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FACULTY OF ENGINEERING
DEPARTMENT OF COMPUTER ENGINEERING
ELECTRONIC ACADEMIC CERTIFICATE VERIFICATION SYSTEM

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DECLARATION

I **AYEBALE GEORGE REG No. BU/UG/2012/1972** do hereby declare that this Project Report is original and has not been submitted for any other degree award to any other University before.

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DEDICATION

To my dear brothers, sisters, parents and friends.

ACKNOWLEDGMENTS

I thank my supervisor Mr. Bwire Felix and all my lecturers for the great work they done and also the almighty God, even not forgetting my parents

LIST OF ABBREVIATIONS AND ACRONYMS

FP	Finger Print
BCS	Barcode Scanner
RFID	Radio Frequency Identification
2D	Two Dimensional
QR	Quick Response
UNEB	Uganda National Examination Board
US	United States
PHP	Hypertext Pre-processor
CUE	Commission for University Education
CMS	Content Management System
PhD	Doctor of Philosophy
CSS	Cascading Style Sheets
HTML	Hypertext Markup Language
DFD	Data Flow Diagram
CSS	Cascading Style Sheet
MySQL	My standard query Language
IDE	Integrated development environment
RDBMS	Random Database management system
.NET	dot net

AN ABSTRACT

Education sector is one of the crucial sectors in whole world and Uganda particularly which has provided people with knowledge and skills which had led to the economic development in various sectors of the economy.

The industry comprises of various levels such as primary, secondary ,university and others which are both private and public .And this sector at various levels its prone to false academic documents due the desire for people to obtain employment in the current competitive job market, lack of uniform process and means to authenticity of academic and professional qualification by prospective employers, advancement in technology hence making companies incur financial and production losses as a result of hiring unqualified employees.

The developed electronic academic certificate verification system prevents prospect employees with fake academic certificate and this will reduce in the production of fake academic certificates in Uganda. The system is able to register a student at the university on the server side by the academic registrar with the corresponding students' information with the results, his finger print and the Barcode ID on the certificate. After registration at the server side, the students' information is saved. Verification is done at the client side where one has to scan the Barcode id and thumbprint and this is compared remotely with server side to see whether the comparisons are matching. In case there is matching at the client side, the system displays valid certificate and in case there is matching the system displays invalid certificate.

This report discusses the background of the Electronic Academic certificate verification system, problem faced by the employers as well as problem solving by showing the design and implementation of the above mentioned system.

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CHAPTER ONE: INTRODUCTION

1.0 INTRODUCTION

This chapter gives a brief introduction of the study of the **Electronic Academic certificate verification system** such as background, problem statement, objectives, justification and the scope for the study.

1.1 BACKGROUND OF THE STUDY

Academic affair is usually in charge of student results and up to date of the honors awarded to each student. It has a collection of sources, resources, services and the structure in which it is housed.

Levels of academic qualification in Uganda include PhD, Master Degree, Bachelor Degree, Higher Diploma, Certificate, Uganda Advanced Certificate of Education, Uganda Certificate of Education and Primary Education all these qualifications are prone forgery [1].

Every company needs to hire trained and academically qualified staff in order to provide quality service delivery [2].

Over the years, there have been a great need of easy and quick means of verifying the results/ degree certificate to reduce the level of certificate forgery and save the time of certificate verification which is done manually today and other methods are unreliable.

Currently, there is an increase in the production of fake academic certificates in Uganda [3] and all over the world due to some reasons behind forging academic certificates as major reasons include the desire to obtain employment in the current competitive job market, lack of uniform process and means to authenticity of academic and professional qualification by prospective employers [4] hence making companies incur financial and production losses as a result of hiring unqualified employees.

Forgery is making of false document with the intent to deceive and it is done in the following ways: An authentic, genuine or valid academic qualification as a qualification that is legally awarded by an academic institution that is legally authorized to award such qualification [4], Counterfeit degrees bear the names and signs of real and fully accredited universities or degrees from bogus or unaccredited universities, sold outright and that can require some academic work, but significantly less than comparable to legitimate

accredited programs and impersonation where one can use others documents this to leads to hiring of unqualified employees. Fake Academic certificates has negative effects which include; Leads to financial and productivity problems, devalues the institution where the qualification is purported to be obtained there, ruins the reputation of the legitimate students of a particular institution and poses a big threat to public safety through recruitment of unskilled people. Therefore, adopting Electronic Academic certificate verification system saves the huddles of manual verification method and other unreliable methods. This enables anybody or an employer to verify university certificate wirelessly, without having to go to the university physically to do so. All that is required is the fingerprint and the barcode scanner on the client side which involves comparing with the remote database of the university. If all the above are not fulfilled, the certificate will be taken as invalid.

1.2 PROBLEM STATEMENT

Currently, there is an increase in the production of fake academic certificates in Uganda [3] and all over the world due to desire to obtain employment in the current competitive job market, modern technology and the rise of the internet, lack of uniform process and means to authenticity of academic and professional qualification by prospective employers [4] making companies incur financial and production losses as a result of hiring unqualified employees.

The current available methods such as the manual process, Rfid based academic certificate authentication system, paper based document authentication using digital signature and online verification and others are unreliable having several weaknesses such as time consuming, prone to impersonation and lack of standardization [5].

This presents a pressing need for universities to adopt an automated system for easy verification of the academic certificates to solve this problem.

1.3 OBJECTIVES

1.3.1 Main objective

To design and implement Electronic Academic certificate verification system

1.3.2 Specific objectives

- i. To gather and analyze the information for the system requirements needed to design the system.
- ii. To design the barcode scanning module, finger print module, interfacing module, the database module and the internet module using the analyzed requirements for the entire system.
- iii. To implement the designed system.
- iv. To test and validate the system.

1.4 JUSTIFICATION

In order to reduce the current threat of forgery of academic certificate which possess financial and productivity losses to companies, academic institutions, legitimate graduates and the society need to verify academic certificate presented by the job candidates [1]. Proving an efficient and uniform process for prospective employers to verify academic certificate ensures that all employees in the organization are qualified and competent to carry their roles since the system is quick, effective, efficient and affordable.

1.5 SCOPE

1.5.1 Content scope

This system is only concerned in verifying the Degree certificate (transcript) for the Busitema University.

1.5.2 Technical scope

The Electronic certificate verification system has utilized client side containing the microcontroller, Barcode scanner, finger print module and the server side which contains the students' academic information in the database containing of the university.

1.5.3 Time scope

The system has been designed and implemented for a period of six months.

1.6 Limitation

- i. In case the thumbprint of the student is not enrolled in the database, the system displays nothing meaning that transcript becomes also invalid because the fingerprint returns the same error value for unrolled student and the unmatched thumbprint.

1.7 Assumptions

- i. Every student with his/her corresponding academic information should be registered in the university database in additional to the student's Thumbprint and the Barcode which is on the certificate.
- ii. Every transcript given to the student contains a unique barcode on the transcript.

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