

WIRELESS ATTENDANCE IDENTIFICATION
SYSTEM BASED FINGERPRINT

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UNIVERSITI MALAYSIA PAHANG

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This thesis is submitted as partial fulfilment of the requirements for the award of the
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SUPERVISOR'S DECLARATION

I hereby declare that I have checked this thesis and in my opinion, this thesis is adequate in terms of scope and quality for the award of the degree of the Bachelor Degree of Electrical Engineering (Hons.) (Electronics).

Signature : 
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Date : 15/12/2016

STUDENT'S DECLARATION

I hereby declare that the work in this thesis is my own except for quotations and summaries which have been duly acknowledged. The thesis has not been accepted for any degree and is not concurrently submitted for award of other degree.

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To my beloved parents, siblings and friends

*“Who were always pray, support and encourage me throughout the course of this
project and thesis”*

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LIST OF ABBREVIATIONS

GUI	Graphical User Interface
UART	Universal Asynchronous Receive/Transmitter
TX	Transmitter
RX	Receiver

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ABSTRACT

My project aim is to design an attendance system which could effectively bring more convenience for student. Usually, the attendance is marked after student identification. The identification is based on fingerprint recognition. Fingerprint is one of a kind of biometric identification and it can be considered as a best and fastest method for identification system. This is because they are unique for every person, secure and the most important one is it last of a forever. In this system, it consists of two phase, enrollment and authentication. During enrollment, the user need to place on the fingerprint twice to store the fingerprint data into database wirelessly along with the user's identity as a template for the subject. During authentication phase, the system will capture the user's fingerprint and compared it with the template in database to determine a match before attendance is made. The matching process will be shown in GUI system in computer which can display the information of the user. There will be action executed when the authentication is succeeded or failed. The authorized user can also examine the database anytime since the entire students' attendance will be recorded. Generally, this system is designed to bring more convenience to user by recording attendance in more efficient way with relatively low costs design, ease of installation and also user-friendly interface.

ABSTRAK

Matlamat projek saya adalah untuk mereka sistem kehadiran yang berkesan yang boleh membawa lebih banyak kemudahan untuk pelajar. Biasanya, Kehadiran akan ditandakan selepas pengenalan pelajar. Pengenalan itu adalah berdasarkan pengesanan cap jari. Cap jari adalah salah satu jenis pengenalan biometrik dan ia boleh dianggap sebagai satu kaedah terbaik dan terpantas untuk pengenalan sistem. Ini adalah kerana cap jari adalah unik untuk setiap orang, selamat dan yang paling penting ianya boleh simpan selama-lamanya. Dalam sistem ini, ia terdiri daripada dua fasa, pendaftaran dan pengesahan. Semasa pendaftaran, pengguna perlu meletakkan cap jari yang dua kali untuk menyimpan data cap jari ke dalam pangkalan data tanpa wayar bersama-sama dengan identiti pengguna sebagai templat untuk subjek. Semasa fasa pengesahan, sistem ini akan tangkap pengguna cap jari dan berbanding dengan template dalam pangkalan data untuk menentukan pemadanan sebelum kehadiran dibuat. Proses yang sama akan ditunjukkan GUI sistem dalam komputer yang boleh memaparkan maklumat pengguna. Akan ada tindakan yang dilaksanakan apabila pengesahan itu berjaya atau gagal. Pengguna yang dibenarkan boleh juga memeriksa pangkalan data bila-bila masa kerana kehadiran pelajar keseluruhan akan direkodkan. Secara amnya, sistem ini telah direka untuk membawa lebih banyak kemudahan kepada pengguna dengan merekod kehadiran dengan cara yang lebih cekap dengan rekabentuk agak rendah kos, memudahkan pemasangan dan juga memudahkan penggunaan pengguna.

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND STUDY

Attendance is an evidence of a person's presence. It now exists in everywhere such as institution, organisations, hospital, etc. It is so important nowadays in institution because penalty will claimed for the student that attendance is below 80 percent. From early days until now, most of the attendances in institution are still recorded manually by calling out the name one by one that carried on by lecturer. This seems to be wasting time especially when the number of student is huge. There is also the other way that is the lecturer will pass the attendance sheet to student one by one to sign beside their name. However, this way will lead to one drawback which is the student can help to sign for the student that are absence. Therefore, the only one solution to overcome this kind of problem is to manage the attendance automatically. Currently, the magnetic card is relatively common way to take attendance but magnetic care is fragile and easily lost. In order to avoid this issue, wireless attendance identification system based fingerprint module is introduced. Fingerprint has a lot of pros, such as unique, last forever, anti fake and everyone know how to use it. Basically, the fingerprint module is attached with Arduino UNO microprocessor and it will capture the fingerprint data and store into its own database. The Arduino microprocessor is control by the GUI (Graphical User interface) which created in computer. The interaction between GUI and Arduino microprocessor is wirelessly. GUI has a lot of advantages, it is easy to use especially for beginner, and unnecessary to learn complicated commands to run GUI and let you exchange data between different software applications.

In a nutshell, this system is to provide a more efficient way to manage attendance which allow user to record attendance faster and store in a safer place. With the overall concept of listing above, it is believed that the project of wireless attendance

identification system based fingerprint module will be able to solve problems regarding to low cost, high efficient and ease of installation design.

1.2 PROBLEM STATEMENT

Attendance is a state of being present at a place especially institution. Attendance is very important in institution. It represent how puncture is a preson are in real life or working environment. From early until now, the attendances are still taking by our own as we sign on the name list that lecturer prepared and submit after signed. In this circumstance, some student may lead to help others absence student to take their attendance. Therefore, an accurate system is needed to be inventing to solve this problem. In order to have an accurate system, an ID is necessary, it means every student will have their own ID that can differentiate each student identity. Currently ID card is already introduced in our university, but ID card is perishable and easily lost.

Thus fingerprint biometric identification is introduced. Fingerprint is unique for everyone, so it is safe to use and also give accurate identity. However, this system will need a lots of wire to connect if it is installed in every class in institution. Therefore, the wireless communication is needed to interact between the system and the computer.

Lastly, we want the system to be easy to use that everybody in the world can learn how to use this system easily, we will create an user friendly GUI for this system.

1.3 PROJECT OBJECTIVE

The main objective for the project is to demonstrate a wireless attendance identification system that can automatically acquire our attendance. In order to accomplish the objective, there are situations need to be considered:

1. To develop a verification system on attendance marking
2. To acquire the data using fingerprint module and store the attendance in database
3. To display GUI system via computer
4. To interface Arduino Microprocessor with computer wirelessly

1.4 PROJECT SCOPE

The project consists of software and hardware part. The assembly of the hardware is completed. The installation for the software like Arduino IDE, Microsoft visual basic 6.0 and Microsoft access is needed for the project in order to achieve the goals.

- Create two databases that have relation in Microsoft access
- Programmed the Microsoft Visual Basic for Creating the graphical user interface
- Programmed the Arduino IDE software
- Try different WIFI module in wireless communication among Arduino UNO microprocessor, Microsoft access and the database.
- Analyze the signal sent by WIFI module to determine which is the most suitable one
- Stimulate and run the hardware
- Record and view the database in Microsoft access.

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