A SIMPLE ID DETECTION USING INFRARED SENSORS

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To my beloved Parents, Family and Friends

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ABSTRACT

The ID detection is design for used in unlocking outdoor gate system. This project is to develop an electronic sensor for ID detection using 4x2 matrix infrared sensors where it can detect self-implemented blocking code. The card is set up for easy usage. The sensor used in this project is the infrared sensor. The main objective of this project is to design an ID Detector by using IR sensors and PIC microcontroller. It is also to develop and implement a system which uses infrared sensors, PIC 16F877A, LCD display, LED display and buzzer alarm. Moreover, this project is to design a low cost ID detector for simple application. The ID Detector is implementing to avoid animal or intruders to enter into the court easily. It is for the reason of environmental protection and to avoid any damage to the courts. Moreover, this ID Detector can be used for reservation system which happened to make the owner of the court easy maintaining the courts privacy. When the card is inserted in the ID detector, the sensors will detect the code and send the information to the PIC microcontroller which then activates the green LED. A valid ID detection will be display on the LCD. An invalid ID detection will be display on the LCD and follows by red LED and buzzer.

ABSTRAK

Pengesan ID direka untuk menghasilkan sistem membuka kunci gerbang luar. Projek ini adalah untuk menghasilkan sebuah sensor elektronik untuk mengesan ID dengan menggunakan sensor inframerah 4x2 matrix dimana ia diimplementasikan untuk mengesan kod. Kad sudah ditetapkan untuk kegunaan mudah. Sensor yang digunakan dalam projek ini adalah sensor inframerah. Tujuan utama projek ini adalah untuk menghasilkan sebuah pengesan ID dengan menggunakan sensor inframerah dan mikrokontroler PIC. Selain itu, pengesan ID dihasilkan untuk melaksanakan sistem yang menggunakan sensor inframerah, PIC 16F877A, layar LCD, LED dan penggera buzzer. Selain itu, projek ini direka untuk pengesan ID kos rendah. Pengesan ID ini dihasilkan adalah untuk mengelak haiwan atau penceroboh dari masuk ke gelanggang dengan mudah. Penghasilan ID ini adalah untuk sebab perlindungan alam sekitar dan untuk mengelakkan kerosakan pada gelanggang. Selain itu, pengesan ID boleh digunakan untuk sistem tempahan oleh pemilik gelanggang untuk menjaga privasi gelanggang miliknya. Saat kad dimasukkan ke dalam pengesan ID, sensor akan mengesan kod dan menghantar maklumat tersebut kepada PIC mikrokontroler yang kemudian mengaktifkan LED hijau. Sebuah pengesanan ID yang sah akan dipaparkan pada LCD. Sebuah pengesanan ID tidak sah akan dipaparkan pada LCD dan diikuti dengan LED merah dan buzzer.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

The ID detection is design for used in unlocking outdoor gate system. This project is to develop an electronic sensor for ID detection using 4x2 matrix IR sensors where it can detect self-implemented blocking code. The card is set up for easy usage. An additional advantage of it safety is the fact that sensors is set up on the internal part, whereas the code is set up on the card. In this case the unlocking gate system is ensured only if the codes on the card make contact with the sensor in the ID detector.

The sensor used in this project is the infrared sensor. Infrared sensor is use to detect the code that on the card. The infrared sensor is then connected to the PIC microcontroller which is programmed to identify the code that is on the card.

The ID detection is a small database system programmed in PIC microcontroller. The PIC microcontroller used in this project is PIC16F877A. When the card is inserted in the ID detector, the sensors will detect the code and send the information to the PIC microcontroller which then activates the green LED. A valid ID detection will be display on the LCD. An invalid ID detection will be display on the LCD and follows by red LED and buzzer.

1.2 Objectives

There are several objectives that are to be achieved at the end of the project which includes:

i. To design an ID Detector by using IR sensors and PIC microcontroller.

ii. To develop and implement a system, which uses; Infrared Sensors, PIC 16F877A, LCD display, LED (green and red) and buzzer alarm.

iii. To design a low cost ID detector for simple application.

iv. To learn about the art of programming in C language.

1.3 Problem Statement

Nowadays, the outdoor gates such as courts gate is unlocked and widely open whenever no one is using it. So when the gate is unlocked, there are many possibilities can happened such as animals or intruders can enter the courts without any reason anytime. Furthermore, the carpet used in tennis courts, basketball courts and many other courts is expensive. The ID Detector is implementing to avoid animal or intruders to enter into the court easily. It is for the reason of environmental protection and to avoid any damage to the courts.

Moreover, this ID Detector can be used for reservation system which happened to make the owner of the court easy maintaining the courts privacy. It is also to avoid any intruders which are not registered entering the courts.

ID Detector is implementing for easy usage and a user friendly type. It is not necessary to use an expensive type of ID detector for a simple gate system. So for this type of gate system, a low cost ID Detector can be used.

1.4 Scope of Work

As to ensure the completion of project achieves the stated objectives, the project shall be completed within these scopes:

i. To built an ID detector using 4X2 matrix IR sensor in the field of outside gate system.

ii. To construct a compact design capable for gate system.

iii. To study the operation of;

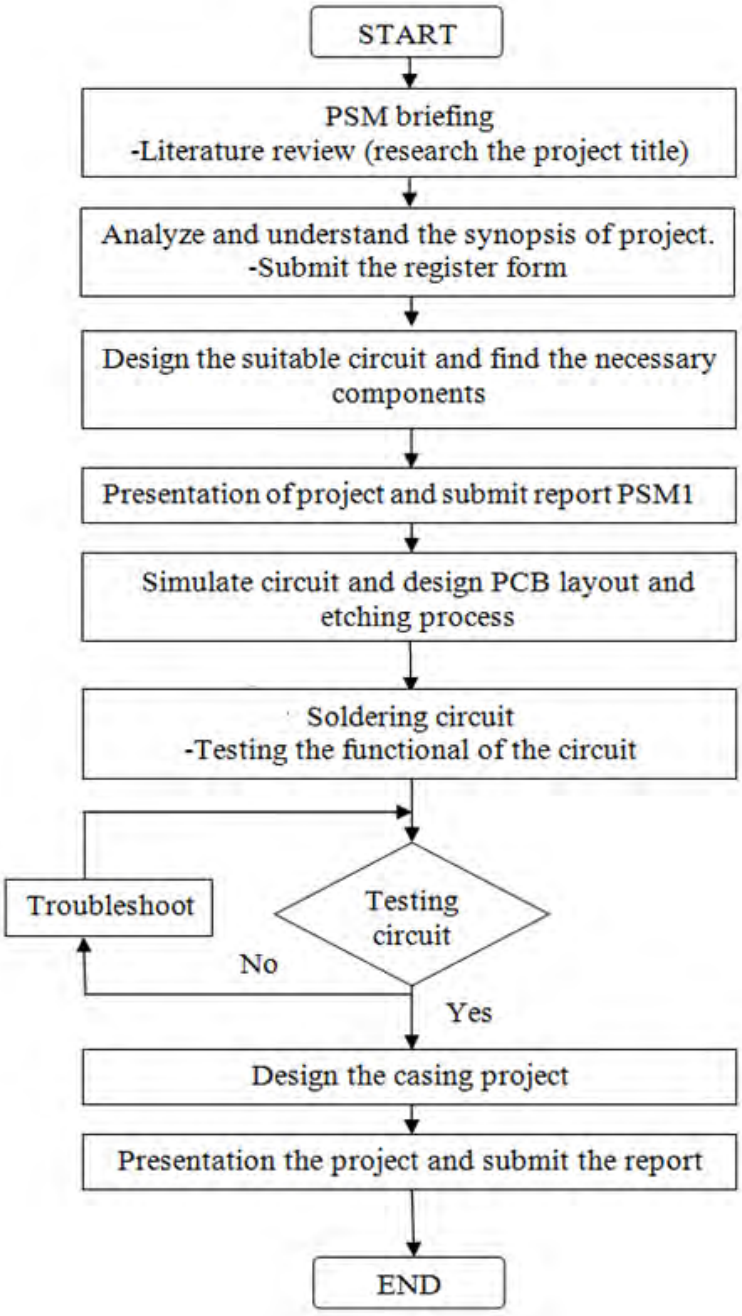
- Microcontroller.
- Infrared Sensor

iv. To identify;

- The accurate and stable circuit.
- Suitable programming and its implementation

1.5 Methodology

To achieve the goal that has been set in the objectives of this project, certain methods shall be used.



1.6 Thesis Structure

Chapter 1 will be discussed about an introduction of the project. The main idea is about the background and objectives of the project will be discussed.

Chapter 2 is about literature review of the project. This project discusses the concept of the research and how it related with the theory.

Chapter 3 is explanation about the methodology and process that taken to complete the project. It consist the detail development of this project.

Chapter 4 is about the result obtaining based on the methodology used. The obtained result will be analyze and based on the objectives and problem statement.

Chapter 5 is about the discussion and summary of project achievement. It also includes the conclusion and recommendation that can be taken for future improvement of the project.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter is upon the study on PIC microcontroller, LCD display, Infrared sensors, LED display and Buzzer Alarm. The PIC microcontroller discussed more towards the capability of it and thorough detail on the functions and the operations of it.

2.2 ID Detector

In designing this project, the requirement is as below:

i) Requires Proximity Card

- For different card code used.

ii) The ID can be detected by using Infrared Sensor controlled by a programmable microcontroller;

- Features an alphanumeric LCD display - interacts with the user.

iii) Requires LED display

- To shows valid ID display Green LED and invalid ID display Red LED.

iv) Requires Buzzer

- It will turned on when ID card fully slotted in, valid ID detected and also when detected invalid ID. When it detected invalid ID card, buzzer will turned on the alarm continuously until the card is removed.