



Faculty of Electrical and Electronic Engineering Technology



The Design of IOT Automatic Hand Sanitizer with Water Level Sensor

SHANGETHA D/O MAHADEVAN

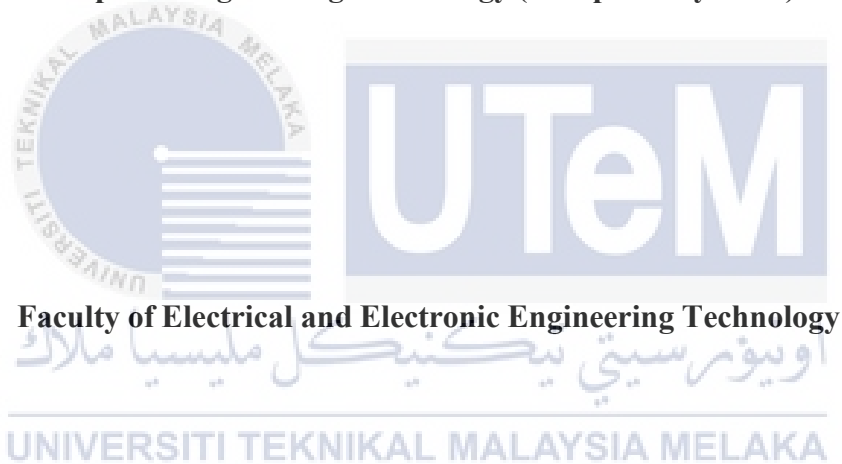
Bachelor of Computer Engineering Technology (Computer Systems) with Honours

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The Design of IOT Automatic Hand Sanitizer with Water Level Sensor

SHANGETHA D/O MAHADEVAN

**A project report submitted
in partial fulfillment of the requirements for the degree of
Bachelor of Computer Engineering Technology (Computer Systems) with Honours**



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**BORANG PENGESAHAN STATUS LAPORAN
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APPROVAL

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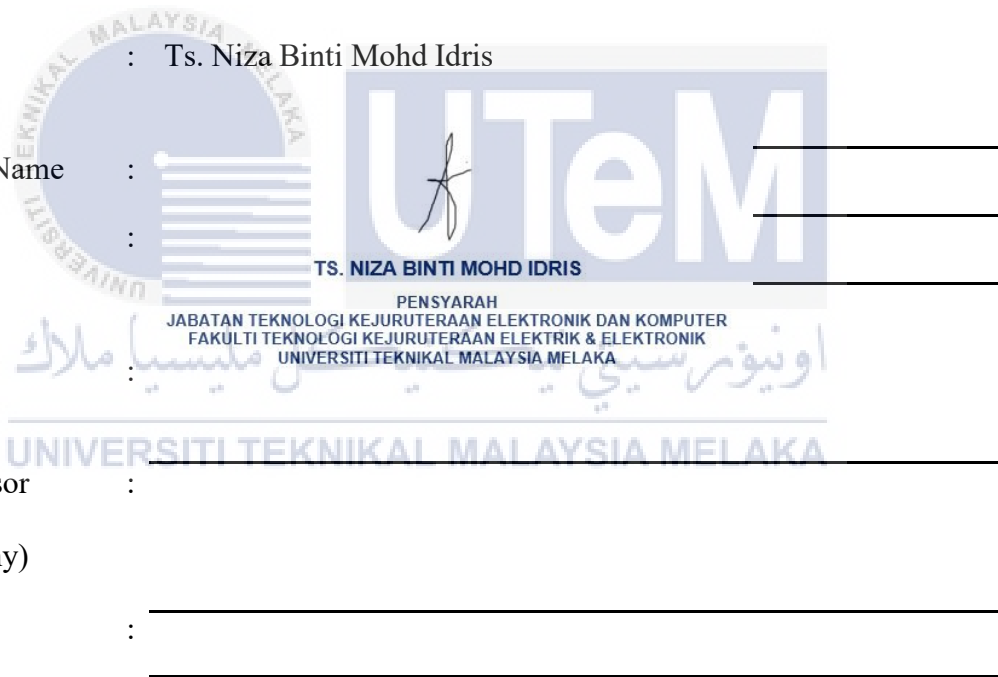
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DEDICATION

*To my beloved mother, Eagavalli, and father, Mahadevan,
and
To my supervisor Ts. Niza Binti Mohd Idris*



ABSTRACT

Automatic Hand Sanitizer With Water Level Sensor (Automatic Hand Sanitizer With Water Level Sensor) is an automatic system that reduces the spread of viruses and the use of human resources. This device will provide high-intensity hand cleaning when placing the palm on its detector. The pump will stop when there is no command received from the detector with the object. Technological progress will make humans easier and happier and safer. Automatic systems are preferred over manual systems. The research results show that the Automatic Hand Sanitizer with water level sensor can control covid infection from spreading because the automatic hand sanitizer provides a solution for saving manpower and avoiding contact which is achieved by detecting the palm of the hand using an infrared sensor and then turning on the relay and the sanitation pump will pump. In addition, this tool can also ensure that the hand sanitizer container always has contents. When the hand is brought close to the hand sanitizer dispensing point, a buzzer will sound indicating that the hand sanitizer pump is activated. After receiving a signal, the device will dispense hand sanitizer in the required quantity in the form of gel or foam. Automatic Hand Sanitizer With Water Level Detection Device can also ensure that the hand sanitizer container always has its contents.

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ABSTRAK

Pembersih Tangan Automatik Dengan Alat Pengesan Paras Air (*Automatic Hand Sanitizer With Water Level Sensor*) adalah sistem automatik yang mengurangkan penyebaran virus dan penggunaan tenaga manusia. Alat ini akan memberikan pembersihan tangan dengan intensiti tinggi apabila meletakkan tapak tangan di tempat pengesannya. Pam akan berhenti apabila tiada penerimaan arahan dari alat pengesan dengan objek. Kemajuan teknologi akan menjadikan manusia lebih mudah dan gembira serta lebih selamat. Sistem automatik lebih disukai daripada sistem manual. Hasil penyelidikan menunjukkan *Automatic Hand Sanitizer with water level sensor* dapat mengawal jangkitan covid dari merebak kerana pembersih tangan automatik menyediakan penyelesaian untuk penjimatan tenaga manusia dan mengelakkan sentuhan yang dicapai dengan mengesan tapak tangan menggunakan pengesan Infra merah dan kemudian menghidupkan relay dan pam sanitasi akan mengepam. Selain itu, alat ini juga dapat memastikan bekas pembersih tangan sentiasa mempunyai kandungan. Apabila tangan didekatkan pada tempat pengeluaran pembersih tangan, buzzer akan berbunyi yang menunjukkan bahawa pam pembersih tangan diaktifkan. Setelah mendapat isyarat, alat tersebut akan mengeluarkan pembersih tangan pada kuantiti yang diperlukan dalam bentuk gel atau buih. Pembersih Tangan Automatik Dengan Alat Pengesan Paras Air juga dapat memastikan bekas pembersih tangan sentiasa ada kandungannya.

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TABLE OF CONTENTS

	PAGE
DECLARATION	
APPROVAL	
DEDICATIONS	
ABSTRACT.....	i
ABSTRAK.....	ii
ACKNOWLEDGEMENTS.....	iii
TABLE OF CONTENTS.....	i
LIST OF TABLES.....	iii
LIST OF FIGURES.....	iv
LIST OF SYMBOLS.....	vi
LIST OF ABBREVIATIONS.....	vii
LIST OF APPENDICES.....	viii
CHAPTER 1 INTRODUCTION.....	1
1.1 Background.....	1
1.2 Problem Statement.....	2
1.3 Project Objective.....	2
1.4 Scope of Project.....	2
CHAPTER 2 LITERATURE REVIEW.....	4
2.1 Introduction.....	4
2.2 Previous Development.....	4
2.3 Review On IOT In Automatic Hand Sanitizer.....	4
2.4 Review On the Components Used in Iot For Hand Sanitizer.....	6
2.4.1 Arduino ESPWiFi Module.....	6
2.4.2 Arduino MKR 1000 WiFi.....	7
2.4.3 Arduino Uno R3.....	8
2.4.4 Arduino Pro Mini 328.....	9
2.4.5 Quark D2000.....	10
2.4.6 Teensy 4.0.....	10
2.4.7 Launchpad MSP430.....	11
2.4.8 Raspberry Pi 4.....	12
2.4.9 Raspberry Pi Zero W.....	13
2.4.10 Raspberry Pi Pico.....	14

2.5 Review on IOT platforms used in Hand Sanitizer.....	15
2.6 Comparison of Size, Weight and Cost of different component for IoT.....	17
Table 2.1 Comparison of Size, Weight and Cost of different component for IoT.....	18
2.7 Related Previous Works.....	18
2.7.1 Design of Automatic Sanitizer Dispenser Machine Based Ultrasonic Sensor.....	18
2.7.2 Design of Automatic Hand Sanitizer with Temperature Sensing.....	20
2.7.3 Design and Implementation of a Smart Hand Sanitizer Dispenser with Door Controller using ATMEGA328P.....	22
2.8 Comparison of previous projects in term of the main component, method, advantages, and disadvantages of different automatic hand sanitizer.....	26
2.9 Summary.....	30
CHAPTER 3 METHODOLOGY.....	31
3.1 Introduction.....	31
3.2 Experimental / study design.....	31
3.3 Hardware requirement.....	31
3.4.1 Arduino Integrated Development Environment (IDE) software.....	39
3.4.2 Blynk application.....	40
3.6 Planning.....	42
3.8 Design.....	43
3.9 Project Software.....	44
3.10 Cost of project.....	45
3.11 Summary.....	46
CHAPTER 4 RESULTS AND DISCUSSIONS.....	47
4.1 Introduction.....	47
4.2 Circuit Design On Tinkercad.....	47
4.3 Project Implementation In a Model Of Hand Sanitizer.....	49
4.4 Hand Sanitizer System Interface.....	51
4.5 Testing and Troubleshooting.....	52
4.5.1 Testing the notification system on Blynk Application.....	52
4.6 Discussion.....	57
CHAPTER 5 CONCLUSION AND RECOMMENDATIONS.....	59
5.1 Introduction.....	59
5.2 Conclusion.....	59
5.3 Recommendations	60
5.4 Project Potential.....	60
REFERENCES.....	61
APPENDICES.....	63

LIST OF TABLES

TABLE	TITLE	PAGE
Table 2.1	Comparison of Size, Weight and Cost of different component for IoT	26
Table 2.2	Comparison of Previous Projects in term of the main component,method, advantages and disadvantages of different automatic hand sanitizer	29
Table 3.1	The pin category, Pin name and details of Arduino Uno	33
Table 3.2	The Specification of Arduino Uno	34
Table 3.3	The Specification of the IR Sensor	36
Table 3.4	The Quantity and Prices of each Components for the Project	45
Table 4.1	Distance versus the average time to receive a notification for the container	55
Table 4.2	Distance versus the rate of hand detection (100%)	56

LIST OF FIGURES

FIGURE	TITLE	PAGE
Figure 2.1	Arduino ESPWiFi Module	6
Figure 2.2	Arduino MKR 1000 WiFi	7
Figure 2.3	Arduino Uno R3	8
Figure 2.4	Arduino Pro Mini 328	9
Figure 2.5	Quark D2000	10
Figure 2.6	Teensy 4.0	10
Figure 2.7	Launchpad MSP430	11
Figure 2.8	Raspberry Pi4	12
Figure 2.9	Raspberry Pi Zero W	13
Figure 2.10	Raspberry Pi Pico	14
Figure 2.11	The Blynk Logo	15
Figure 2.12	The Cayenne	16
Figure 2.13	The Particle logo	17
Figure 2.14	Timing diagram for Ultrasonic sensor SR04	19
Figure 2.15	Schematic of the sanitizer dispensing machine circuit	20
Figure 2.16	Visualization of flowchart	21
Figure 2.17	Smart Hand sanitizer dispenser with door controller block diagram	23
Figure 2.18	Smart Hand sanitizer dispenser with door controller circuit diagram	24
Figure 3.1	Arduino Uno	32
Figure 3.2	Infrared Sensor (IR)	34
Figure 3.3	12V DC Pump	36
Figure 3.4	Buzzer	37

Figure 3.5	Ultrasonic sensor	38
Figure 3.6	Arduino IDE	39
Figure 3.7	Blynk Application Interface	40
Figure 3.8	Block Diagram of the Project	41
Figure 3.9	Project Flow Chart	42
Figure 3.10	Design Illustration	43
Figure 3.11	Flow chart Software of Project	44
Figure 4.1	The circuit design of the Project	48



LIST OF SYMBOLS

mA - Milliamps (mA)

V - Voltage



LIST OF ABBREVIATIONS

- Internet of Things
- Passive Infrared
- Centimeter



LIST OF APPENDICES

APPENDIX	TITLE	PAGE
Appendix A	Coding of the Project.....	63
Appendix B	Gantt Chart.....	66



CHAPTER 1

INTRODUCTION

1.1 Background

During pandemic of COVID-19, technologists are focusing on providing devices or systems to reduce the spread of the virus such as temperature scanners and disinfection machines. Apart from that, hand sanitizer is in great demand around the world during the COVID-19 pandemic since it is one of the most effective ways to prevent the transmission of illnesses and reduce the chance of becoming ill. When individuals are on the go, hand sanitizer is more handy, and the Centers for Disease Control claims that sanitizers should lower the quantity of germs in various settings. One of our Standard Operating Procedures (SOP) is to sanitise our hands at every entrance and leave of the premises. Hand sanitation is a legal requirement for anybody who enters a building. People will always use and touch the same container of hand sanitizer since there is a SOP. People who come into contact with contaminated surfaces or items and subsequently touch their eyes, nose, or mouth might get COVID-19. This might enhance the chances of a human being contracting the virus. People may become infected with the virus if they contact the contaminated surface of an empty hand sanitizer bottle because they are unable to sterilise their hands, then people are considered as not complying with the requirement. The hand sanitizer containers are sometimes empty as the worker or the owner did not realize of the level of hand sanitizer in respective containers. People are really

concern on contact points or parts.

1.2 Problem Statement

We have a standard hand sanitizer container on the premises that we must squeeze or pump , but people are avoiding using it because they don't want to touch the hand sanitizer bottle that has been handled by multiple people.

Some establishments require a staff to stand at the door and serve out hand sanitizer to each visitor or client.

Some premises do not realize that the hand sanitizer is run out which make people to not sanitize their hand before entering the premise. Some people are taking too long to get the hand sanitizer. It will cause the next person to skip sanitizing their hands as they lost their patience to wait for their turn.

1.3 Project Objective

1. To design the system for automatic hand sanitizer with water level sensor
2. To produce the system detect the presence of hand palm near the nozzle
3. To analyse the performance of sensor on detecting hand palm and water level

1.4 Scope of Project

The project focuses on designing automatic hand sanitizer with water level sensor which can analyse the system response to the presence of hand palm

and the performance of sensor on detect the water level. The proposed system required the integration of both software and hardware.

1. Hardware : Arduino Uno, Infrared(IR) sensor, buzzer, breadboard, jumper wires, motor water pump, Ultrasonic sensor.

2. Software : Arduino IDE, Blynk app

The prototype allows the automated distribution of hand sanitizer and detect water level by sensor. It can be used at anywhere required to sanitize hand.



CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter will discuss mainly on the research related development of Automatic Hand Sanitizer. The research related on this project development provides the author the best understanding regards project involved. Some article had been closely studied to analyse automated hand sanitizers and evaluate the advantages and disadvantages that they may provide.

2.2 Previous Development

Research article from the previous development will be explain about the description of block diagram, concept, method and hypothetical researches about security as well as notification system using Arduino ESPWiFi module and IoT emphasize and analysed. Finding knowledge, significant data, and any relevant hypotheses that support the idea of a "IOT Automatic Hand Sanitizer With Water Level Sensor" is the goal of this chapter.

2.3 Review On IOT In Automatic Hand Sanitizer

IoT (Internet of Things) refers to physical things that can connect to a network and exchange information among themselves without requiring human contact. Users can gather information from a number of sources, including humans and

machines, using this, which is known as the "Infrastructure of the Information Society." An object that has received an IP address to enable data transfer over a network is referred to as an IoT object. An item can become a part of the IoT system by adding electronic components like sensors and software. IoT is distinct from the Internet in that it allows common objects with embedded circuits to connect and communicate with one another using the Internet's current infrastructure.[13]

Peter T Lewis spoke to the Federal Communications Commission about the idea of the Internet of Things (FCC). The Internet of Things has expanded tremendously since then. There are currently more than 12 billion connected devices in use, and by the end of 2020, estimates predict that number will rise to 50 billion. With the aid of precise sensors, seamless connectivity, and real-time data collecting and analysis, IoT infrastructure has aided in the execution of efficient decisions. Both manufacturers and consumers have benefited from the Internet of Things.

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

Manufacturers have learned how their products are used and how they function in the real world and have increased their revenue by providing value-added services that improve and lengthen the life-cycle of their goods or commodities. On the other hand, consumers can mix and manage multiple devices for a more customised and sophisticated experience.

When it comes to automatic Hand Sanitizer , there's a lot to keep in mind. Automatic hand sanitizer has undergone a significant transformation in recent years and it is expected to continue to do so in the near future. Previously, automatic hand

sanitizer structures were characterised as having system that could go check if the sanitizer liquid is getting low, but a smart automatic hand sanitizer can do much more. As a result, the main purpose is to create a device that will notify the owner by sending a message to their smartphones.[13]

This highlights the importance of using existing infrastructure in the development of the proposed automatic hand sanitizer framework. As a result, this system aims to keep the owner up to date on refill the sanitizer liquid whenever the liquid level below 20%. The price of these automatic hand sanitizer devices for poor populations was taken into consideration during development. Society benefits from their availability and ease of use because they may be easily purchased by lower income groups seeking to improve their well-being.[13].

2.4 Review On the Components Used in Iot For Hand Sanitizer

2.4.1 Arduino ESPWiFi Module



Figure 2.1 Arduino ESPWiFi Module

Figure 2.1 shows the Arduino ESPWiFi Module, which provides the ability to wirelessly connect the Arduino to the internet as a significant feature. With the help of the WiFi Shield, an Arduino board may connect to the internet using 802.11 wireless requirements. A network (IP) stack that supports both TCP and UDP is provided by the Atmega 32UC3 processor, which is also a part of this WiFi shield. Finally, drawings that connect to the internet are produced using the WiFi library.

2.4.2 MKR 1000 WiFi

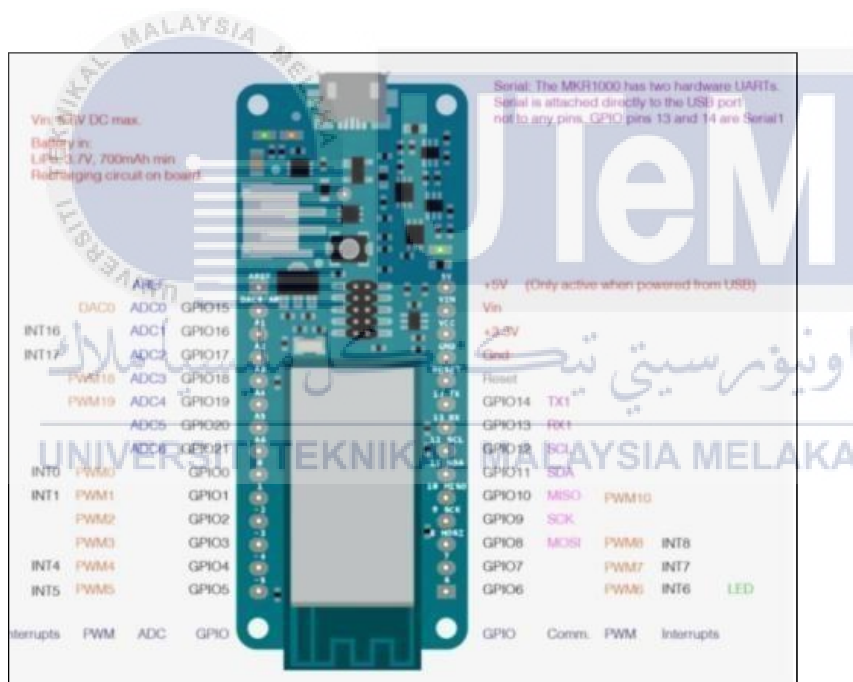


Figure 2.2 MKR 1000 WiFi

Figure 2.2 shows the MKR 1000 WiFi, most straightforward entry point for fundamental IOT and pico-network application design. A low power WINC1500 WiFi board and SAMD21 Cortex were used in the development of the MKR1000. You can