

NETWORKED BIOMETRIC AUTHENTICATION

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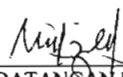
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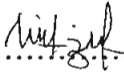

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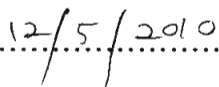
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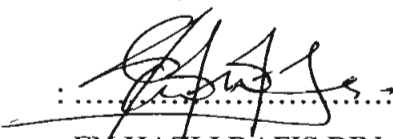
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To my beloved parents, family, fellow friends and supervisor, thanks for all supports in
successfully producing this project

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ABSTRACT

The project is to recognize fingerprint image and match within the database. The database system will be created using a Microsoft Visual Basic 2008 together with Microsoft Access. A connection need to be established between the fingerprint devices with the database system. The database will contain the information of the students like a name, matrix number, course, year of studied and faculty. The connection between device and the system will required a programming code and a third particular software which is called Software Development Kit (SDK).The objectives of the project is a create a database system and link the database to the fingerprint device. This project is basically to enhance the security in attendance system. It will be used to overcome the falsify signature between the student. This project will use a Microsoft Fingerprint Reader that is from the Mouse Fingerprint Scanner. The successful of this is when the exactly information of the student appear during the fingerprint scanning process.

ABSTRAK

Projek ini adalah untuk mengenalpasti gambar cap jari dan padankan cap jari tersebut dengan pengkalan data. Sistem pengkalan data akan dibina dengan menggunakan program Microsoft Visual Basic 2008 bersama-sama dengan program Microsoft Access. Alat pengesan cap jari akan dihubungkan dengan sistem pengkalan data yang dibuat. Sistem pengkalan data mengandungi maklumat seperti nama pelajar, nombor matrik, kursus yang diambil, tahun pengajian dan fakulti. Proses menghubungkan pengkalan data dengan alat pengesan cap memerlukan sistem program dan juga menggunakan program bantuan ketiga iaitu Software Development Kit (SDK). Objektif projek ini adalah untuk membuat sistem pengkalan data menghubungkannya dengan alat pengesan cap jari. Projek ini dijalankan untuk meningkatkan sistem keselamatan dalam kehadiran pelajar. Projek ini juga akan menangani masalah penipuan tandatangan di kalangan pelajar. Projek ini akan menggunakan alat pengesan cap jari jenis tetikus pengimbas cap jari. Projek ini dikatakan berjaya sekiranya informasi yang tepat tentang pelajar tersebut yang disimpan dalam sistem pengkalan data yang dipaparkan semasa proses pengesanan cap jari yang dijalankan.

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CHAPTER I

INTRODUCTION

The main purpose of producing this document is to precisely report to design an attendance system at class using fingerprint created by Microsoft Visual Basic software. The project is to recognize fingerprint images and match within the database. For this chapter is included about project introduction, objectives, problem statement, scope, methodology, and report structure of the project.

1.1 Project Overview

Biometrics is the science and technology of measuring and analyzing biological data. The term is derived from the Greek words “Bios” for life and “Metron” for degree. In information technology, biometrics refers to technologies that measure and analyze human body characteristics, such as fingerprints, eye retinas and irises, voice patterns, facial patterns and hand measurements, for authentication purposes. Authentication by biometric verification is becoming increasingly common in corporate and public security systems, consumer electronics and Point of Sale (POS) applications. In addition to security, the driving force behind biometric verification has been convenience.

The Networked Biometric Authentication System is also one of the projects using this biometric technology for authentication and verifies purpose. The networked from this project is a combination of software and hardware to communication their function. In this project the hardware is referring of the device that is using for fingerprint recognition as input device while the software here is referring for a system that is built for application as display output. The application that is build for this project is an Attendance System for student. The application will required to create a database first where all the information are stored within it. Name, matrix number and the course of the student is the information that will be store in database. In order creating the system, a programming codes is needed and the software that been use for this project is Microsoft Visual Studio, while the database is created by using Microsoft Access. The system must be a friendly user and not to difficult in handle the system.

The system will do two main tasks which are the first ones is to store the information in the database together with the fingerprint of the user. And the second task is the system must be able to retrieve the information from the database and show it correctly. The fingerprint must match accurately with the information of the user and must recognize it. The hardware that represent for this project is the Fingerprint Images Scanner Device. The device will utilize with the system that are created.

The program also required a Software Development Kit (SDK) to make the connection establish with the hardware. This project is basically a simple of Attendance System in order to show the system that required the database. There are many other application system that are using the database system and mostly for the authentication purpose. The system is not limited for the students only but also can be applied for the company and school security system.

There are two basic parts in process of fingerprint authentication. The first part is software. This project is designed for use Microsoft Visual Basic 2008 to create the Fingerprint Graphic User Interface (GUI). The second part is fingerprint device such as system fingerprint capture, system communication, system bus device, system memory,

system electronic, and so on. The input and output of attendance system as shown in Figure 1.1

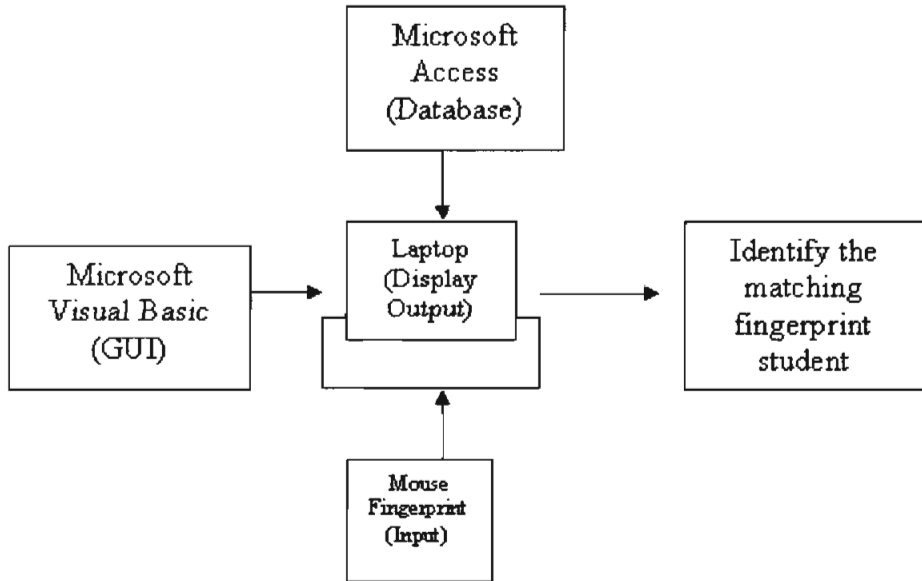


Figure 1.1: Block Diagram of Attendance System

1.2 Project Objectives

This main objective of this project is to study the technique concept, performance, and process a Network Biometric Authentication. So, it must be designed software and hardware to communication the system which has the input biometric as fingerprint and output on the laptop display to identify the fingerprint. The objective of this project is to develop a database system using Microsoft Visual Basic 2008 and Microsoft Access with low cost. This project apply knowledge about the connection establish between the database and input device (fingerprint scanner).It enable student is fast granted access the attendance signature via some form of biometric authentication.

1.3 Problem Statement

The university is still using a signature for attendance and this is not very efficient because the student still faking the signature and sign for their friend. This problem is normally trend for most of the student to absent the class. This is frequently happen and this kind of method also wasting time. Therefore, the attendance system needs to be improved in other to solve this problem. The fingerprint recognition is more efficient that the current security, passwords and authorization features. The fingerprint recognition already applied in many state for an official task such as a driving schools licenses, bank security system and many more. In addition, the application of this project can also been applied for students class attendance.

This fingerprint system is still considered as inexpensive and the effective ones because easy to apply and systematic. Using this fingerprint method will make sure that students attend the class and there will be more falsity of the signature. This project also can be applied during the final exam for take the attendance. This technique is more efficient in order to check the list of student that going to take the rest. The database is an ideal way because its will provide with all the information of the student. Furthermore, this database can be add and delete information easily under an authorized person only.

1.4 Scope of Project

The scope of this project is developing the Attendance Management System for student using the mouse fingerprint scanner by using Microsoft Visual Basic 2008. To make this reader to communicate with the Microsoft.NET framework, the GrFingerXCtrl Class toolbox provided by Griaule is used. Through this project, the research of biometric fingerprint algorithm will be explored widely. Besides that, Microsoft Visual Basic 2008 programming language with extended Graphical User

Interface (GUI) will be use as an interface for design program. The design program includes the basic personal information database.

The scope of the project is to create a database system and utilize with the Fingerprint Image Scanner Device. The database will be create using Microsoft Visual Studio and connected with the device using a Software Development Kit (SDK). The scope of the project is definitely for the chosen brand of Fingerprint device. The manufacturer of the fingerprint device is limited for Microsoft Fingerprint Reader. The database cannot be claimed as universal and cannot be used with the different brand of fingerprint device. The system is basically a direct identification and cannot be done via wireless. The scope of the project can be divided into software and hardware.

1.5 Project Planning

Grant chart is most important in this project attendance system because it as guideline to collect information for providing steps of build the project. Grant Chart is divided into two periods which consists Projek Sarjana Muda I and Projek Sarjana Muda II. This planning will be explained about the all the activities while to development system from initial to finish the project. All activities can described as shown in Table 1.1.

1.6 Structure of Report

Generally, this report contains of five main chapters. Those five chapters are start with the introduction, literature review, methodology, result discussion and end with conclusion and suggestion. Introduction explains about objectives to build the project, problem statements that yield the idea of the project, work scope, methodologies and report structure of the project. The literature review is more about research that have been conducted to the topic that related with this project. Its will include about the

software and hardware that is been used for this project. Every facts and information which are found from any source will compared and the best method will be chosen based from the information. Methodologies is a step involve to developed this system will be explained in this chapter. It consist are project idea, block diagram, software method design and graphical user interface. It will start from studying of the project and process in doing this project whether in coding a program or utilize the hardware. Result and Discussion contains result analyze and preliminary result for building this project. There are consisting of the progress for the project. There will be two phase for the project and this chapter will state the progress of the project. Finally, conclusion and recommendation contains a suggestion for the project. The upgrading for the project will also stated in this chapter. There will also a project planning for the project that has been discussed in this chapter. All chapters will separate in sequence in order to give view for reader.

CHAPTER II

LITERATURE REVIEW

A literature review is a body of text that aims to review the critical points of current knowledge and or methodological approaches on a particular topic. This project combined between hardware and software before running the attendance system using fingerprint scanner. The information was carried out from various sources such as journals, articles, books, technical report and all the related topics. This is done as to gain the basic knowledge about electronic system.

2.1 Biometrics Definition

Biometrics is automated methods of identifying a person or verifying the identity of a person based on a physiological or behavioral characteristic. Examples of physiological characteristics include hand or finger images, facial characteristics, and iris recognition. Behavioral characteristics are traits that are learned or acquired. Dynamic signature verification, speaker verification, and keystroke dynamics are examples of behavioral characteristics. Biometric authentication requires comparing a registered or enrolled biometric sample against a newly captured biometric sample.

Biometric recognition can be used in identification mode, where the biometric system identifies a person from the entire enrolled population by searching a database for a match based solely on the biometric. For example, an entire database can be searched to verify a person who is registered user of university library or not. A system can also be used in verification mode, where the biometric system authenticates a person's claimed identity from their previously enrolled pattern. This is also called "one to one" matching. In most computer access or network access environments, verification mode would be used. A user enters an account, user name, or inserts a token such as a smart card, but instead of entering a password, a simple touch with a finger or a glance at a camera is enough to authenticate the user [1].

2.2 Types of Biometrics

2.2.1 Fingerprints

The patterns of friction ridges and valleys on an individual's fingertips are unique to that individual. For decades, law enforcement has been classifying and determining identity by matching key points of ridge endings and bifurcations. Fingerprints are unique for each finger of a person including identical twins. One of the most commercially available biometric technologies, fingerprint recognition devices for desktop and laptop access are now widely available from many different vendors at a low cost.

2.2.2 Face Recognition

The identification of a person by their facial image can be done in a number of different ways such as by capturing an image of the face in the visible spectrum using an inexpensive camera or by using the infrared patterns of facial heat emission. Facial recognition in visible light typically model key features from the central