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New home security and safety system / Lionel Chadik Anak  
August.

**NEW HOME SECURITY AND SAFETY SYSTEM**

**LIONEL CHADIK ANAK AUGUST**

**NOVEMBER 2008**

“I here by declared that I have read through this report and found that it has comply the partial fulfillment for awarding the degree of Bachelor of Electrical Engineering (Control Instrumentation and Automation)”

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**NEW HOME SECURITY AND SAFETY SYSTEM**

**LIONEL CHADIK AUGUST**

**This Report Is Submitted In Partial Fulfillment Of Requirements For The Degree of Bachelor  
In Electrical Engineering (Control Instrumentation and Automation)**

**Electrical Engineering Faculty  
Universiti Teknikal Malaysia Melaka**

**OCTOBER 2008**

"I hereby declared that this report is a result of my own work except for the excerpts that have been cited clearly in the references"

Signature : Lionel  
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Date : 28/11/2008

To Family, lectures and colleagues

Your passion, your life and your strength are the source of my incredible inspiration  
everyday

## **ACKNOWLEDGEMENT**

Thanks to the God Most High for giving me chance and time and for Him I still alive that can finish my final year project. My sincerest appreciation is extending to my respected supervisor Mr Shahrudin Bin Zakaria who has contributed to this project by giving his comment, correction and suggestion to me to complete this final year project. I also thanks to all lecturer and technician for helping given me extra knowledge. I wish to dedicate this project to my parent, family and friends who have give strength and moral support until the end of this semester. Lastly, i would like to thanks those individuals involved and generous impart their knowledge and generously their knowledge and gave their suggestion and evaluations in order to complete my research.

## **ABSTRACT PROJECT**

The project that proposes is New Home Security And Safety System. This project is an innovation idea from the project that already have in the market. Generally, this project is more efficient and smarter compare to the system just now. Current system in the market dont has any backup system but this system has it own backup system which can protect both owner and the house. The main components that use in this project are PLC (programmable logical controller). The advantage of this system is it was smaller compare to the current system at the market and easy to install. This system also low cost and affordable for everybody to have the system.

## **ABSTRAK PROJEK**

Projek yang dicadangkan ialah 'NEW HOME SECURITY AND SAFETY SYSTEM'. Projek ini ialah inovasi daripada sistem keselamatan rumah yang sedia ada dan lebih berkesan. Ianya merupakan sebuah sistem yang lebih berkesan dan pintar dimana ianya menekankan aspek keselamatan rumah daripada dimasuki oleh penceroboh dan juga mementingkan keselamatan rumah itu sendiri daripada berlaku bencana akibat kecuaiian penghuni rumah itu sendiri. Komponen utama dalam projek ini ialah PLC 'programmable logical controller'. Disamping itu juga,projek ini mempunyai saiz yang kecil dan kos yg murah dan mudah untuk dikendalikan. Sistem ini juga mampu dimiliki oleh semua orang oleh semua orang jika dibandingkan dengan sistem yang sedia ada di mana pada masa sekarang hanya golongan yang kaya sahaja mampu memiliki sistem keselamatan rumah.



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## CHAPTER 1

### INTRODUCTION

**Security** is the condition of being protected against danger, loss, and criminals. In the general sense, security is a concept similar to safety. The nuance between the two is an added emphasis on being protected from dangers that originate from outside. Individuals or actions that encroach upon the condition of protection are responsible for the breach of security. The word "security" in general usage is synonymous with "safety," but as a technical term "security" means that something not only is secure but that it has been secured.

There are a wide range of home security systems available on the market and, depending upon your specific requirements, you can easily get the one that suits you best. Security systems can allow you to do many different things depending on their features, These include monitoring the times you are away from home as well as keeping an eye on what is happening in different rooms of your house while you are at home. You can keep an intensive watch of your home 24 hours a day, 7 days a week. Apart from providing constant home surveillance, the home security system also provides security against fire and smoke, intrusion by burglars, medical emergencies and many other things. Security systems ensure you can get overall protection against multifarious hazardous situations for you and your loved ones.

## **1.1 Problem statement**

Some systems are dedicated to one mission; others handle fire, intrusion, and safety alarms simultaneously. Sophistication ranges from small, self-contained noisemakers, to complicated, multi-zoned digital systems with color-coded computer monitor outputs. Many of these concepts also apply to portable alarms for protecting cars, trucks or other vehicles and their contents (i.e., "car alarms"). Burglar alarms are sometimes also referred to as alarm systems.

## **1.2 Objective**

The purpose of this project is to improve the home security system and to understand the function of the PLC and the software relative on this project. The objective of this project is:

1. To design the security system which has backup system
2. To design system this can protect both of the house and owner from dangerous such as fire and robbery.
3. To make sure that the house owner more satisfy with their home security system.
4. To study the advantage of using PLC in the home security system.

### **1.3 Project scope**

1. Design the structure of the home security system and also the house model for project demonstration
2. Design suitable software for this system.
3. Combined the hardware and software and make sure that the system can function in good condition
4. To study and research on an automated sorting system by using PLC.
5. To study and design an automated sorting system based on many different types of actuators and drives
6. To study and design an automated system using CX-Programmer for software development



#### **1.4 Problem statement**

1. Current system only has secondary protection and do not have the secondary protection.
2. The current system does not have any cooking reminder which it was the place where the fire starts that can cause fire.

## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 The Beginning of Security System

Security system begin with the classic idea of the so called “Biological-based Security System” which used animal, especially dogs to protect certain area or the house as well. This ancient idea was still in used today.

Dog (animal) acts as danger sensing unit which detect intruders or any approaching object, and bark at it out loud, which mimic the operation of modern electronic security system with alarm sound warning.

Biological-based security system using the dog is better than some modern electronic and computer controlled security system because the dog will attack intruders. Some electronic security system can only activate warning alarm in case of emergency. This required extra attention and actions from the user.

This is not a complete “end-to-end” security system, but a partial security system. Surprisingly, a classic biological-based security system discussed earlier was a great

“end-to-end” security system. Dog special ability to sense the danger from afar gives this classic system a high credit.

However, efficiency of the system depends on the type and behavior of the dog. Guard dog can be trained to attack human or intruders, but not all watch dogs was trained to do this, since this practice was illegal at some places.

Some watch dog was trained to bark out loud to alert their masters of intruders but are not given to attack behavior. Some breeds such as the Weimaraner and Rhodesian ridgeback were originally bred for hunting, but their large intimidating look and territorial instincts have helped them evolve into guard dogs in today’s society. Dog usage for the purpose of security and safety was still very interesting.

The idea of using animal, especially dogs to create security system was still in used in today’s society, and still famous.

## **2.2 Types of Security System**

Basically, security system can be divided into three main categories, namely mobile security system, fixed security system, and digital security system. Mobile security system protects the user's mobile properties and fixed security system protects the fixed locations and area.

Digital security system refers to the security system which protects electronic devices by using software. This type of security system was usually used to protect computer from viruses and hackers.

Online banking system required a very high standard of security system to protect their customers account from being hacked. However, only fixed type of security system will be developed in this project.

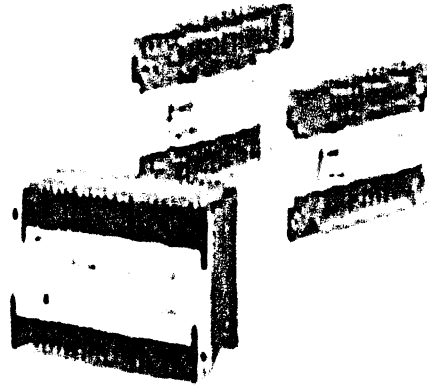
## **2.3 Programmable Logic Controller**

The PLC was invented in response to the needs of the American automotive manufacturing industry. Programmable controllers were initially adopted by the automotive industry where software revision replaced the re-wiring of hard-wired control

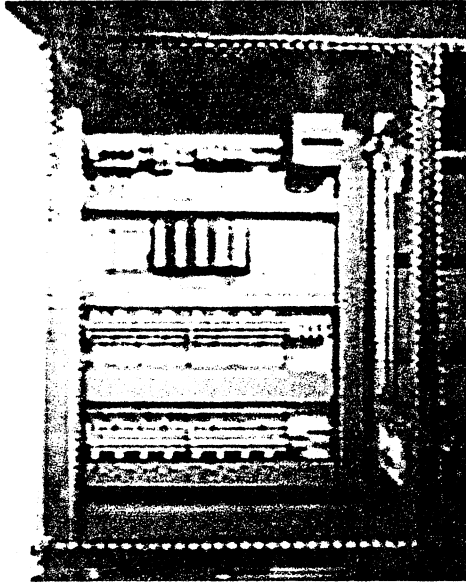
panels when production models changed. Before the PLC, control, sequencing, and safety interlock logic for manufacturing automobiles was accomplished using hundreds or thousands of relays, cam timers, and drum sequencers and dedicated closed-loop controllers. The process for updating such facilities for the yearly model change-over was very time consuming and expensive, as the relay systems needed to be rewired by skilled electricians. The winning proposal came from Bedford Associates of Bedford, Massachusetts. The first PLC, designated the 084 because it was Bedford Associates' eighty-fourth project, was the result. Bedford Associates started a new company dedicated to developing, manufacturing, selling, and servicing this new product: Modicon, which stood for MODular Digital CONTroller. One of the people who worked on that project was Dick Morley, who is considered to be the "father" of the PLC. The Modicon brand was sold in 1977 to Gould Electronics, and later acquired by German Company AEG and then by French Schneider Electric, the current owner.

Early PLCs were designed to replace relay logic systems. These PLCs were programmed in "ladder logic", which strongly resembles a schematic diagram of relay logic. Modern PLCs can be programmed in a variety of ways, from ladder logic to more traditional programming languages such as BASIC and C. Another method is State

Logic, a Very High Level Programming Language designed to program PLCs based on State Transition Diagrams. Many of the earliest PLCs expressed all decision making logic in simple ladder logic which appeared similar to electrical schematic diagrams. The electricians were quite able to trace out circuit problems with schematic diagrams using ladder logic. This program notation was chosen to reduce training demands for the existing technicians. Other early PLCs used a form of instruction list programming, based on a stack-based logic solver.



**FIGURE 2.1 a PLC**



**FIGURE 2.1 b PLC**