REMOTE CONTROL DOORLOCK SYSTEM

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To my beloved mom, dad and family

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ABSTRACT

Remote control system is widely used now in the equipment such as television, radio and are one more example used in trasports system as a keylock system. Remote control system is divided to two categories; device based and activity based. Door is a portable obstacle that can be opened up and closed. The combination between tool of system remote control and door will produce one security system. This project will focused the design of the safety system for house especially house door. This sytem is constitute from the extension of remote control device to main system as a signal receipient from it and activate or deactivate the keylock system at the door. The objective of this design is to invent the keylock system that easy to used and easy to maintain. This system also designed to give facilitate for disabled people to use the door. Besides that this inventation also focusing for commercialization. So the inventation of this project will be considering budget expenditure of the component and raw material that will be used to produce one product that can be commercialized.

ABSTRAK

Sistem alat kawalan jauh merupakan sistem yang meluas digunakan pada kebanyakan alat kawalan jauh digunakan pada alat elektrik seperti televisyen, radio, dan pada sistem kenderaan sebagai sistem pengunci keselamatan. Alat kawalan jauh terbahagi kepada 2 iaitu berasaskan peranti dan juga berasaskan aktiviti. Pintu pula merupakan halangan mudah alih yang boleh dibuka atau ditutup. Gabungan antara sistem alat kawalan jauh dan pintu akan menghasilkan satu sistem keselamatan. Projek yang dihasilkan ini sebenarnya menumpukan kepada rekaan satu sistem keselamatan pada pintu rumah. Sistem ini terdiri daripada sambungan alat kawalan jauh kepada sistem utama sebagai penerima isyarat daripada alat kawalan jauh dan mengaktifkan atau mematikan sistem pengunci pada pintu. Matlamat rekaan sistem keselamatan ini adalah untuk mereka cipta sistem pengunci rumah yang mudah digunakan dan diselenggarakan. Sistem ini juga direka untuk memudahkan golongan kurang upaya menggunakan pintu. Selain itu, rekaan ini juga mensasarkan satu matlamat untuk dikomersialkan. Jadi, projek ini direka dengan sebaik mungkin dengan mengambil kira bajet perbelanjaan komponen dan bahan mentah yang digunakan untuk menghasilkan satu produk yang boleh dikomersialkan.

TABLE OF CONTENTS

II LITERATURE REVIEW

LIST OF TABLE

LIST OF FIGURES

CHAPTER I

INTRODUCTION

1.1 Overview

A remote control deadbolt lock was designed for quadriplegics. The system consists of ~~a~~ modified standard household deadbolt lock, a central lock and a remote control. People who have limited use and control of their hands would use this system to simplify the complicated procedure of using a key to lock and unlock their homes at the touch of a button. The purpose of this project was to simplify the tasks of locking and unlocking a conventional door for people who use wheelchairs and have limited use of their hands and arms. By incorporating the use of a remote control, the inconvenience of using a key was eliminated. With just a push of a button, the locking mechanism in the door can be activated or deactivated. There are several door-locking systems that do not use a conventional key. There is a "credit card" type used in many hotels and the push-button combination lock used in many businesses. Both of these and similar systems did not address the inability of our client to grasp the card key or push the tiny buttons. There are also variations of remote controlled doors and gates, but these tend to be large and expensive systems more suitable for industrial use.

1.2 Project Objective

The objectives of this project are:

- To design a remote control doorlock system for user to lock and unlock a conventional door.
- To commercialize this product to people.

1.3 Problem Statement

The problem statement of this project is divided into several aspects. In remote control doorlock system, the construction of circuit for remote control is one of the important aspects. In remote control system, it is divided into two part; transmitter circuit and receiver circuit. If either one or both circuit is not function, the full system would not work well. The central lock system is the main connector which connecting the remote sensor to solenoid valve (actuator) and alarm indicator. If the central lock is not developed, the system is not fully complete. So, the circuit must be constructed first in electronic software. For my final project, the circuits are developed and simulated by using Multisim, Proteus 7 Professional. From this software, the specification of the circuits can be determined easily. For the design of the door and wiring diagram, the Autocad software will be used to develop its.

In the remote control, there has a transmitter which send the data to the main system which placed at the door. That main system consist a central lock which has a receiver that will receive the sent data from the transmitter. The main system can not directly switch on the system (opened up the door) because the main system needs to connected and work together with the actuator to pull and push the lock door. In this project, the two pneumatic actuators are used to work together with the main system. The actuator consist a valve inside which require little pressure to operate and usually double or triple the input force. The actuator is an electric motor drive. The electric motor drive can have a speed-reducing transmission as may be desirable or required. When the actuator is applying in between the system, it can create the great force to pull and push the dead bolt easily.

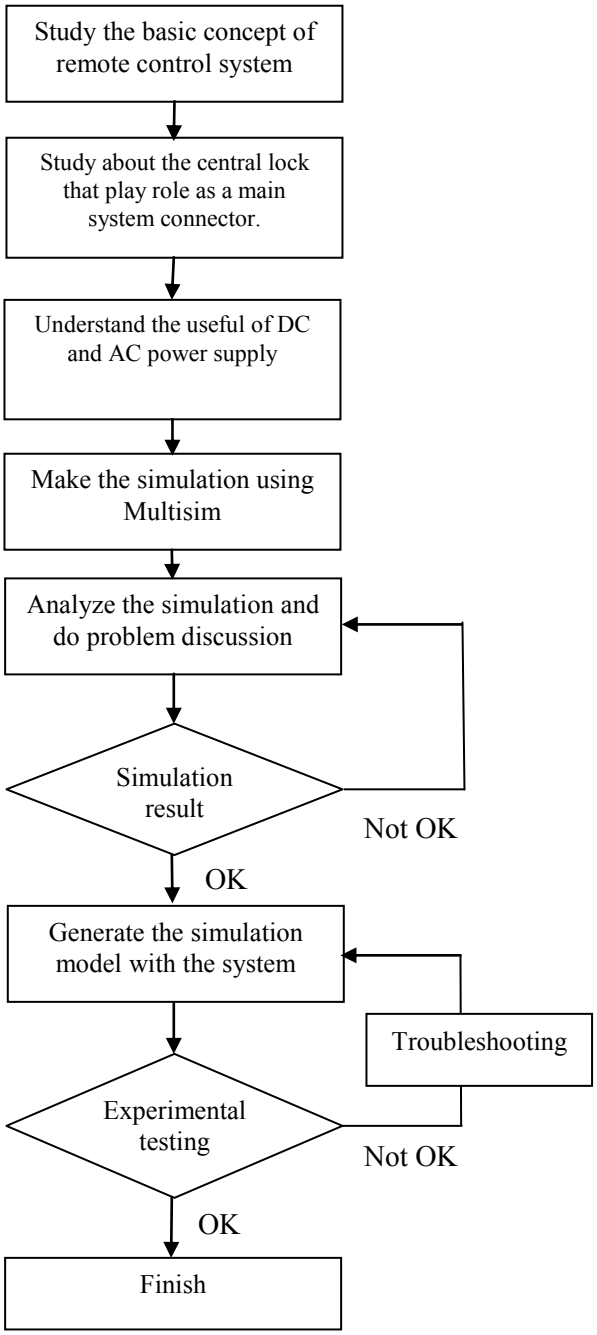
Beside that, the arrangement of the complete wiring is important aspect need to be focused in order to create the complete and safety locking system for the door. For this aspect, the system needs something to keep the complete wiring. So, a piece of Perspex is used to keep the all wiring set and the main system from anything that can make a short circuit and disturbance in this system. The safety value which has in this system can make it user friendly system whereas people can use it easily.

1.4 Project Scope

The scopes of this project are:

- Study about the locking mechanism.
- Study and research about the usage of remote control system.
- Study on the system that will be linked between remote control and the mechanical locking system of the door.
- Simulate and investigate the additional circuit in order to apply remote control doorlock system.
- Apply the electrical wiring technique to doorlock system, testing and troubleshooting.
- Project report write-up.

1.5 Methodology



1.6 Thesis Outline

This thesis describes the remote control doorlock system and how to develop this system. This thesis has seven chapters. The first chapter will be describe about a brief introduction about the project consist the overview, objective, problem statement and scope of the project. A literature review of recent work on theory for the device and concept involved and application is presented in chapter 2. Chapter 3 describe about explanation about equipment, component, procedure, rule and technique applies in developing this project. The simulation result, design and discussion about the system will be showed and discussed in chapter 4. Chapter 5 introduce detailed about hardware interfacing between hardware and simulation. And finally, chapter 6 summarizes the contributions of this work along with suggesting avenue for future explorations.

CHAPTER II

LITERATURE REVIEW

This chapter consists of some information about remote control system which included the central lock statement and also an overview of the literature that has been published in relation to build the system.

2.1 Remote Keyless Entry System

A remote keyless system is a system designed to remotely permit or deny access to premises or automobiles. This system was invented by mechanical engineer A.B. Makkar. There are several remote keyless entry (RKE) systems on the market, including but not limited to KeeLoq by Microchip, HITAG by Philips, and AVR411 by Atmel. In the case of automobiles a remote keyless system performs the functions of a standard car key without physical contact; power door locks can be locked or unlocked from several feet away or even from inside a building. A remote keyless system can include both a remote keyless entry system (RKE) and a remote keyless ignition system (RKI).