

**Universiti Teknologi MARA**

**Home Security System Using Arduino**

**Ahmad Hazmi Bin Lawrence**

**Thesis submitted in fulfilment of the requirements  
for Bachelor of Computer Science (Hons.) Data  
Communication and Networking  
Faculty of Computer and Mathematical Sciences**

**January 2019**

## **ACKNOWLEDGEMENT**

In the name of Allah SWT, the most Gracious, the most Compassionate.

Praise and thanks to Allah SWT because He has given me the strength to complete this project with a lot of patience and peace of mind. I would firstly like to thank my supervisor, Dr. Zolidah Kasiran for the encouragement, support, knowledge and guides that she has given me throughout the whole process of researching and documenting this project.

I would also like to express my gratitude towards Project Formulation lecturer, Assoc. Prof. Dr. Kamarularifin Abd Jalil for pulling us to the right track towards success, and for giving us hope and encouragement in this semester and last semester.

I would like to thank to my parents and families, for being patient with me during this phase of life and for providing the right necessities for me to continue with my studies and compulsory assessments. Without them, I would be nothing.

Finally, I would sincerely like to say thanks to my housemates, classmates, and friends who have been great at supporting and helping me getting through the hardships that I've been having, especially my project mate, thank you for telling me not to quit and to never give up.

Thank you all and may all your days be blessed.

## **ABSTRACT**

A home with no security system is vulnerable to intruders such as robbery which will lead to loss of personal belongings. The home security system using Arduino can help to reduce the chances of undesirable loss of personal belongings. This system are applicable to houses and apartment room. This system can help to detect the presence of intruders and can alert the home owners by notifying them using GSM technology. Several sensors were used to detect the presence of intruders in this. The combinations of these sensors allow the system to capture the presence of intruders by 3 methods. Firstly, home security system using Arduino can detect intruders by motions inside the house or apartment room. Testing for this method have been done by moving objects in front of the sensor. Second method detects intruders inside the house is by tripping laser that have been set inside the house. This method was tested by blocking the reading of the laser beam to cover the emitted laser. Whenever intruders move across the laser beam, it will then trigger the alarm and notify the home owner. For the third method, vibration sensors was also implemented at the window to detect if any intruders try to break inside the house using the window. In this paper, the design and development of affordable home security system was presented.

# TABLE OF CONTENTS

<b>CONTENT</b>	<b>PAGES</b>
<b>TABLE OF CONTENTS</b>	iii
<b>LIST OF FIGURES</b>	vi
<b>LIST OF TABLES</b>	vii
<b>LIST OF ABBREVIATION</b>	viii
<b>CHAPTER ONE: INTRODUCTION</b>	1
1.1 Project Background	1
1.2 Problem Statement	2
1.3 Objective	2
1.4 Scope	2
1.5 Significance	3
1.6 Summary	4
<b>CHAPTER TWO: LITERATURE REVIEW</b>	5
2.1 Background of IOT	5
2.2 IOT Applications	6
2.2.1 Smart Greenhouse	7
2.2.2 Smart City	7
2.2.3 Environment Monitoring	8
2.2.4 Smart Home	9
2.3 IOT Technologies	11
2.3.1 IOT Platforms	13
2.3.1.1 Oracle	13
2.3.1.2 Amazon Web Services IOT Platform	13
2.3.1.3 Microsoft Azure IOT HUB	14

# CHAPTER 1

## INTRODUCTION

This chapter provides the background and rationale for the study. It also gives details of the significance of home security, the issues and problems that led to this research.

### 1.1 Project Background

In this new era of technology, there are many organizations and vendors strive to create new technologies even though there are still plenty of new technologies available. In addition, security systems are being utilized in businesses, automobiles and most importantly in our home. A well-secured building and house will prevent any unwanted losses, such as money loss and data loss. Thus, implementing a well-planned security by using current technology equipment can reduce the loss of personal belongings from robbery.

In this project, alarm and sensor technologies will be used in order to secure a house. Alarm will be used to create alerts whenever a sensor is triggered and several sensors will be implemented inside the house to detect the presence of intruders. In addition, this system can help to notify the owner by using GSM technologies and alerting neighbours of intruders by noisy alarms. Apart from that, the user also can reply the message to control the alarm and LED. It is a system that can be applied to houses including apartments.