



UNIVERSITI TEKNIKAL MALAYSIA MELAKA

SMART DUSTBIN MONITORING USING GSM

This report submitted in accordance with requirement of the Universiti Teknikal
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By

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Date : 11/12/2015

APPROVAL

This report is submitted to the Faculty of Engineering Technology of UTeM as a partial fulfillment of the requirements for the degree of Bachelor in Electronic Engineering Technology (Telecommunication) with Honors. The member of the supervisory is as follow:

.....

(PUAN SITI ASMA BINTI CHE AZIZ)

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ABSTRACT

"SMART Dustbin MONITORING USING GSM" is one of the bins automatic system where he is a new creation that can be used by all levels of society, particularly for people with disabilities. In addition, the trash is also equipped with a system of transmission of information through short messages (SMS). It has been modified to make the connection between the bins with Global System for Mobile Communications (GSM). This system will provide information orders (SMS) to the management of waste cleaning to make cleanup or garbage collection which is full. Normally the trash that is on the market is mostly trash manually operated either using the feet or hands to open the lid of a garbage can, and it will be difficult for disabled people to dispose of waste. Indirectly with the automatic trash can assist people with disabilities. Dustbin Monitoring Project Using Smart GSM will also facilitate the management of cleaning in a supermarket or shopping complex to make the monitoring of bins is full. With this project it can reduce the problem of trash filled up and overflowing bins that are not managed well or not makes cleaning the trash that was littered with trash. The project will operate if the sensor is located on the front of the trash can detect or identify an object approaching a 3 feet and automatically opens the lid of a garbage can in a few seconds, after which it will be bins cover closed again. If it is full of garbage, trash will give an audible signal and at the same time it will enable the Global System for Mobile Communications (GSM) and the information is sent through short message (SMS) to the management of cleaning. Trash operating system will also automatically turned off when the bin is full and it does not operate even when there is an object approaching the trash can, until the reset button is pressed. However, this automated garbage bins still much to be improved and made improvements in terms of operation and system aspects therein.

ABSTRAK

“**SMART DUSTBIN MONITORING USING GSM**” merupakan salah satu system yang tong sampah automatic dimana ia merupakan ciptaan yang baru yang sesuai digunakan oleh setiap lapisan masyarakat khususnya untuk orang kurang upaya. Selain itu tong sampah ini juga dilengkapi dengan system penghantaran maklumat melalui pesan ringkas (SMS). Ia telah di ubahsuai dengan membuat sambungan antara tong sampah dengan Sistem Global untuk Komunikasi Mudah Alih (GSM). System ini akan memberi maklumat pesana ringkas (SMS) kepada pihak pengurusan pembersihan sampah untuk membuat pembersihan atau mengutip sampah yang telah penuh. Kebiasanya tong sampah yang berada di pasaran kebanyakannya merupakan tong sampah yang beroperasi secara manual samada menggunakan kaki ataupun tangan untuk membuka penutup tong sampah, dan ini akan menyukarkan orang kurang upaya untuk membuang sampah. Secara tidak langsung dengan adanya tong sampah automatic ini dapat membantu orang kurang upaya. Project Smart Dustbin Monitoring Using GSM ini juga akan memudahkan pihak pengurusan pembersihan di sesebuah pasaraya atau kompleks membeli-belah untuk membuat pantauan terhadap tong sampah yang telah penuh. Dengan adanya projek ini ia dapat mengurangkan masalah tong sampah yang penuh sehingga melimpah dan tong sampah yang tidak di uruskan dengan baik atau tidak membuat pembersihan terhadap tong sampah yang telah penuh dengan sampah. Projek ini akan beroperasi sekiranya sensor yang terdapat pada bahagian sepan tong sampah tersebut mengesan atau mengenalpasti sesuatu objek menghampirinya dalam jarak 3 kaki dan secara automatiknya penutup tong sampah akan terbuka dan dalam saat , selepas itu penutup tong sampah ini akan tertutup semula. Sekiranya sampah didalamnya sudah penuh., tong sampah ini akan memberikan isyarat bunyio dan dalam masa yang sama ia kan mengaktifkan Sistem Global untuk Komunikasi Mudah Alih (GSM) dan maklumat akan dihantar memalui pesan ringkas (SMS) kepada pihak pengurusan pembersihan. Sistem operasi tong sampah ini juga akan dimatikan secara automatic sekiranya tong sampah penuh dan ia tidak beroperasi walaupun terdapat objek

yang menghampiri tong sampah ini, sehingga butang reset ditekan. Walaubagaimanapun, tong sampah automatik ni masih banyak yang perlu diperbaiki dan dibuat penambahbaikan dari segi aspek operasinya dan system dalamnya.

DEDICATION

Alhamdulillah, praise to the Almighty Allah S.W.T

This thesis is dedicated to:

My beloved mother Puan Saniah Binti Tufari and my father Encik Md Yusof Bin
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My beloved family,

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Thanks for their encouragement and support until I have finish my final year project.

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TABLE OF CONTENT

Abstrak.....	i
Abstract.....	ii
Dedication	iii
Acknowledgement.....	iv
Table of Content.....	v
List of Figure.....	vi
List of Table.....	vii
CHAPTER 1 : INTRODUCTION	
1.1 Background.....	1
1.2 Problem Statement.....	2
1.3 Objective.....	3
1.4 Scope of Project.....	3
1.5 Project Significance.....	4
1.6 Project Methodology.....	5
1.7 Thesis Structure.....	5
1.8 Conclusion/Summary.....	6
CHAPTER 2 : LITERATURE REVIEW	
2.1 Introduction.....	5
2.1.1 Dustbin application	5
2.2 Waste Issues.....	6
2.2.1 Meaning of waste.....	6
2.2.1.1 Types of waste.....	7
2.2.1.2 Liquid type.....	7
2.2.1.3 Solid type.....	7
2.2.1.4 hazardous type.....	7

2.2.1.5	Recyclable type.....	7
2.3	Previous Journal	
2.4	GSM (Global System for Mobile Communication).....	8
2.4.1	GSM Module.....	8
2.4.2	The comparison Mobile Phone or GSM / GPRS Modem.....	9
2.4.3	Advantages of SMS through GSM Network.....	10
2.4.4	The different GSM module SIM300 and SIM900.....	10
2.5	IR Sensor (IR Receiver and IR Emitter).....	11
2.5.1	Reflective Surface.....	12
2.5.2	Non-reflective Surface.....	12
2.5.3	Photodiode.....	12
2.5.4	IR LED.....	13
2.5.5	Sensitivity of IR piroelectric sensor.....	13
2.6	Power Supply.....	14
2.7	Servo motor.....	15
2.7.1	The difference between a DC motor and servo motor.....	15
2.7.2	Stepper motors.....	16
2.8	Arduino Uno Board.....	17
2.8.1	PIN that specialized function.....	17
2.9	Descriptions of LCD Display Basic 16x2.....	19
2.10	PIR Motion Sensor.....	21
CHAPTER 3 : METHODOLOGY.....		22
3.0	Introduction.....	22

3.1	Summary of project development process.....	24
3.2	Planning.....	25
3.2.1	Data collection.....	25
3.2.2	Flowchart of the Project Methodology.....	26
3.3	Design.....	27
3.4	Flowchart System.....	29
3.5	Implement.....	30
3.5.1	Hardware Implementation.....	30
3.5.1.1	Hardware Placement.....	30
3.5.1.2	Hardware Device Description.....	30
3.6	Compiling Program to Arduino.....	33
 CHAPTER 4 : RESULT AND DISCUSSION.....		35
4.1	SOFTWARE PART.....	35
4.1.1	Coding in Arduino (PIR Sensor and Servo Motor).....	35
4.1.2	Coding in Arduino (IR sensor and GSM).....	37
4.1.3	Simulation in Arduino Software.....	37
4.2	HARDWARE PART.....	38
4.2.1	Testing Voltage at Each Digital Output Pin in Arduino.....	38
4.2.2	Testing Connection between Arduino and Servo motor.....	39
4.2.3	Testing the IR Sensor detects and sending message using GSM.....	41
4.2.4	Testing the PIR Motion Sensor and it distance.....	41
4.2.5	Type of sensor used (PIR Sensor and IR Sensor).....	42
4.2.6	Type of sensor used (IR Sensor).....	42
4.2.7	GSM (Global System for Mobile Communication).....	43
4.2.8	First trial to open and close cover dustbin.....	44

4.3	Discussion	47
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**CHAPTER 5 : CONCLUSION AND RECOMMENDATIONS FOR FUTURE
WORK**

5.1	Conclusion.....	48
5.2	Recommendation and future work.....	49
	REFERENCES.....	50

APPENDIX

A	Coding in Arduino.....	51
B	Data sheet LCD (Liquid Crystal Display) 16x2.....	57
C	PIR Motion Sensor.....	58
D	IR Sensor.....	61
E	GSM (Global System for Mobile Communication).....	63
F	Arduino Uno Board (Microcontroller).....	65

LIST OF TABLE

Figure 2.3: GSM SIM300	10
Figure 2.4 : GSM SIM900	10
Figure 2.5 : schematic symbol	12
Figure 2.6: Power Supply Circuit	13
Figure 2.7 : Servo motor	14
Figure 2.8 : Type of DC motor	15
Figure 2.9 : Atmega168 Pin Mapping	18
Figure 2.10 : LCD Display basic 16x2	20
Figure 2.11 : PIR Sensor Motion	21
Figure 3.0 : Major step in methodology	22
Table 3.1 : Summary of project development process	24

Figure 3.2.2 : Flowchart of Project Methodology	26
Figure 3.3 : The main components covering the input and output	27
Figure 3.3.1 : Flowchart of process for Dustbin Monitoring Using GSM	29
Figure 3.4 : Arduino Uno Board	30
Figure 3.5 : GSM module	31
Figure 3.6 : IR Sensor	31
Figure 3.7 : LCD Display 16x2	32
Figure 3.8 : Servo motor	32
Figure 3.9 : Upload the code inside Arduino Uno Board	33
Figure 3.10 : Click Button Compile	34
Figure 3.11 : Connection from PC to the Arduino Uno board by using USB cable	34
Figure 4.0 : Coding Arduino	35
Figure 4.1 : Coding Arduino	37
Figure 4.2 : Coding in Software Arduino	37

Figure 4.3 : Arduino Uno Board	38
Figure 4.4 : Connection between Arduino and servo motor	39
Figure 4.5 : PIR Sensor	42
Figure 4.6 : IR Sensor	42
Figure 4.7 : GSM Module	43
Figure 4.8 : Full function Smart Dustbin	44
Figure 4.9 : PIR sensor and servo motor	44
Figure 4.10 : Cover dustbin open after PIR sensor detect	45
Figure 4.11 : IR sensor detect dustbin full then connect with GSM	45
Figure 4.11 : Message receive from GSM	46

LIST OF FIGURE

Table 4.1 : Voltage Level of Arduino Output Pin	39
Table 4.2 : Range Data Delay Timer (OPEN and CLOSE cover dustbin).....	40
Table 4.3 : Time taken for receive the massage.....	4
Table 4.4: Testing the sensitivity of PIR sensor and the distance for detected.....	41

CHAPTER 1

INTRODUCTION

1.1 Project Background

Nowadays many people prefer to shop in supermarkets because there are a variety of goods from raw materials to cook up household items. With the presence of many visitors to the supermarket will generate a lot of waste disposal problems and can lead to the trash cannot cope with the amount of waste that much that sometimes it overflows. This is because the cleaning of waste management is not very sensitive to the situation full of trash. Most of the available bins of supermarkets or public areas not be collected on time and sometimes it was full of trash rapidly due to the many visitors who shop at supermarkets. So the model is designed bins to resolve this issue. When found bins are full, short message will be sent to the garbage collector to collect the waste.

In this project is combines knowledge in the field of telecommunications and computing. Sending short messages via a modem that is GSM (Global System for Mobile Communications) mobile phones to be used and studied and practiced to this project. The project also uses the C programming to PIC was also used and studied and applied to the control circuit.

1.2 Problem Statement

The world today is moving fast along with the rapid flow of technology. A long with it, people have to move fast so it not misses out by modernity technology that available in the world today. Now with changing this time is need to make some application or product that very useful for all segment of society without thinking their status.

If seen in the market most of dustbins are manually operated and it will use leg and hand for open the cover of dustbin that can allow a person to dispose the rubbish. But it very difficult for the persons with disabilities. This dustbin is not user –friendly system dustbin because it only can use for normal people and not for person with disabilities.

In the hypermarket it will more of dustbin that be prepared, it will make easy to people for dispose of rubbish. But some time, when the rubbish is overloading the management team cleanup is slow to take the action for the collected rubbish. This is because cleaner not accept the instruction or information about the overflow rubbish inside the dustbin. For monitoring the dustbin it still use the old-fashioned way and it is not very efficient for this age, so created this project can make the work clean faster and easier.

Other problem that can see is many people not interested to use dustbin for littering because they not interesting to came near the dustbin. So this project can attract attention people to use dustbin because it very easy to use and it is a very modern system.

1.3 Objective

The purpose of this project is to provide some project that can monitor the dustbin using the new technology.

1. To develop a prototype of the smart dustbin monitoring system, when the trash inside the dustbin is full it will automatically detects by the sensor system.
2. To develop a system that can send information from one place to another place without any limitation
3. To integrate the project of dustbin that uses the communication system for sending information data and it also can provide the user-friendly system.

1.4 Scope of Project

The project is about monitoring the dustbin inside the hypermarket. This project is more suitable for area inside hypermarket or in the specific area. The focus of this project is make easy for cleaner collect the overload garbage without waste of time, they will come collect when get the message.

The projects have use Arduino Uno Board because it can control the sensor, motor and GSM to run the function. This project have use software and hardware component. For the software application it will apply to active the component and run the application GSM to make the connection between dustbin and management. The message full rubbish will send to supervisor for the information and will be notified to cleaner for collect the rubbish.

On the other hand, to order word the limitation of this project

- This project are focus on the hypermarket or specific area
- The dustbin will operate when human approaching the sensor and the cover will open
- This dustbin will only send the message to department of cleaning management
- The project will become user-friendly that can use for all type of people whether normal or persons with disabilities.

1.4.1 The basic concept of Arduino Uno Board

In this project, Arduino board is use to become the main system that can control or conduct other device for make it function properly. The Arduino board can be programmed with the Arduino Software (IDE). This programmed can control the device electronic that use for the system. The coding of device that want be use can define in the Arduino Software system or in internet

1.4.2 GSM (Global System for Mobile Communication)

GSM (Global System for Mobile Communication) is a cellular network and it means that cell phones connect to it by searching for cells in the immediate vicinity. The GSM module that use can be programmed by the Arduino software to making the call or sending message.

1.5 Project Significance

The expectation of this project is to solve problem rubbish not collect and make the ease for monitoring the dustbin. It also becomes the user-friendly dustbin that can use for all type of people. Cleaner can collect the rubbish when get information that dustbin is full, so it will save time for them to make the collect rubbish without go to the dustbin and make checking. It also can help cleaner to do other work and not focus to collect the rubbish in every time. When the rubbish are collected in very smart and faster so it can avoid from the spread bacteria. This project can also ensure full rubbish can be collect as soon as possible without allowing it to overflow. If rubbish not collected it will affect our views and also will effectuation odor pollution. From this project it can solve the problem that faced by the management of cleaning. Other expectation for this project is use the new application or system that is GSM for monitoring the full rubbish. This project will became the one of the project can help people for their convenience.

1.6 Projects Methodology

Project methodology is an important part where it is show the step of the project to be complete. The objectives must be achieved to obtain a successful outcome in this project. Project started with having discussions with supervisor, then study the project have been designed by other company or person. For the following stage, all the information related to hardware and software components information is seeking and the most suitable would be selected for used in this project. If the output of the system did not fulfill the desired output, so the troubleshooting would be carry out until it reaches the project requirements. Flow chart for this project is shown on the chapter 3.

1.7 Thesis Structure

Chapter 1:

The first chapter introduces brief idea of the project. It focused on the overview of the project, detailing the objectives, the problem statement, scope and outcome of the project.

Chapter 2:

Projects background is discussed in this chapter. The method concept, theory, and some characteristic of component of hardware that used in this project is discussed in this chapter. This chapter also contain a definition of term used in this project also discusses the concept of the research and how it related with the theory.

Chapter3:

This section is methodology chapter. Methodology chapter is a schedule or steps that need to be complete, detailed reports of studies done to achieve aim objective. This chapter explains the procedure taken to complete the project. It consist the detail development of this project.

Chapter4:

The chapter four is about the result and discussion that we obtain based on the methodology that we used. All the simulations, data collection and analysis obtained were discussed in detail. The results were compared with the outlined objectives in order to state some hypothesis and conclusion.

Chapter 5:

The chapter five is about the conclusion and future work. In this section, we will conclude what we have done and followed by some recommendation on how to improve the performance of the system based on the desired results.

1.8 Conclusion and Summary

In this chapter 1 roughly describe about the project which is “Dustbin Monitoring Using GSM”. In this chapter, it have consists of background of project, problem statement, objective and also the scope of this project. Inside in his chapter it explains about a basic guideline for this project “Dustbin Monitoring Using GSM”. For the next chapter it is about the Literature Review that is provide the review from previous research that is related to this project.

CHAPTER 2

LITERATURE REVIEW

2.1 Introductions

In this chapter will explain and discuss about the component and the previous study or research that use for Project Smart Dustbin using GSM. There are previous researches on roughness in smart dustbin system that has using the different circuit and application. It also has use the different method, material and experiment design to obtain the problem of waste. In addition, in this chapter it will be include about the GSM system, type of sensor and the PIC microcontroller used in previous research.

2.1.1 Dustbin application

(Shove, 2007)Dustbins are important in life people can throw garbage in it. Without it the earth would be cover with garbage. It became important equipments in a company or big supermarkets because they have a garbage disposal system are important in order to secure their garbage waste management and orderly.

Although an intrinsic part of our everyday routines, the dustbin's role as a mediator of changing waste practices has rarely been considered. As bins become reconfigured as environmental technologies for contemporary recycling programmes, is argued that they provide a revealing indicator of new waste relationships in society.