

SMART STUDENT ATTENDANCE SYSTEM

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Dedicated to:

My beloved parents and friends for giving me unconditional love and care.....

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ABSTRAK

Projek ini adalah untuk membina sebuah sistem kehadiran pintar yang berupaya mengesan kehadiran pelajar secara efektif. Tujuan projek ini dijalankan adalah untuk menghasilkan dan membangunkan satu sistem untuk merekod data ke dalam sistem pangkalan data dan menggunakannya untuk menganalisis maklumat yang lain. Di samping itu, projek ini mempunyai tujuan khas untuk mengira maklumat pelajar dan menghasilkan notis amaran kepada pelajar yang tidak hadir. Projek ini menitikberatkan kepada rekabentuk perantaraan dan perinteraksian dengan '*source code*'. Perisian ini berkomunikasi dengan perkakasan dengan menggunakan PS2 atau komunikasi bersiri. Microsoft Visual Basic 6.0 telah digunakan sebagai program komputer utama untuk mencipta antaramuka manakala pangkalan data dihasilkan dengan menggunakan Microsoft Access. Untuk merealisasikan projek ini suatu kenyataan, kajian yang mendalam dilakukan mengenai pengimbas kodbar dan 'RFID', penggunaan Visual Basic dan Microsoft Access. Kajian yang asas dan utama yang digunakan dalam projek ini termasuk kajian latar belakang, pembangunan sistem, ujian lapangan dan penghasilan program.

ABSTRACT

This project is to build a smart student attendance system which has the capability to track student attendance effectively and efficiently. The purpose of this project is to create and develop a software system that automatically store data in database and use it to analyze for further information. Besides that, this project has special purpose to calculate the student data and provide early notification to non attendance of students. This project requires careful interface design and precise interaction with source code. This software will allow the communication with hardware using PS2 or serial communications. Microsoft Visual Basic 6.0 is used as main software to create the interface while database created by using Microsoft Access. In order to realize this project, extensive background studies have been done on barcode/RFID reader, visual basic interface and Microsoft Access. The basic and important methodologies that have been used in this project are literature review, system development, field testing and build up software. This project can be implemented in universities for systematic student management.

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CHAPTER I

INTRODUCTION

Chapter 1 starts with the introduction and background of the project. It is followed by objectives, scope of the project and problem statements. Research methodologies and organization of the thesis are presented in the last of the part.

1.1. Introduction

The attendance system is a comprehensive, user-friendly development environment to evaluate student's effectiveness. The Attendance System is designed to answer the needs of the users that want daily attendance records or period-by-period / excused or unexcused attendance records. The attendance system is fast and a key factor to track student absences, since there should be fewer of them than presences. An attendance record is stored for a student who is present and absent. This is the easiest approach in terms of record entry. I have chosen the project of Smart Student Attendance System which is a student time and attendance tracking software system specifically designed to replace punch cards and attendance book sign in/out processes.

1.2. Background of Project

Smart Student Attendance System is a quick, easy and accurately tracking software system. It can track the attendance effectively and efficiently. The purpose of this project is to develop system that automatically acquire or store and calculate the student data and attendance into PC. It consists of barcode reader/RFID as the sensor to acquire the student's attendance through proximity access metric cards. A complete database must be built and can be update from time to time. This system will be design to hold all students' details including student's name, ID number, Photo Images, the subject code of a subject for subject based attendance and more. Additionally, from the system, lecturer will know the percentage of attendance for every student and the warning sign will appear on the system if the student's absence >20%. This System assigns a unique card number for each student. When student places the card to the barcode reader /RFID, it notes down the time, date and can be interfaced with one PC through the serial port. The interface software is responsible for attendance record processing and it produces attendance reports in the preferred format. Microsoft Access issued to recognize at from input device with a data from database. If data is true, then data will be displayed in software created with Microsoft Visual Basic 6.0. The software can be develop using VB and communicate with barcode reader/RFID using PS2 or serial communications. It is a flexible system and comes with an easy-to-use system that will let us start using the program right away. A stand alone system also has been created which means system can be operated even though barcode reader/ RFID is not functioning.

1.3. Objective of Project

The purpose of this project was to create and develop a database system for students attendance based on barcode/RFID reader and provides the ability to receive and transmit it as record. The objectives of the project are;

1. To allow quick, easy and accurately track students time, attendance, punctuality and leave
2. To increase accuracy, decrease student's absence and help improve universities profitability.
3. To generate attendance reports conveniently on their computer and save time. With this attendance system, lecturers can then perform random checks effectively and efficiently. Therefore, lecturers can instantly check who's not in, who's in and who's out today.
4. To gain control of university's most precious asset-student's attendance.
5. To improve and maintain systematic attendance system by keep precise track of attendance.

1.4. Scopes of Work

The project compromises the building of software Visual Basic 6.0. This software allowed the hardware to communicate with barcode sensor/RFID using PS2 or serial communications. Barcode Scanner contains a small sensory reading element where it detects the light being reflected back from the barcode, and converts light energy into electrical energy and an electrical signal converted into data. It can display and store data temporarily then transfer the data to computer. This project has dual purpose, for both student identification and attendance record.

Scopes of Works are:

1. The attendance record contains:
 - The Date and the time of the present.
 - The Metric Number of the student.
 - The personal and academic information of the student.
 - The Subject-Section of a subject for subject based attendance.
 - The full report of student's attendance.

2. Students must attend a specific percentage for each semester. Failure to attend the required percentage would result in a student not allowed to take final exam for the semester. This system calculates the percentage of attended and has a capability to send a warning message to any of the student that been failure for not attending.
3. This project developed by using Visual Basic 6.0. Visual Basic 6.0 provides the interactive and easy development of GUI and line of code for functionality.
4. Focused on building database using Microsoft Access. Database Develop in Microsoft Access due to the nature of Microsoft Access where it is fast to develop and possible to get a system up and running in much less time and low risk.
5. Communication
 - Between barcode or RFID readers.
 - Using PS2 or USB communications.

1.5. Problem Statements

The old method of tracking attendance, signing an attendance sheet was slow and expensive because it requiring intensive data entry from poorly written attendance sheets. A lecturer must prepare, print out and distribute the attendance sheet to the students all the time. One main problem of paper system is poor security due to buddy punch. For example one student asked another student to sign in for him. Besides that, it's hard to instantly know which student is absence during class.

When attendance is done by, a method is required to make sure all attendance has been entered before reports are generated since they have to track absences and a missing presents due to a student not filling this in would mean that the student was absence. Moreover, Lecturers need to spend hours manually going through attendance paper to consolidate and calculate the percentage of student's attendance.

The Smart Student Attendance System is one of the best solutions to handle these problems and thus makes system easier and comprehensive. With this attendance system, lecturers can then perform random checks effectively and efficiently. As a result, the software system and its ease of management provide an effectual and valuable solution in future.

1.6. Research Methodologies

The system builds up by using software Visual Basic. The system import data from Microsoft Access where student records were kept. It communicates with a barcode/RFID system that could scan student id as the students exited the class to be uploaded easily to a PC. Once you have the attendance records displayed, you can edit or delete any individual records desired. The procedures and methods used to achieve the project objectives are;

- 1) Literature review and background study
 - Barcode reader
 - RFID reader
 - Programming with Visual Basic.
 - Microsoft Access
- 2) Data gathering to build a database of student information system development
 - Compile all the important information
- 3) Studying and handling with visual basic programming for attendance system application
 - Graphical user interface (GUI) with Visual Basic
- 4) Synchronize between reader and software in order to display information
- 5) Field Testing
- 6) Thesis Writing
- 7) Come out with complete final project and report

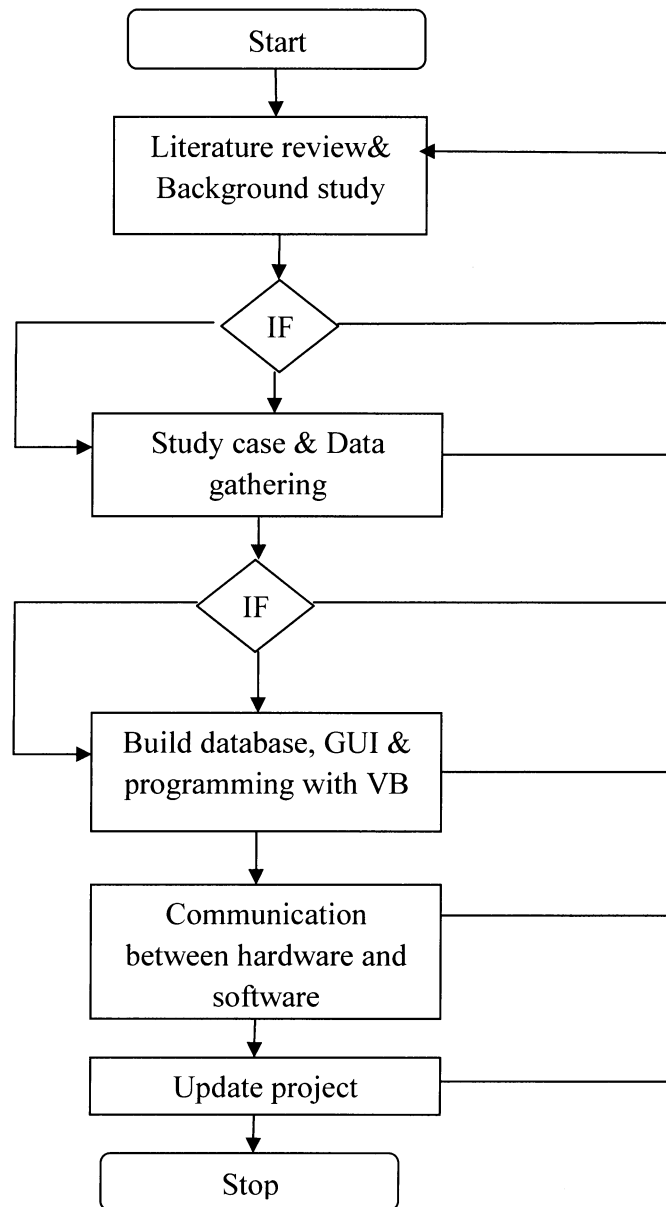


Figure 1.1: Flowchart of methodologies used in this project

1.7. Organization of Thesis

Each chapter begins with identifiable objectives and brief overview. This report is divided into several chapters which are Introduction, Background and Literature Review, Theory, Project Methodology, Result and Analysis and Conclusion.

The first chapter is an introduction to the project. It consists of objectives, scope of works, problem statements and research methodologies that clearly describe what is the project is all about.

The second and third chapter contains about theory and concept of the entire project. Literature review based on technologies and information has been done in order to create a specific research about this project. Several research are been highlighted such as barcode reader and RFID history and application, serial connection, and the used of visual basic as an interface.

Chapter four explained the methodology of implemented used in this project in detail. In this chapter, the methods and the project flow has been explained clearly. In chapter five, it describes the results and analysis obtained on this project. This is the main chapter that shows the development of the project and thus, provides a full analysis on the project, starting from theoretical findings to a conceptual design and lastly simulation results.

For the last chapter of the thesis, some suggestions have been made to make this project much better.