SMART RFID BASED MANAGEMENT SYSTEM FOR CONVOCATION

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Sesi Pengajian

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Specially dedicated to:

my beloved mother

Fauziyah Binti Yusoff

my siblings

Noor Azillah Binti Abdullah Suhaimi

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ABSTRACT

Technology is created to make ease for humanity and have its own specific function to human being. Technology of Radio Frequency Identification (RFID) is implemented in management system of convocation session to reduce time usage as well as cost. RFID is a generic term for technologies that use radio waves to automatically identify people or objects. The system development will be advanced its performance through the concept of interchanging barcode to RFID tag and computerized system can make the convocation system more smooth and advanced related to reduce the work overlapping. System consists of RFID reader and tags that operates at frequency range of 125KHz. For the software development, visual basic is needed for implementation of the system to run the database of entire system. Each RFID tag will store different information of graduate. The interface that has been designed is used for output display. As graduate walk on the stage, screen display will appear live video, image, text and audio sound of graduate information. With the help of RFID technology and the development of the system, it is hope that this RFID convocation management system could be more efficient and systematic.

ABSTRAK

Teknologi dicipta untuk memudahkan kerja dan mempunyai fungsinya yang tersendiri dalam melicinkan kehidupan manusia. Oleh kerana itu, teknologi *"Radio Frequency Identification (RFID)"* diaplikasikan dalam Sistem Pengurusan Konvokesyen supaya lebih menjimatkan masa dan kos. Teknologi RFID ini menggunakan gelombang radio secara automatic untuk mengenalpasti sesuatu objek ataupun benda hidup. Pembangunan system ini dipertingkatkan lagi prestasinya dengan konsep penukaran system barkod kepada tag RFID secara berkomputer dapat menjadikan system konvokesyen lebih lancar serta dapat mengurangkan penindanan kerja. Sistem ini meliputi *RFID reader* dan tag yang beroperasi pada kadar frekuensi sebanyak 125KHz. Untuk pembangunan perisian, *visual basic* digunakan dalam perlaksanaan keseluruhan system ini untuk pangkalan data. Setiap tag RFID akan menyimpan data dari setiap graduan. Perisian yang dibina digunakan untuk tujuan paparan. Apabila graduan berjalan di atas pentas, paparan skrin yang akan muncul adalah video secara langsung, gambar, tulisan berserta suara yang berkenaan dengan graduan. Dengan adanya bantuan teknologi RFID dan pembangunan system ini, diharapkan Sistem Pengurusan Konvokesyen Berimplementasikan RFID dapat dilaksanakan dengan efisyen dan sistematik.

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LIST OF ABBREVIATION

RFID – Radio Frequency Identification

LMS – Library Management System

UHF – Ultra High Frequency

ETC – Electronic Toll Collection

EAS – Electronic Article Surveillance

DBMS – Database Management System

ODBC – Open Database Connectivity

RAD- Rapid Application Development

DSR – Data Set Ready

DTE – Data Terminal Equipment

DCD – Data Carrier Detect

RTS – Request To Send

CTS – Clear To Send

GUI – Graphical User Interface

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CHAPTER 1

INTRODUCTION

1.1 Project Introduction

Radio Frequency Identification (RFID) is such a demand technology nowadays. It can be implements in various applications such as automobile assembly industry, warehouse management and the supply chain network. It is kind of non-contact type automatic recognition technology of making use of a radio wave to carry on communication. It discerns the target and obtains its relevant data automatically through the radio frequency signal. The discerning work doesn't need manual intervention. RFID has great storage capacity, can read and write, and has strong penetrating power.

For this project, the technology of RFID is use for convocation management system, instead of using manual system or barcode system. It is compulsory for all graduates to have RFID tag that store their information. All graduate have to register for their convocation session and the data will be saved on database.

RFID reader will be place near the convocation stage where the graduate will walk through to get their scroll. These readers are connected directly to the Personal Computer (PC) unit via RS232 interface. PC will be used as monitoring system in this project. It works as the core project for controlling and monitoring the database and signal received to process the information signal from the registered tag.

First, graduates need to tap the RFID tag to RFID reader before walk on the stage. As the graduate tap the tag to RFID reader, it will scan the unique code of RFID tag and match the code with information in database. Then, the information of the graduate will be display on the main screen automatically and audio sound will announce the information of the graduate simultaneously when the graduates walk on the stage to get their scroll.

1.2   Problem Statement

In our country, most education institution use manual management system for their convocation session. They use manpower in handling the overall process and procedure of convocation session.

Because of this, many human errors and technical errors occur such as the MC"s announce the graduate"s name wrongly. Apart of that, the graduate"s information display on screen is not correct. This is due to wrong turn list, either the graduate or MC make a mistake.

Barcode system is the improvement made from manual system. However, this system is not systematic enough to manage the overall convocation session.

In order to avoid all these problems and inconvenience, this project will develops convocation management system that implements the technology of RFID. This will make the system become smooth and more systematic.

1.3   Project Objective

Focus of this project is about RFID system for convocation in order to have systematic and smooth convocation management system. The objectives of this project are:

i.   To create convocation management system using RFID.
ii. To avoid human technical error in handling convocation session.
iii. To make sure the screen will display the video, image, text and audio of graduate"s information.
iv. To reduce time consume and the use of manpower to manage and set up the session.

1.4   Scope of Project

In this project, the main part that been covered is develop convocation management system using RFID. In order to achieve the objective of the project, there is several scope of work that needs to be considered:

i.   This system use low-frequency passive RFID instead of active RFID that can be functioning without battery which is less expensive.
ii. Microsoft Visual Studio is used for the framework to structure, plan and control the interface.
iii. Microsoft Access is used to store the database and control the information received.

1.5   Thesis Outline

This thesis of Smart RFID Based System Management for Convocation contains of five chapters. The first chapter is an overview of the project in order to give more understanding about project. Chapter I include Project Introduction, Project Objectives, Problem Statement and Scope of Project.

Chapter II discuss about literature review. Research and study had been done to get more information about project. The information is collect through many sources and references. The research covers about convocation system and the application of RFID that have been implemented. From the research, there are lot of information that helps to complete this project and thesis.

Chapter III is about methodology of this project. Methodology gives explanation about the process of this project. This part is important in order to plan the procedure of the whole work.

Result and Discussion are explains in chapter IV. All the finding and problem about the project is discussed. The result and discussion are includes hardware and software part.

Chapter V explains about conclusion and recommendation. The conclusion covers about the project that has been done. Recommendation part is about the opinion and improvement of the project for future work.

CHAPTER II

LITERATURE REVIEW

2.1 Previous Study and Research

RFID technology is currently being used throughout many application systems over the world. There are also some innovations that had been done on management system to make it more systematic. Some research had been done to get the information about the main idea of the project. The idea of this research is based on the system that control in and out process.

2.1.1   Convocation Management System Using Barcode

Lately, the use of barcode was implemented in institution for convocation management system. This is an innovation from manual system. For this system, graduate will be given their own barcode printed on a piece of paper. This barcode stored information of graduate in the computer system. They have to scan the barcode using barcode scanner at counter before go to the stage to receive their scroll, this is to make sure their turn list. The turn list information will then connect to MC‟s control panel. As graduate walks on the stage to receive their scroll, MC will announce and display the graduate information based on the turn list. Figure 2.1 shows barcode scanner that is used to scan the barcode.

Figure 2.1: Barcode scanner