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SMART SUBMIT SYSTEM

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DEGREE OF BACHELOR OF MECHATRONIC

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SMART SUBMIT SYSTEM

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**A report submitted in partial fulfillment of the requirements for the Degree
of Bachelor in Mechatronics Engineering**

**Faculty of Electrical Engineering
UNIVERSITI TEKNIKAL MALAYSIA MELAKA**

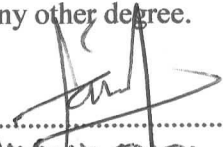
APRIL 2009

“I hereby declare that I have read through this report entitle “Smart Submit System” and found that it has comply the partial fulfillment for awarding the degree of Bachelor of Electrical Engineering (Mechatronics Engineering)”.

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I declare that this report entitle "Smart Submit System" is the result of my own research except as cited in the references. The report has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

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ABSTRACT

Nowadays, bar code has been widely used for variety purpose like car parking ticket and price tag. Its advantages are low cost, easy to implement, accuracy and easy to integrate with other software or applications. For this Final Year Project, it will use bar code as the main theme. This project entitles Smart Submit System which is about document management. For each subjects, there are a lot of assignment given to the student. But, there are a lot of problems occur when student submit their assignment like past the due date, lecturer doesn't receive the assignment and others. This is because current system is not effective. Therefore, this project will solve these problems. First of all, student will be given a bar code as their identity. Lecturer may use the student matrix number or create other identities for student. All the student data will be put in the database programmed by Visual Basic 6 software. Through this database, lecturer can key in or modify student data. Then, student need to print the bar code in front of the assignment page and scan it with the bar code reader. The data like time and student identity will be sent to the CPU and save it as a notepad file. Lecturer can check the data log via this notepad file. Finally, after scanned the bar code, student will put the assignments in the prepared box. An indicator will be display on the LCD monitor to indicate that the data has been successfully saved.

ABSTRAK

Pada masa sekarang, kod bar telah digunakan dengan meluas untuk pelbagai tujuan seperti tiket parkir kereta, tanda harga dan sebagainya. Ia digunakan dengan meluas kerana kelebihannya seperti menjimatkan kos, senang digunakan, ketepatan dan mudah berinteraksi dengan perisian atau aplikasi yang lain. Untuk Projek Sarjana Muda ini, kod bar akan digunakan sebagai tema. Tajuk projek ini ialah Sistem Penghantaran Pintar yang mana mengenai pengurusan dokumen. Untuk setiap subjek, terdapat banyak tugas yang diberikan kepada pelajar. Akan tetapi, banyak masalah yang muncul ketika pelajar menghantar tugas seperti kelewatan menghantar tugas dan sebagainya. Hal ini kerana, sistem yang sedia ada adalah kurang efektif. Oleh sebab itu, projek ini dapat menyelesaikan masalah-masalah tersebut. Mula-mula, setiap pelajar akan diberikan kod bar sebagai identiti mereka. Pensyarah boleh menggunakan nombor matrik pelajar atau mencipta identiti baru untuk pelajar. Semua maklumat pelajar akan disimpan di dalam pengkalan data yang diprogram melalui perisian Visual Basic 6. Dengan adanya pengkalan data ini, pensyarah dapat memasukkan atau mengubah maklumat pelajar. Selepas itu, pelajar akan mencetak kod bar tersebut di muka hadapan tugas dan mengimbasnya dengan menggunakan pengimbas kod bar. Maklumat seperti masa dan identiti pelajar akan disimpan sebagai fail *notepad* di dalam CPU. Pensyarah dapat menyemak data-data tersebut dengan membuka fail tersebut. Akhir sekali, selepas mengimbas kod bar tersebut, pelajar akan meletakkan tugas di dalam kotak yang telah disediakan. Satu pemberitahuan akan keluar di paparan skrin komputer untuk menunjukkan maklumat telah berjaya disimpan.

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LIST OF ABBREVIATIONS AND SYMBOLS

- CPU - Computer Processing Unit
- LCD - Liquid Crystal Display
- CCD - Charged Coupled Device
- VB - Visual Basic
- GUI - Graphical User Interface
- POS - Point of Sales
- SQL - Structured Query Language

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CHAPTER 1

INTRODUCTION

1.1 Background

Nowadays, bar code has been widely used for different purpose such as for labeling price, ticket parking, document management and others. For this final year project, its concept will be based on the bar code.

This Final Year Project is entitle Smart Submit System. The purpose of this project is to create a submit system for the student assignments. It will make the assignments management more smoother. Therefore it is mainly design for the lecturers. By using this application, lecturers will know the date, time and name of the students that submit the assignments. The main components for this project are bar code, bar code scanner and CPU.

This project is mainly about database, therefore all the coding will be done in Visual Basic. About the mechanical part, the bar code scanner will be directly connected to CPU. The bar code scanner will be connected via USB or PS/2 port. There will be a box for students to put their assignments.

Next is about overall Smart Submit System process. Firstly, students will be given their own bar code. The bar code will represent the student's identity. They need to print the barcode on the front page of their assignments. Then, the bar code will be scanned under the bar code scanner. The assignments will be put into the prepared box. All the information will be saved as a notepad file in the CPU. After submit the assignment, an indicator will display on the LCD monitor.

1.2 Problem Statement

Currently, lecturers give many assignments to their student. Student need to submit assignment before the due date. But, sometimes there are problems occur during submit the assignments.

The problems may occur to lecturer and student. From lecturer perspective, they do not know when students submit their assignments. Is it before the dateline? Other problem is for security purpose. There are some students take the assignment from the box to copy them. From student perspective, they do not know whether the assignments successfully handed to lecturer. Therefore, they feel insecure.

This project can solve these problems. Firstly a database will be created which student name, bar code and matrix number. So, an efficient and user friendly database must be created. This database will make lecturer job easier. They can just key in the student data through this database.

Next is the indicator. Most of students submit their assignments with feeling unsecured. Why? This is because they did not know if their assignments are successfully handed to their lecturer. Via this project, their uneasiness can be rid. After the scanning process, an indicator will be displayed on the LCD monitor to notify students that data has successfully saved.

1.3 Objectives

The main objectives for this project to create a submit system by using bar code as its main theme. Below are the objectives that must be achieved to complete this project:

- To design a smart submit system for the student's assignments.
- To create a database by using the Visual Basic 6 software.
- Store the data into the CPU.

1.4 Scope

- ❖ Student database that consist name and matrix number.
 - An efficient and user friendly database must be created. Through this database, lecturers are able to key in or change the student data easier.

- ❖ Indicator
 - To notify students that data has successfully stored.

- ❖ A Visual Basic 6 programming that saves data like name, date and time into CPU.
 - Data such as time and student information will be saved into the CPU after scan the bar code. These data will be saved as a notepad file.

- ❖ Integrate bar code scanner with the software.
 - To ensure that bar code scanner works well with the software. The bar code scanner able to scan without error and able to send data to CPU.

1.5 Thesis Outline

This project will be used bar code, so this project will be discussed in five chapters which are introduction, literature review, methodology, result & analysis and discussion, suggestion & conclusion.

Chapter 1, introduction is about the overall of this project. This project overview is discussed in the background, problem statements, objectives and scopes.

Chapter 2, literature review is about the project components and characteristic. This chapter discussed about the components and software that will be used. As for the references, the related work also will be reviewed.

Chapter 3, methodology is about the operations, techniques and methods to do this project. This chapter will discuss about the project flow thoroughly such as hardware, programming and others.

Chapter 4, result and analysis is about the project outcome. When testing the project, the results that are obtained will be recorded. The result will be analyzed to improve the results.

Chapter 5, discussion, suggestion and conclusion, is the final chapter. Discussion and suggestion are the ideas to improve this project. Conclusion is about this project final statement whether it is achieved the objectives or not.

CHAPTER 2

LITERATURE REVIEW

2.1 Bar Code

Bar code is an optical machine readable representation of data. Bar codes represented data in the width of lines and the spacing of parallel lines. They may be referred to as linear or one dimensional bar codes or symbologies. They also come in patterns of squares, dots, hexagons and other geometric patterns within images termed two dimensional matrix codes or symbologies. Although two dimensional systems use symbols other than bars, they are generally referred to as bar codes as well. Bar codes can be read by optical scanners called bar code readers, or scanned from an image by special software.

For this project, line type bar code will be used. It is because this type has been widely used. Figure 2.1 shows an example of line type bar code.



Figure 2.1: Line type bar code.

As shown in Figure 2.1, the bar code represents the data for 'MUHAMMAD FAISAL BIN JESMANI'. The bar code can be generated by using the bar code font. By using this font, all alphabet and numbers can be converted into bar code language.

2.2 Bar Code Scanner

Bar code can be read by using bar code scanner or special software. For this project, bar code scanner will be used since it is more convenient and purchasable. A bar code scanner is an electronic device for reading printed barcodes. It consists of a light source, a lens and a light sensor translating optical impulses into electrical ones. Additionally, nearly all barcode readers contain decoder circuitry analyzing the barcode's image data provided by the sensor and sending the barcode's content to the scanner's output port. Figure 2.2 shows the example of a bar code scanner.



Figure 2.2: Bar code scanner.

The scanner resolution is measured by the size of the dot of light emitted by the reader. If this dot of light is wider than any bar or space in the bar code, then it will overlap two elements which mean two spaces or two bars and it may produce wrong output. On the other hand, if a too small dot of light is used, then it can misinterpret any spot on the bar code making the final output wrong. For the bar code scanner connection, there are many connection can be used which are RS232 serial port, USB port and PS/2 port. But now, users mostly use USB or PS/2 port connection due to simplicity and conveniently.

There are many type of bar code scanner such as pen type reader, laser scanner and CCD reader. Below is the Table 2.1 comparison between the bar code scanners.

Table 2.1: Bar code scanners characteristic.

TYPE	SOURCE	FUNCTION	RANGE	PRICE
•Pen type reader.	•A light source and a photodiode.	•Measuring reflected light .	•Medium.	•± RM300
•Laser scanner.	•Laser beam.	•Measuring reflected light .	•Far.	•± RM450
•CCD reader (LED reader).	•Hundreds of tiny light sensors.	•Measuring emitted ambient light.	•Medium.	•± RM300

2.3 Visual Basic

Visual Basic also known as VB is the third-generation event-driven programming language and integrated development environment from Microsoft for its COM programming model. This programming is easy to learn and use programming language, because of its graphical development features and BASIC heritage.

Visual Basic was derived from BASIC and enables the rapid application development (RAD) of graphical user interface (GUI) applications, access to databases using Data Access Objects, Remote Data Objects, or ActiveX Data Objects, and creation of ActiveX controls and objects. Scripting languages such as VBA and VBScript are syntactically similar to Visual Basic, but perform differently.

The programmer can put together an application using the components provided with Visual Basic itself. Programs written in Visual Basic can also use the Windows API, but doing so requires external function declarations.

Through this software, programmers are able to create simple GUI application and develop complex application. Basically programming in VB is a combination of visually arranging components or controls on a form, specifying attributes and actions of those components, and writing additional lines of code for more functionality. Forms are created by using drag-and-drop techniques. A tool is used to place controls on the form. Controls have attributes and event handlers associated with them. Default values are provided when the control is created, but may be changed by the programmer.

Visual Basic can create executables (EXE files), ActiveX controls, or DLL files, but is primarily used to develop Windows applications and to interface database systems.