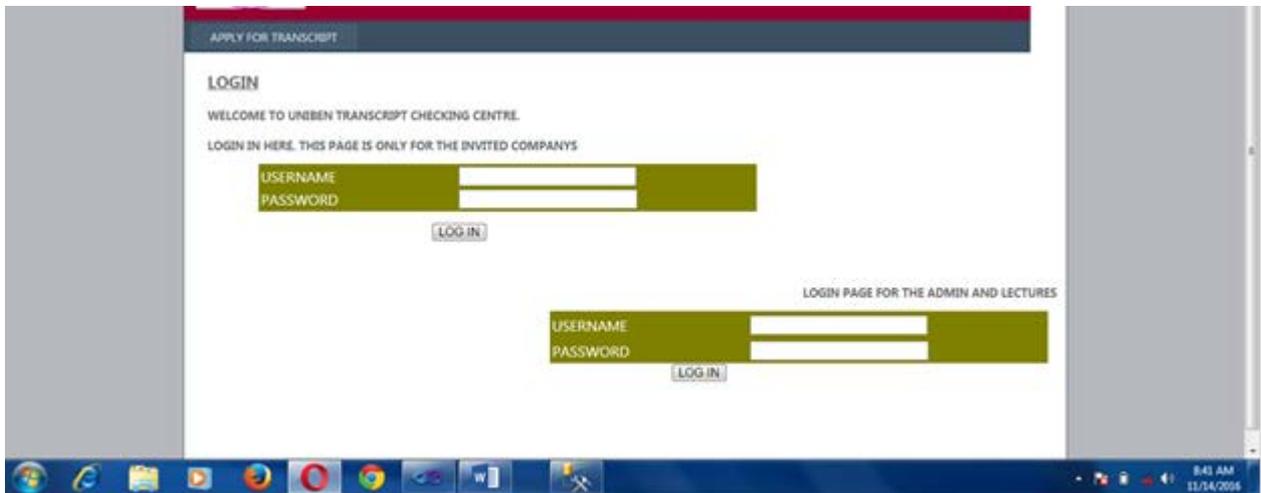
Figure 4: Login Page
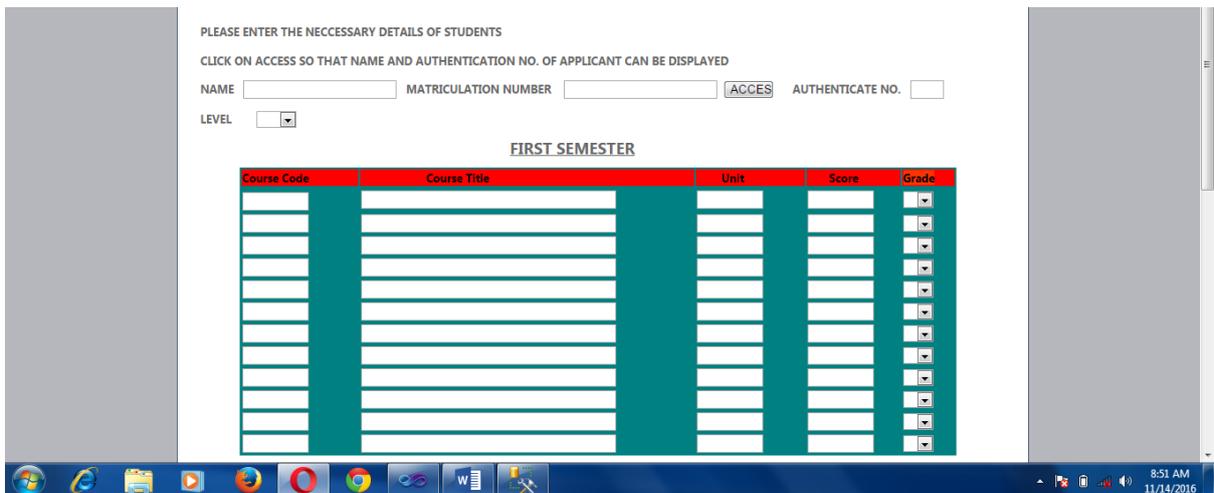
Figure 5: Transcript Input Interface

Figure 6: Sample of Transcript Generated by the System

5. Conclusion

The paper briefly discusses a conceptualized model for developing a centralized transcript processing system for tertiary institutions in Nigeria. The work reviews the experiences (or stress) students face while requesting for their transcripts in tertiary institutions in Nigeria. Based on this background, the system was developed to help both the students and the academic institutions to process and post (or e-transcripts) to address supplied by students. The system helps to improve the efficiency of requesting and processing transcript in tertiary institutions. It removes the stress and bottleneck face when processing transcript manually. The system allows students to request and track the progress of their transcripts process at the comfort of their homes. The system encourages paperless administration in our university system. It is very cost-effective to the students and easy to operate and administer by designated officers of academic institutions.

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