



GARDEN GUARDIAN

NUR YASMIN BINTI YUSERI

NABIL FIKRI AL-MANSOR

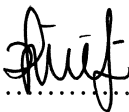
MUHAMMAD HAEKAL JUNAIDI

FACULTY OF ELECTRICAL ENGINEERING

UNIVERSITI TEKNOLOGI MARA

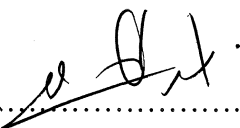
JUN 2014 – OCT 2014

“ I declare that this report entitled “ GARDEN GUARDIAN “ is the result of my own group research except as cited in the references. This report has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.”

Signature : ..... 

Name : NUR YASMIN BINTI YUSERI

Date : ..... 13<sup>th</sup> OCTOBER 2014 .....

Signature : ..... 

Name : NABIL FIKRI AL-MANSOR

Date : ..... 13<sup>th</sup> OCTOBER 2014 .....

Signature : ..... 

Name : MUHAMMAD HAEKAL JUNAIDI

Date : ..... 13<sup>th</sup> OCTOBER 2014 .....

## ACKNOWLEDGEMENT

Alhamdulillah. Thanks to Allah SWT, whom with His willing giving us the opportunity to complete this Final Year Project which is title *GARDEN GUARDIAN*. This final year project report was prepared for Faculty of Electrical Engineering, University Technology Mara (UiTM), basically for student in final year to complete the undergraduate program that leads to the degree of Bachelor of Engineering in Electronic. This report is based on the methods given by the university.

Firstly, we would like to express our deepest thanks to, Mr Abdul Hidier b. Abdul Razak, a lecturer at Faculty of Electrical Engineering, in University Technology Mara (UiTM) and also assign as our supervisor who had guided us a lot of task during two semesters session 2013/2014. We also want to thanks the lecturers and staffs of Faculty of Electrical Engineering for their cooperation during our complete the final year project that had given valuable information, suggestions and guidance in the compilation and preparation this final year project report. Deepest thanks and appreciation to our parents, family, special mate of ours, and others for their cooperation, encouragement, constructive suggestion and full of support for their port completion, from the beginning till the end. Also thanks to all of our friends and everyone, that have been contributed by supporting our work and helped us during the final year project progress till it is fully completed. Last but not least, our thanks to Faculty of Electrical Engineering, University Technology Mara (UiTM).

## ABSTRACT

This project presented the application of ultrasonic in repelling the mice away. This Garden Guardian system is to drive the rats away from our area. The mice should be eliminated because the non-hygienic of the mice can affect human's health. This project is using the transmission mode which is designed in a non-invasive method where this technique will not harm the mice or the human being. However these frequencies do not affect the hearing ability of man. An Astable Multi-vibrator (AMV), timer NE555 was used to generate the required ultrasonic frequency and automatically varied in five steps by a pulse generating IC (CA32400) and a counter (4017). A D-type flip-flop IC (4013) was used to obtain a symmetrical output signal which was amplified in push-pull mode by 2-NPN Transistors (BD-139) and 2-PNP transistors (BD140). Five variable resistors (each 100K $\Omega$ ) were used to control the different frequencies selection. Two transducers (tweeters) were employed to produce an efficient sound generated. The unit will be tested with three groups of white foot mice (*Peromyscus leucopus*) and a female house mouse *Mus musculus* which all the respond will be recorded from a distance of up to fifteen (15) meters from the source. The device can be utilized by both small and large scale farmers for the purpose of repelling pests. The performance of the device could be greatly improved with little modifications, for instance, using microcontrollers and ultrasonic sensors to transmit the ultrasonic sound in a special band of frequency.

## TABLE OF CONTENT

CHAPTER	TITLE	PAGE
	<b>DECLARATION</b> <b>DEDICATION</b> <b>ACKNOWLEDGEMENT</b> <b>ABSTRACT</b> <b>ABSTRAK</b> <b>TABLE OF CONTENT</b> <b>LIST OF TABLE</b> <b>LIST OF FIGURE</b>	
<b>1</b>	<b>INTRODUCTION</b> 1.2 Problem Statement 1.3 Objective 1.4 Scope of Project	
<b>2</b>	<b>LITERATURE REVIEW</b>	
<b>3</b>	<b>IMPLEMENTATION</b> 3.1 Operating Cicuit 3.2 Hardware Development 3.2.1 3.2.2	
<b>4</b>	<b>RESULT AND DISCUSSION</b> 4.1 Result 4.2 Simulation Process 4.3 Construct the Circuit on Breadboard 4.4Complete Circuit on PCB	