PARKING MONITORING SYSTEM

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PROJEK SARJANA MUDA II

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Supervisor's name   :   Mdm Nurmala Irdawaty Bt Hassan

Date   :

*Dedicated to **my mother** and **my father***

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ABSTRACT

This project purpose is to build parking monitoring system that more efficient than the conventional. Nowadays, parking systems information just have a signboard at the entrance that give information about how many parking space is still available. The driver having a problem when they want to find available parking because it need time and it become worst when the parking slots are placed on building that have many floors or in the wide parking area. This project is fully constructed by Visual Basic Programming. It consists of front panel and virtual sensor slot that replaced signboard and sensor that are used in parking systems. It also include of booking system made in the front panel which is the driver has an option to make reserve slot available. The front panel will show the counter number of available slot, used slot and the total of parking slots. These box will change with variable color depends on the condition of the slots whether is available (green), not available (red) or reserved (yellow).

ABSTRAK

Projek ini bertujuan membina sistem pemantauan letak kereta yang lebih efektif berbanding yang sedia ada. Sistem meletak kenderaan di negara ini mempunyai kekurangan seperti tiada paparan untuk kawasan meletak kenderaan yang masih kosong serta keadaannya. Masalah berlaku apabila pemilik kenderaan terpaksa bersusah payah untuk mencari kawasan letak kereta yang kosong untuk meletakkan kenderaan masing-masing. Hal ini sahaja sudah merugikan masa serta minyak kenderaan. Sistem ini mempunyai paparan hadapan yang dibina berasaskan aturcara Visual Basic. Sistem tempahan juga disediakan pada paparan hadapan tersebut. Apabila kenderaan memasuki pintu masuk, pengguna mempunyai pilihan menempah tempat untuk meletakkan kenderaan masing-masing. Kotak meletak kenderaan pada paparan hadapan akan menunjukkan warna yang berbeza untuk setiap operasi berlainan yang dijalankan. Paparan ini juga akan menunjukkan kiraan bagi setiap kawasan kenderaan yang masih kosong, kawasan yang digunakan serta jumlah bilangan keseluruhan kawasan meletak kenderaan tersebut. Sistem aturcara ini akan disambungkan kepada hardware supaya keluaran bagi sistem pemantauan parking ini menjadi lebih efiksyen dan sistematik.

CONTENTS

LIST OF FIGURES

LIST OF ABBREVIATION

PLC   -   Programming Logic Controller

PC   -   Personal Computer

VB   -   Visual Basic

GUI   -   Graphical User Interface

NO   -   Normally Open

NC   -   Normally Close

IDE   -   Integrated Development Environment

CHAPTER I

INTRODUCTION

1.1   Project Introduction

Parking monitoring system helps to display the number of available parking and also show the map of parking area. This project is focus on a way to develop a new parking monitoring system that will replace the conventional car park. Nowadays, a conventional car park have display panel that vacancy of parking lot but it just a number only that show how many parking are still available or not. The driver does not know where parking slot is is still available and this can make waste the time and also oil cost.

The way that can solve this problem is by developing a parking system which includes PC display panel for the parking lot. This display also need sensor slot which display on the Visual Basic System to help give information status and vacancy of parking lot in car park area. By integrate the parking monitoring system with hardware that is Programming Logic Controller (PLC) systems, this will make a parking lot become well organized because hardware will detect the car from sensor that are using

in the parking lot and after that the output from sensor will integrate with Visual Basic programming which will be display of the condition in the parking slot.

1.2   Project Objectives

To make sure this project work as planned, a few objectives were determined where these objectives will be followed as a guide through the whole completion process of this subject in order to achieve the desired output. These objectives were provided by sequence of project from beginning until the end of project. A detailed explanation for each objective will be discussed.

The objectives to be achieved in this project are:

- To write the program for parking slot of Parking Monitoring System using Visual Basic Programming language.

- To develop front panel for Parking Monitoring System using Visual Basic Programming language.

- To write the program of the virtual sensor for Parking Monitoring System using Visual Basic Programming.

- To write the program for the status and counter of the front panel using Visual Basic Programming.

- To integrate hardware (PLC) with Visual Basic Programming (PC front panel display) using RS-232 cable.

1.3   Problem Statement

The increased of use cars now days have lead to parking issues and concerns at car parks. Due to various behavior and desires of visitors, car parking problems arise from the moment before visitors enter the car park until after they leave the car park. With the system representation, the parking operators and management can make better decisions in choosing solutions to car parking problems. This is main idea of developing Parking Monitoring System.

There are a lot of obvious problems occur at the parking place such as spending time to search for a parking space. When entering the parking space especially at a larger area with many numbers of cars inside, searching available space to park is a big problem and will take long time to get one if there are still have available parking. This situation can be more complicated when during on busy hours. The problems become tougher when the parking slots are placed on building that have many floors or in the wide parking area. With developing this parking monitoring system they would not know if there is some slot left for them to park the car. If there is no parking slot left, the car owner usually made their own decision to park the car in the wrong place.

1.4   Scope of Work

The scope of work is the process to produce a front panel, the virtual sensor and the integrating hardware and Visual Basic Programming. There are list of the activity that have been done during producing the Parking Monitoring.

1.4.1   Visual Basic Programming Software

Visual Basic (VB) programming software is selected to create the simple graphic interface which is called front panel where the created screen should have the information about the parking slot vacancies, used and total. It also provides the button for booking the car slot. This includes the sensor of the parking slot built in the Visual Basic to show the process of this Parking Monitoring System.

1.4.2   Front Panel

The front panel is constructed by using VB software. The status of the car park slot represent as variable color that is yellow (reserved), red (used) and green(available) in the box. It also contains the booking system to the user.

1.4.3   Integrate software and hardware.

Hardware is constructing from PLC which using ladder builder to show condition of parking slot and limit sensor as sensor to detect a car. To make the real situation show the parking slot condition, using Visual Basic coding to integrate between PLC and PC display (sensor slot and front panel constructed using VB programming).

1.5   Brief Explanation of Methodology

This project will starts from discussing with supervisor and understanding the concept and objectives of this project. The important is doing the research about this project. Start with planning and start to design the front panel using Visual Basic. After that, design the sensor slot in Visual Basic to replace the sensor on real operation situation. After done the sensor programming, project is run to determine the output which is the counter of the parking slot and sensor slot which is can function or not. If problem occurred, return back to check the coding of the Visual Basic and try to run again the project to check the output. After finish all part of programming, testing again the output whether it can function and integrate with hardware systems part (PLC).

1.6   Report Structure

i. Chapter 1

Review about car parking system such as introduction, objectives, problem statement and scope of project.

ii. Chapter 2

This chapter discuss about the literature review, theory of component using and some examples of conventional car parking.

iii. Chapter 3

Describe about project methodology used in this project, project process flow and project layout.

iv. Chapter 4

These chapters describe about result of this project. On this chapter also write about discussion about this project.

v. Chapter 5

This chapter was clarifying about recommendation and conclusion about this project.

CHAPTER II

LITERATURE REVIEW

2.1 Introduction

This chapter discuss about reviews of existing project created to get an idea about the project design, conception and any information that related to improve the project. With different concept and design, there are other creations and innovations of projects done by other people. Researches related to this project also covered in this chapter.

2.2 Project Component

This project consist a lot of component used and the future development of this project. Below are the lists of the component used in this project and the entire component that can be use in the future development of this project.

2.2.1 Visual Basic

Visual Basic is the important part on this project. Visual Basic is the third generation event-driven programming language and integrated development environment (IDE) from Microsoft. Visual Basic is also considered a relatively easy to learn and use programming language, because of its graphical development features and basic heritage. In this project Visual Basic 6.0 is used.

2.2.1.1   Comparison between Visual Basic 6.0 and Visual Basic.net

There are many differences between VB6 and VB.NET. Much of the current VB6 code base will not run under VB.NET due to changes in VB.NET's syntax and language, its use of the new *common runtime*, and its switch to *WinForms* from the VB6 form model.

Visual Basic.NET includes an upgrade tool to assist in converting VB6 projects to .NET. The tool adds an *upgrade report* to your project listing any problems and inserts comments into your code and *To Do* items into the new *Task List* indicating where additional changes need to be made.

However, understanding the following changes can help simplify migrating your existing VB6 code. For further information on this topic, visit Microsoft's web site.

Beside the changes discussed here there are many new and fundamentally different language features and programming concepts incorporated into the VB.NET platform. The big ones include: Polymorphism, Inheritance and Encapsulation (PIE), operation overloading, parameterized constructors, class-level attributes and operations.

2.2.1.2   Steps to use Visual Basic 6.0

To make this project is success; firstly student must familiar with Visual Basic Programming. In this project, Visual Basic 6.0 is used to develop a Parking Monitoring System. There are a few steps to study and learn about this Visual Basic Programming before start to make a real programming for this project. Below is the few steps to start a Visual Basic.

1. Start Visual Basic. Usually, 'Start > Programs > Microsoft Visual Studio > Microsoft Visual Basic 6.0'.

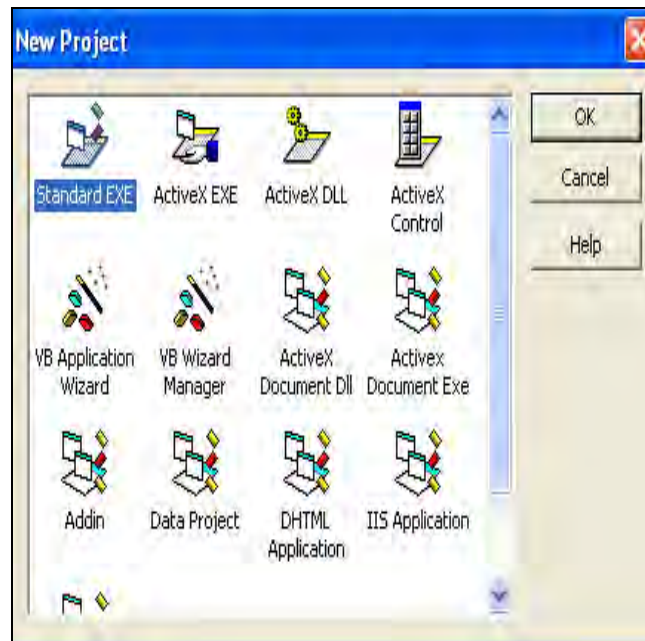2. Click the default Standard EXE icon and then click the Open button.

Figure 2.1 : New project list icon
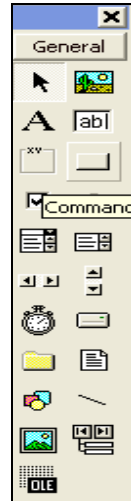
3. Click the Command Button icon in the Toolbox.

Figure 2.2: Toolbox icon

4. Click the first Command Button to select it. Open the property window and change the Name property to Command.

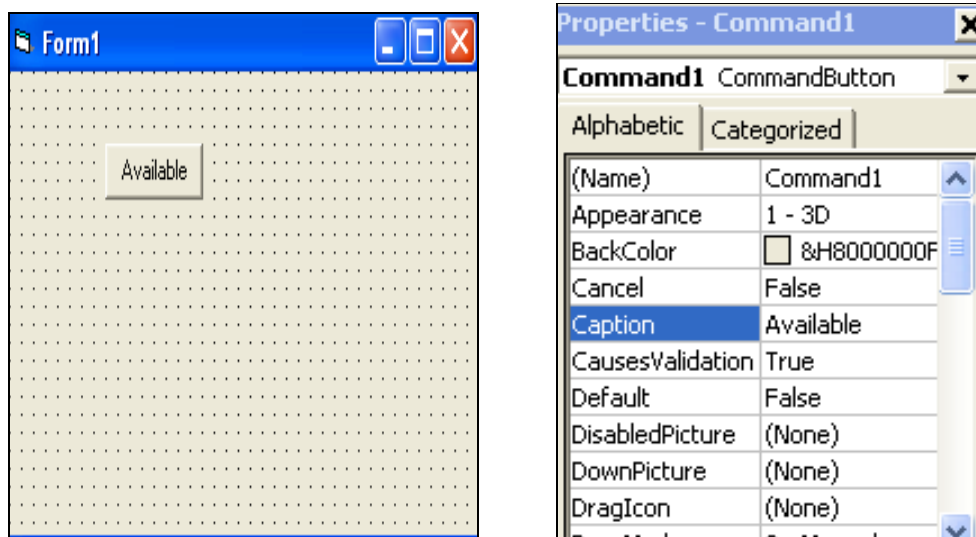

Figure 2.3: Command box icon and Properties command icon.

5. Double click at the Command Button object in the form to open the code window for that button. Enter the code, after the automatically entered code Private Sub CommandA_Click().
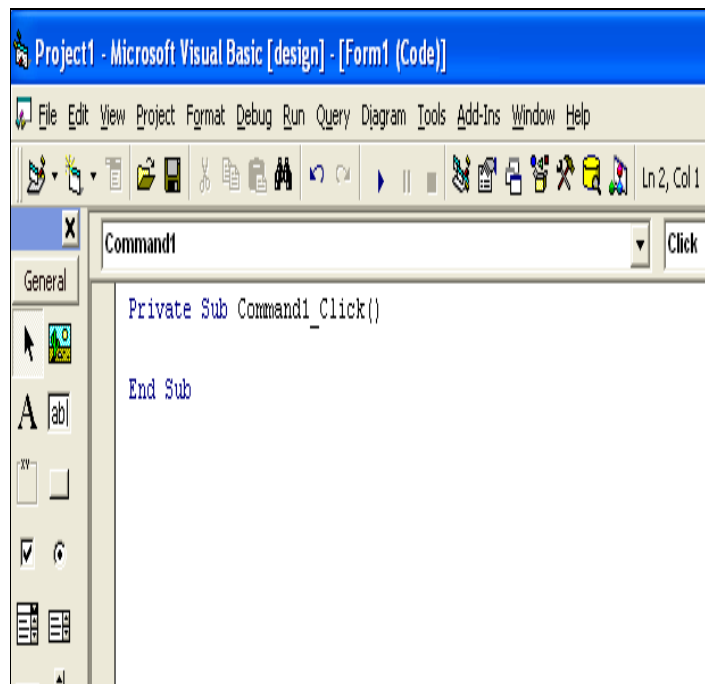

Figure 2.4 : Code witting icon

6. Click the Run button in the toolbar at the top of the VB 6 development environment window to execute the program.

7. Click your command button and observe your result.