Design and Implementation of a Mobile-based Transcript-Request-Processing System (MBTS)

Abstract - Since coming into the limelight around 2010, mobile computing has been gaining momentum in the computing world as a better means of computing with greater accessibility. Different operations and operators have benefited from its ease of use, with many spheres of life been affected. Transcript generation is another challenging data processing area that needs the ‘Macedonia call’ for mobile computing to enhance real-time accessibility by user. This study therefore aims to adopt object oriented methodology to design and implement a mobile-based transcript generating system for graduants; accessible through their mobile phones. The system, which will be secured using appropriate encrypting method, is considered to be more accurate, more responsive, faster, and friendlier than all the existing modes of transcript generating systems. The mobile application was developed to target the android mobile platform with Java Android Programming (Native App) as the language of development. It was developed as an Hybrid Mobile App with HTML5, JavaScript and compiled with Phonegap. Object-Oriented PHP serves as the frontend, with MySQL database as the backend in the implementation of this system.

Keywords: Transcript, Mobile-Based, Data Processing, Mobile-Computing, Real-Time, Accessibility, Object-Oriented, Native App

I. INTRODUCTION

The fascinating world of mobile computing has only been around since the 1990s. Since then, devices that have been developed for mobile computing have taken over the wireless industry. This new type of communication is a very powerful tool for both businesses and personal use. Mobile computing is defined as the ability to use technology that is not physically connected to any static network. This actually used to mean radio transmitters that operated on a stable base, usually with the help of large antennas. 2 way radios used by police officers were also considered mobile technology but now, it means people can connect wirelessly to the internet or to a private network almost anywhere. As long as a person has one of the devices capable of wirelessly accessing the internet, they are participating in mobile computing. Chances are, you have done it with a laptop computer or a personal digital assistant (PDA).

Mobile computing has evolved from two-way radios that use large antennas to communicate simple messages to three inch personal computers that can do almost everything a regular computer does. One area were mobile computing finds its value appreciated is the educational sector, where the highest consumers or embracers are the students. Among many areas students and staff of educational or higher institutions of learning could find mobile computing relevant is in the processing and generation of transcripts. Many school leavers and higher degree aspirers desire a faster and better approach to the procedures of applying and getting transcripts across to their employers or institution of learning.

Cristian et al, (2013) defines a transcript of Academic Record as a certified statement detailing a student’s academic record. It also lists University prizes and conferring title to a student. An academic record, achieved by a student is a document that includes details where applicable. In other words, transcript simply refers to a copy of a student’s academic record. Thus, applicants have to resort to asking for the transcripts the old fashion way and need to ensure sufficient time is given for the postal mail to deliver the documents to time. With the aim to address the above drawbacks of a typical college admission system and to conduct a proof-of-concept of various burgeoning technologies, this research article sets out to build a mobile-based portal system to facilitate the student application process by means of allowing the transmission of electronic transcripts over the mobile app.

Taking Adekunle Ajasin University as a case study for this work, and considering the fact that the collection of transcript is done manually, it becomes necessary to analyze, design and implement this proposed mobile-based system.
This research work aims to provide:

- a mobile-based transcript portal for sending students’ transcripts,
- a platform on which students/graduates can request for their transcript,
- a more useful electronic transcript for those who wish to image the transcript into a document imaging system

II. METHODOLOGY OF THE STUDY

In order to actualize the set goals of this study, Structured System Analysis and Design Methodology (SSADM) was adopted. With this, adequate information was gathered through interview from the Exam and Records Affairs Unit of Adekunle Ajasin. Sufficient information were gathered from the staff of the unit on the underlying logic (parameters) used for preparing graduants’ transcripts, modes of sending the transcripts and the various prices.

Other approaches adopted include:

*Phase 1(Model Design): The Unified Modelling Language (UML) was used for the design of the mobile transcript model.

*Phase 2(Model Transformation): HTML5 framework was used to develop the application.

*Phase 3(Model Implementation): Web services (or API) containing student results were consumed by the mobile app. Phonegap was used to compile the HTML codes and to achieve the implementation of the model.

III. RELATED WORKS

We present previous research works directed towards transcript request system models or processes.


**Aim:** The study aimed at implementing a web-based result and transcript portals.

**Methodology:** The study employed Structured System Analysis and Design Methodology.

**Implementation and Solution:** The work was implemented using ASP.Net. The author developed a system that provided/computerized both result and transcript problem in a web format.

**Limitation:** Students have little or no access to the transcript generated.


**Aim:** The study seeks to illustrate how a prototype college admission portal system can make use of web services to consume student transcripts over the web.

**Methodology:** The study employed web service technologies.

**Implementation and Solution:** The work used Java to implement the transcript-web services. It specifically utilized a web-service development tool, called Web-Logic Workshop. The study bridged the gap between colleges/institutions in the exchange of students’ data for transfer.

**Limitation:** The participating institutions have to agree on the format to represent transcripts. Also, the transcript data transfer is implemented through web and only between the involving institutions.


**Aim:** The study proposed an electronic transcript web services framework supporting not only XML and EDI e-transcripts, but also, both web services and FTP transmission mechanisms.

**Methodology:** The study adopted workflow management mechanism.

**Implementation and Solution:** The work utilized open source projects to implement the proposed framework based on web services architecture and workflow management mechanism.

**Limitation:** The work emphasizes document conversion and reuse of web services.


**Aim:** The paper presents suitable system architecture for implementing a system-based transcript application.

**Methodology:** The study adopted System Analysis approach to survey the existing system approaches to transcript processing.

**Implementation and Solution:** The study suggested suitable and systematic architectural model for executing centralized transcript request system in Nigeria.

**Limitation:** The work is limited to the architectural design aspect of the proposed system.

In his closing remarks, Momodu et al (2014) suggested that researchers should further their work by looking into possibilities of implementing paperless transcript transfer between institutions. This we concluded upon as our motivation for venturing into this mobile-computing based study.

IV. SYSTEM MODELS AND ANALYSIS

A. Proposed System

Mobile-based Transcript System (MBTS) ideally serve as a mobile application from which students can access all information that can help them facilitate academic transfer. First and foremost, the mobile app will provide accurate
information about the institution transfer and articulation policies. A combination of web service API (Application Programming Interface) consumed through the mobile app, would be available to students to understand how institution policy applies to their own educational plans.

Below is the summary of the proposed system

- Login interface for the operator or user
- A view interface that displays student status.
- A payment (order) interface where student can pay for the transcript
- It has an Administrator interface i.e. the back-room that uploads students’ transcript.
- It has a contact User Interface that serves as a means of contacting the developer as well as ‘Help’ which is an instructional guide on how to use the software.

B. The Proposed Model

The mobile app will provide a user-friendly interface for requesting transcript and tracking transcript order status.

C. System Flow

Fig 1: Use Case Model of the proposed system

Fig 2: Architectural Model of the proposed system

Fig 3: System Flow
D. I/O Interfaces

The application comprises of compatible and user-friendly mobile interfaces. The figure below highlights few of such.

V. IMPLEMENTATION

A. Development Tools

A combination of web service (API -Application Programming Interface), consumed through the mobile app was made to interact with the student result portal to facilitate request of transcript, the generation of transcript and provision of the basic information of the mobile application user.

HTML5 and JavaScript were used for the coding, while the compilation was done using Phonegap. The system uses Object-Oriented PHP for the frontend and MySQL database for the backend.

B. Document Exchange and Conversion

The JavaScript Object Notion (Jason) was deployed to retrieve/hold data or document. It is also deployed to implement conversion of same to PDF format.

C. Security Module

Confidentiality cannot be compromised in transcript system. Adequate provision was therefore made to ensure secured transfer by employing md5 checksum for data encryption. This prevents hacking of transferred data, and also aid complete file downloads.

CONCLUSION

This paper has been able to push a position for ‘transcript-on-the-go’ system; eliminating travel risks, long queues, as well as other bureaucracy involved in a typical manual transcript request processing system. If integrated with institutional result portal/system, the app will go a long way in solving the problem of delay usually experienced in the manual version of the system.

However, the study still leaves room for improvement. One, further research work can be carried out on implementation of a platform-independent transcript system that runs across different mobile platforms (e.g. Symbian Phones, Java Phones etc.). Also, interested researchers can further implementation of the work on cloud, defiling its security challenges.

REFERENCES


