ATTENDANCE AND ACCESS CONTROL SYSTEM USING RFID SYSTEM

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This report is submitted in partial fulfillment of the requirements for the award of
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Dedicated To my beloved mother, my late father, my family and members of the electronics academia.

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ABSTRACT

Based on the leading technology of microwave band long range radio frequency identification, this system is design to monitor attendance and control the access system using RFID system.

This system can completely control the access to the area with automatic identification process and automatic attendance record system, with each vehicle is equipped with an active sticker/ tags which is previously registered on the system. The active sticker will send microwave signal constantly to the reader.

When the reader installed near the gateway has receives the signal from the active sticker/tags, it will transmit the signal to the gateway controller (PIC 16F876A).

Then the RFID system will verify the validity of the sticker. If valid, the time of arrival is recorded as part of the attendance and the relay on the controller will drive the gate open and permit the vehicle's access.

If the sticker is not valid, microcontroller will not function and the gate will remain closed. A camera will then take the picture of the affected vehicle. The images are saved in the database.

A computer can be installed at the gate guard's room to supervise the vehicles' in/out, the time of arrival, the department of which the owner of the vehicle works in and the photograph of the vehicle.

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ABSTRAK

Berdasarkan teknologi gelombang mikro sistem ini direkabentuk untuk memantau kehadiran dan mengawal akses menggunakan sistem RFID.Sistem ini aka n sepenuhnya mengawal aliran keluar masuk dengan process mengenalpasti secara automatik dan mengambil masa kedatangan secara automatik. Setiap pekerja/ pelajar, ataupun orang dalaman akan dibekalkan dengan kad yang perlu berdaftar terlebih dahulu pada pangkalan data..Kad tersebut bertujuan sebagai kad pengenalaan diri yang menunjukkan pemegang kad tersebut merupakan orang dalaman kawasan tersebut.Pelekat akan menghantar isyarat gelombang mikro terus menerus untuk pembaca.

Ketika pembaca yang dipasang berhampiran pintu pagar telah menerima isyarat dari kad yang aktif, ia akan menghantar isyarat ke pengawal pintu pagar (PIC16F876A).

Pembaca RFID akan mengesahkan kesahihan kad tersebut. Jika sah, waktu kedatangan direkodkan sebagai sebahagian daripada kehadiran dan geganti pada pengawal akan mendorong pintu terbuka dan membolehkan kenderaan masuk.

Jika kad tersebut tidak sah, pengawal tidak akan berfungsi dan pintu tidak akan terbuka.. Sebuah kamera akan mengambil gambar kenderaan yang tersebut. Gambar akan disimpan di dalam pangkalan data..

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TABLE OF CONTENTS

CHAPTER	DESCRIPTION	PAGE
	PROJECT TITLE	**i**
	APPROVAL FORM	**ii**
	PAGE OF ADMISSION	**iii**
	SUPERVISOR CONFIRMATION	**iv**
	DEDICATION	**v**
	ACKNOWLEDGEMENT	**vi**
	ABSTRACT	**vii**
	ABSTRAK	**viii**
	TABLE OF CONTENTS	**ix**
	LIST OF FIGURES	**xiii**
	LIST OF TABLE	**xv**
	LIST OF APPENDICES	**xvi**
	LIST OF ABBREVIATIONS	**xvii**
1	**INTRODUCTION**	
	1.1 Project Introduction	1
	1.2 Project Objectives	3
	1.3 Statement of Problem	3
	1.4 Scope of project	3
	1.5 Methodology	4
	1.6 Report Structure	7
2	**LITERATURE REVIEW**	

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2.1 Introduction 8
2.2 Attendance And Access Control System
Using RFID System Concept 9
2.3 Identification System 10
2.3.1 Automated fingerprint identification 11
2.3.2 Barcode system 12
2.3.3 Radio Frequency Based Identification(RFID) 12
2.3.3.1 RFID Reader 12
2.3.3.2 RFID Tag 14
2.4 Existing Attendance System 14
2.4.1 RFID Based Attendance System
(AT89S52 + RFID) 15
2.4.2 Time Attendance System by Tutis
Technologies Limited 15
2.4.3 Smart Clock 16
2.4.4 Automation of Time and Attendance
using RFID Systems 17

3 **COMPONENT AND SOFTWARE OVERVIEW**

3.1 Introduction 19
3.2 Chosen Components 19
3.2.1 Hardware overview 20
3.2.1.1 Microcontroller 22
3.2.1.1.1 PIC16F876A by
Microchip 23
3.2.1.2 PIC programmer 26
3.2.1.2.1 UIC00BUSB ICSP
PIC Programmer 26
3.2.1.3 Power Supply 27
3.2.1.3.1 Voltage Regulator 28
3.2.1.4 RFID 29
3.2.1.4.1 IDR-232 RFID Reader 29

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3.2.1.4.1.1 RFID-IDR 232N setup 30

3.2.1.4.2 RFID Card 34
3.2.1.5 LCD Display 34
3.2.1.6 Others Components 35
3.2.1.6.1 Capacitors 35
3.2.1.6.1.1 Polarised capacitors (large values, 1μF) 35
3.2.1.6.1.2 Unpolarised capacitors (small values, up to 1μF) 36
3.2.1.6.2 LED 38
3.2.1.6.3 Resistors 39
3.2.1.6.4 Transistors 40
3.2.1.6.4.1 Types Of Transistor 41
3.2.1.6.4.2 Connecting 41
3.2.1.6.5 Crystal oscillator 42
3.2.2 Software Overview 42
3.2.2.1 RFID-IDR-232N Protocol 42
3.2.2.2 The C language 43
3.2.2.3 Microsoft Visual Basic 44
3.2.2.3 CCS MPLAB IDE 45

4 METHODOLOGY

4.1 Procedures in Designing the Project 46
4.2 PCB Board Development 48
4.3 Software design 49
4.3.1 Initialization of Program 49
4.3.1.1 Ports Configurations 50
4.3.1.2 Preassigned ID 50

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5	**RESULT AND DISCUSSION**		
	5.1	Introduction	52
	5.2	Attendance And Access Control System Using RFID System Test Result	51
	5.3	Test On System	51
	5.4	The Database for Attendance and access control system using RFID system	5
		5.4.1 First step	56
		5.4.2 Second Step	56
		5.4.3 Third step	57
6	**CONCLUSION AND RECOMMENDATION**		
	6.1	Conclusion	58
	6.2	Problems	58
	6.3	Recommendations	59
		6.3.1 Hardware Improvement	59
		6.3.2 Software Improvement	59
REFERENCES			60
APPENDIX A			**61**
APPENDIX B			**68**
APPENDIX C			**70**

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LIST OF FIGURES

NO.	TITLE	PAGE
1.1	Flow chart of Attendance And Access Control System Using RFID System	5
2.1	A fingerprint scan	9
2.2	An example of barcode	10
2.3	An example of long range RFID Reader and its applications	11
2.4	A Times Attendance System device	15
2.5	A Smart Clock using magnet stripe as identification.	16
3.1	Block diagram of Time Attendance And Access Control System Using RFID System	20
3.2	The Hardware Circuit	21
3.3	The Hardware circuit with RFID	21
3.4	Block Diagram of Microcontroller the microcontroller.	22
3.5	The PIC16F876A microcontroller	24
3.6	The PIC16F876A pin diagram	25
3.7	Connection of cable to box header of UIC00B and box header of development board	27
3.8	Schematic circuit of 5V DC supply.	28
3.9	LM7805	29
3.10	IDR-232 RFID reader	30
3.11	Connect RJ11 cable connector into RFID Reader	31
3.12	The communication line has to be connected to serial port of PC	31
3.13	Hyper Terminal	32
3.14	The protocol of the RFID Reader. The extra byte of data at the first and the last of tag ID's	33

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3.15	The diagram of LCD display	35
3.16	Symbol Of Capacitor And Example For Polarised Capacitor	37
3.17	Example And Symbol For Unpolarised Capacitor	37
3.18 a)	Light Emmitting Diode	38
3.18 b)	The Symbol of LED	38
3.19	Transistor	40
3.20	Moss Common Case Styles Of Transistor	41
3.21	Microsoft Visual basic 2010 start page	44
4.1	Work flow in designing Attendance and Access Control System Using RFID System	47
4.2	Completed Circuit Routing	48
4.3	The Flow chart of the process inside microcontroller	49
5.1	Code Under MPLAB IDE	52
5.2	Attendance And Access Control System Using RFID System Standby Mode.	53
5.3	Identifying Sample 1	54
5.4	Identifying Sample 2.	54
5.5	Identifying Sample 3.	54
5.6	the system display . CAMERA ACTIVATING". "WAITING GUARD TO OPEN THE GATE	55
5.7	Security log in.	56
5.8	Password And The Database Success	56
5.9	View the database	56

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LIST OF TABLES

NO.	TITLE	PAGE
3.1	Table pin name and application	25
3.2	Example of wire color output	33
3.3	Pin connections of LCD Display.	35
3.4	The Resistor Colour Code	39
4.1	ID number and the Plat number.	50

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LIST OF APPENDICES

NO	TITLES	PAGE
A	Code of program	61
B	Schematic	68
C	PIC16F876A datasheet	70

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LIST OF ABBREVIATIONS

PIC	Programmable Integrated Circuit
PC	Personal Computer
IDE	Integrated Development Environment
PSM	Projek Sarjana Muda
LCD	Liquid Crystal Display

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CHAPTER 1

INTRODUCTION

1.1 Project Introduction

Attendance is define as the act of being present (at a meeting or event etc.), the frequency with which a person is present or the number of people that are present. Attendance is one of the important factors that affect the staff performance in work.

Attendance and access control systems are used by companies of all sizes to record working hours of employees in order to pay their wages. Some companies have a requirement to record the number of hours spent on specific tasks in order to evaluate the jobs accurately. This is referred to as job costing.

Companies with large number of employees might need to install several clocking points in order to speed up the process of getting all employees to clock in or out quickly or to record activities in dispersed locations.

The suitable solution for this problem is by design a system that will record attendance automatically. In this project, Radio Frequency Identification (RFID) system used to record student attendance automatically

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These actions require a more systematic and advanced monitoring system. The suggested monitoring system will use RFID as the main technological driver. RFID (radio frequency identification) is a new technology that incorporates the use of electromagnetic or electrostatic coupling in the radio frequency (RF) portion of the electromagnetic spectrum to uniquely identify an object, animal, or person.

An RFID system consists of three components, an antenna and transceiver and a transponder or known as tag. The antenna uses radio frequency waves to transmit a signal that activates the transponder. When activated, the tag transmits data back to the antenna.

RFID technology differs from bar codes. RFID can read the tag using RF, meaning that the RFID reader can be read from a distance, right through your clothes, wallet, backpack or purse. Besides the RFID tag consist of unique identification (ID) for each tag.

The technology used in RFID has been around since the early 1920s. In our country, this technology already been used for several years in certain places. Some places, they prefer to used Barcode which is cheaper than RFID. Technology spread very fast. In few years later, there is not impossible if RFID will replace the barcode system in today's life.

This project will used ID card as RFID tag. The identification number on the card will indicate the information of user. Each ID number has pre assigned in the database. The data in this context consists of the name, department, the ID number and car plat number. This project is developed to track the number of attendance of people in the desired workplace. This method is more effective to prevent problem in process getting attendance manually.

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1.2 Project Objectives

This project is attempt to::

1.1.1 Design the attendance and access control system using the RFID system with extensive supervision.

1.3 Statement Of Problem

Currently the method that companies use to control the flow of people coming in and out is very lacking. People (employees or outsiders) can go in and out of the company's premises with minimal supervision. Important records such as picture and time of entry or exit are not properly managed or recorded. The attendance system also has the absolute potential of wasting valuable time since the employees need to line up and wait their turn to tally up hand-written time cards or punch clock cards manually.

1.4 Scope of project

The project is created in based on the scope. The scope is important to ensure the manufacturing of the project according as planned. However, this scope can be changed to obtain better results. Among the initial scope set is:

1.4.1 This system can be used in big companies, industries, colleges, schools, etc where there are many numbers of candidates available.

1.4.2 Total width of the passage should be 4~6m, one entrance and one exit. Example like UTeM.

1.4.3 There's no need to stop if necessary. The passing speed should be under 60 km/h.

1.4.4 The identifying process is full automatic, which can avoid the problem that driver must open the window to punch the card in bad weathers.

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1.5 Methodology

This project began with the research of the proposed title. The result of that research is then discussed with the supervisor. Once we have agreed with the supervisor on the title, the background study of this project is searched. Here, theories on this project are found. When the project has progressed thus far, the process of designing the system can be done. Components can now be chosen and the control elements programmed using the desired software. An interface device should also be chosen. The correct software is chosen to comply with the control elements. The flowchart of the system shown below in figure 1.1

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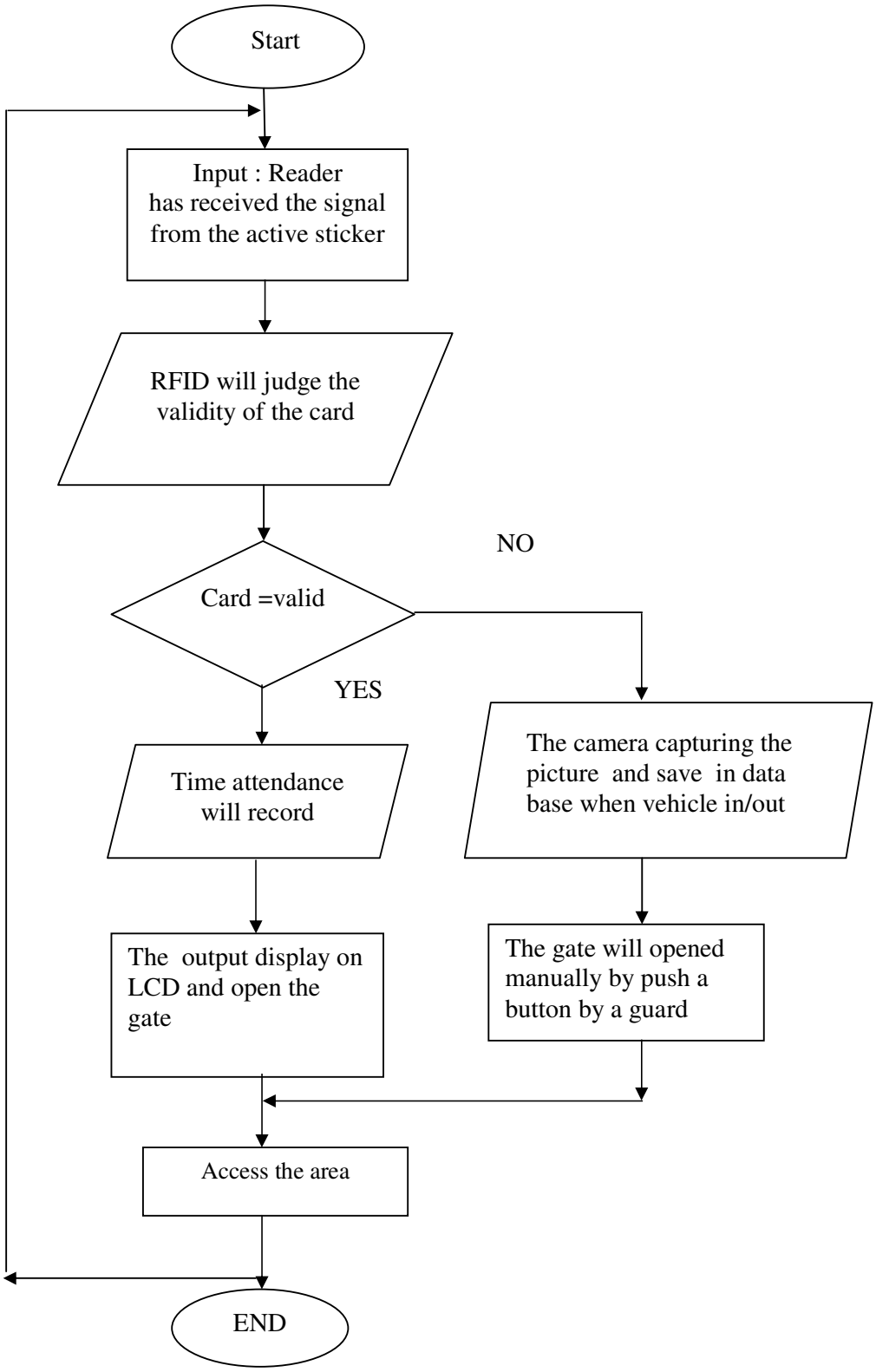

Figure 1.1: Flow chart of Attendance And Access Control System Using RFID System

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1.6 Report Structure

This report shall explain how this project came to be. What is done thus far is compiled in this report. All of contents of this report are useful to fast pacing this project to the next level. So it is important that the contents of this report to be thoroughly researched and put into place.

Chapter 1 introduces the project as a whole. The early and basic explanations are mentioned in this chapter. This chapter consists of the project's objectives, statements of problems, scope of work, and the simplified methodology.

Chapter 2 is literature review. Past projects or researches are taken into consideration when completing this chapter. The ways those projects and researches are done are compared with what this project is all about. These comparisons are done to understand what this project is all about and where it stands.

Chapter 3 explain on the components used in this project. It is divided into two parts; the hardware and the software. Each part explains the components, software and programmes used in this project.

Chapter 4 explains how this project came to be. It is the methodology. The ways and procedures in which this project is done. This chapter will enlighten the part most important of all, the flow this project. What is researched and what needs to be done is explained in this chapter.

Chapter 5 concentrates on the result and discussion of this project. What has been done thus far is explained in diagrams and written programs. Why the results are like so will also be explained. The reasons and setbacks that cause the project to be halted are discussed in this chapter. The expected results will also be mentioned in this chapter.

Chapter 6 is the final chapter in this report. The conclusions and recommendations are placed in this chapter. The conclusion is the final overview of this project. In other words, the conclusion is the summary of what has been done

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throughout this project. After the project is done, recommendations are made for the betterment of this project or any expansions or upgrades that might be done in the future.

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