POLITEKNIK SHAH ALAM

MOBILE CONTINUITY TESTER

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JABATAN KEJURUTERAAN ELEKTRIK

DECEMBER 2019

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NAYLI ZULAIKHA BINTI JAMALLULAIL	08DJK17F2012

This report submitted to the Electrical Engineering Department in fulfillment of the requirement for a Diploma in Electrical Engineering

JABATAN KEJURUTERAAN ELEKTRIK

DECEMBER 2019

CONFIRMATION OF THE PROJECT

The project report titled “Mobile Continuity Tester" has been submitted, reviewed and verified as a fulfills the conditions and requirements of the Project Writing as stipulated

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Supervisor’s name : PUAN FA`IZAH BINTI YA`ACOB

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Verified by:

Project Coordinator name :

Signature of Coordinator :

Date :

"I acknowledge this work is my own work except the excerpts I have already explained to our source"

1. Signature :

Name : **Nayli Zulaikha Binti Jamallulail**

Registration Number : **08DJK17F2012**

Date :

DECLARATION OF ORIGINALITY AND OWNERSHIP

TITLE : MOBILE CONTINUITY TESTER

SESSION: DECEMBER 2019

1. I, **1. NAYLI ZULAIKHA BINTI JAMALLULAIL (08DJK17F2012)**

   is a final year student of **Diploma in Electrical Engineering, Department of Electrical, Politeknik Shah Alam**, which is located at **40150, Shah Alam, Selangor**. (Hereinafter referred to as 'the Polytechnic').

2. I acknowledge that 'The Project above' and the intellectual property therein is the result of our original creation /creations without taking or impersonating any intellectual property from the other parties.

3. I agree to release the 'Project' intellectual property to 'The Polytechnics' to meet the requirements for awarding the **Diploma in Electrical Engineering** to me.

Made and in truth that is recognized by;

a) **Nayli Zulaikha Binti Jamallulail**) .
(Identification card No: - 980908435204) ...…….
) **NAYLI ZULAIKHA BINTI JAMALLULAIL**

In front of me, **PUAN FA`IZAH BINTI YA`ACOB** (Click here to enter text.)) ....……
) Click here to enter text.
As a project supervisor, on the date:

ACKNOWLEDGEMENTS

I have taken efforts in this project. However, it would not have been possible without the kind support and help of many individuals and organizations. I would like to extend my sincere thanks to all of them. I am highly indebted to lecturers and my supervisor for their guidance and constant supervision as well as for providing necessary information regarding the project & also for their support in completing the project.

I would like to express my gratitude towards my parents & member of DJK 5 for their kind co-operation and encouragement which help me in completion of this project. I would like to express my special gratitude and thanks to industry persons for giving me such attention and time.

My thanks and appreciations also go to my colleague in developing the project and people who have willingly helped me out with their abilities.

ABSTRACT

Continuity tester is a basic item of electrical test equipment used to determine if an electrical path can be established between two points that is if an electrical circuit can be made. The circuit under test is completely de-energized prior to connecting the apparatus This invention focused on electrical repair work so it can be used at home or at factory. As it is an electrical continuity tester that stores data digitally using an IoT system but basically for the technicians themselves to find the 'bad-good' wire in circuit. Most of the technicians are currently facing the delay process in testing electrical wiring. The project relates to the concept of Internet of things (IoT) system. The main controller that used is the RF Transmiter-Receiver. RF Module which is an RF transmitter receives serial data and transmits it wirelessly through RF through its antenna connected with Arduino. The transmitted data is received by an RF receiver operating at the same frequency as that of the transmitter and sending us the result of the wire along with the graph. ESP8266 is a wifi module, it is one of the leading platform of Iot. The project is highly recommended for everyone, especially in electrical wiring which is technicians. This recommendation will lead to helps individuals by created a technical device that give advantaged and benefits to others.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

This project is about digital connectivity testers that stores data on the continuity of wires used. Bit of information about this project its own use is a continuous circuit tester for electrical circuit repair that can measure the percentage of the wire whether it is a good which is safer to use or bad that lead any short circuit.This continuity tester is an idea thats is potential to make an upgrade in a better technology nowadays. It uses a transmitter to give an electrical signal to the receiver circuit hence it senses electric power through wave.An uprade were made in this continuity tester with an IoT was adding in it too. With this continuity tester it facilitates the measurement of voltage in the wiring. Futhermore the existance itself is to identify short-circuit problem within a few seconds. It helps individuals especcially technicians plus we created a technical device that give advantaged and benefits of it to our country.

1.2 Background Research

The purpose to introduce the use of this subject is because the need itself to create a product that may ease the work of workers. This invention also focused on electrical repair work so it can be used at factories or home as it is an electrical continuity tester that stores data digitally using an IoT system but it is basically for the technicians themselves to find the fault of the circuit or short circuit problems. Through this invention, we can make a breakthrough for further inventions and improvise in this product.

1.3 Problem Statement

Problem had before was not be able to accurately identify the continuity between wires in the circuit for most electrical wiring workers. The electronic device helps to

simplify and detect the conductivity by touching the end of the wire to the detect electrical current flowing through a wire and whether the wire is good or bad type of wire which is safe type of wire without any faulty can be use in circuit.

1.4 Research Objectives

The main objective of this project is to been able to checking and monitor the continuity of electrical wire whether it were bad type of wire or good type which is much safer to use by helping or avoid any circumstances that could happened such as short circuit and etc

More specifically the principle objective of this research are:

1. To facilitate the work registering and recording data during wiring work.
2. This innovation of continuity tester can identify the short circuit problem by recheck the wire in seconds.
3. To help in reduce time for checking wires

1.5 Scope of Research

1. This project scope is focusing on monitor and check the continuity of electrical wire whether it were bad type of wire or good by checking the percentage of the wire easily using Blynk Apps on phone which our main target is for technician itself.
2. The. An innovation that we created in order to advance our technology especially in electrical industry
3. The main controller is using the Arduino Uno. The microcontroller will connect with the other component such as receiver and transmitter to make the component work as desired.

1.6 Project Significance

This innovation significance is way more difference than the normal existance of continuity tester which is the main is the function of the IotT itself that stores data in the software by using Blynk apps. This continuity tester itself uses a transmitter to give an electrical signal to the receiver circuit hence it senses electric power through wave. By the time it sending the measure current of the wire that lead to the result by showing the percentage depending on the condition of the wire itself whether it is on good condition or not. Other than showing the percentage it also will also shows the graph of the wire by using apps. It saves and controlled data past few months up to 3 months of the usage.

1.7 Chapter Summary

So to summerize, this project is the usage of continuity tester may help , advanced, technically reduces time for workers in electrical repair session. It is the used for every project to advanced and helping others in the better technology. The usage data will be save in the smartphone which is helping the technician to recheck when the last usage of the continuity tester has been used. Hence, its also been able to helping technician in deciding whether the wire is suitable and safer for using or connect to any wire supply.

CHAPTER 2
LITERATURE REVIEW

2.1 Introduction

In electronics, a continuity tester is the checking appliances of an electric circuit to see if the current do flow in a complete circuit. A continuity tester is used to performed by placing to the small voltage end to end wire. If the current flow is inhibited by broken conductors, damaged components or excessive resistance the circuit is an 'open'.

The tester is also an item of electrical appliance that been used to determine if an electrical path can be established between two point the circuit under tjest is completely de-energized prior to connecting the apparatus it also consists of an indicator in series with a source of electrical power - normally a battery, terminating in two test leads. If a complete circuit is established between the test-leads, the indicator is activated.

The indicator may be an electric light or a buzzer. This led to the term "buzzing out a circuit" which means to test the continuity. Audible continuity buzzers or beepers are built into some models of multimeter, and the continuity setting is normally shared with the ohmmeter setting.

A popular design has the tester combined with a standard flashlight. A phone connector or jack plug in the rear of the unit permits a set of test leads to be plugged in effecting a quick conversion between the two applications.

For situations where continuity testing must be done on high resistance circuits, or where delicate conductors and sensitive components that might be damaged by excessive current are present, a low voltage, low current device must be used. These typically use an op-amp and watch batteries to drive an LED as an indicator. These testers can be exquisitely sensitive; for example they will indicate if the test points are taken by both hands.

There are times when a simple continuity test fails to reveal the problem. For example, vibration-induced problems in automobile wiring can be extremely difficult to detect because a short or open is not maintained long enough for a standard tester

to respond in these applications a latching continuity tester is used. A more complex device, it detects intermittent opens and shorts as well as steady-state conditions.

2.2 Control System

Control System theory has played an important role in formulating the theoretical basis for understanding how a system work. A control system is an interconnection of components forming a system configuration that will provide a desired system response. The basis for analysis of a system is the foundation provided by linear system theory, which assumes a cause-effect relationship for the components of a system. Therefore a component or process to be controlled can be represented by a block, as shown in Figure 2.1. The input-output relationship represents the cause-and-effect relationship of the process, which in turn represents a processing of the input signal to provide an output signal variable, often with a power amplification. An open-loop control system utilizes a controller or control actuator to obtain the desired response, as shown in Figure 2.1. An open-loop system is a system without feedback.

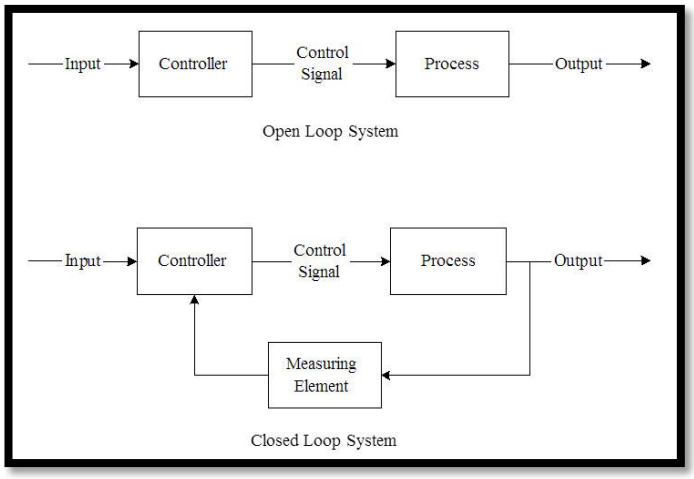

Figure 2. 1: Block diagram of open loop and closed loop system

A simple closed-loop feedback control system is shown in Figure 2.1. A feedback control system is a control system that tends to maintain a prescribed relationship of one system variable to another by comparing functions of these variables and using the difference as a means of control. A feedback control system often uses a function

of a prescribed relationship between the output and reference input to control the process.

2.2.1 Microcontroller

A microcontroller board based on the ATmega328 (datasheet). It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz ceramic resonator, a USB connection, a power jack, an ICSP header, and a reset button. A microcontroller is a small computer on single metal oxide semiconductor integrated circuit chip. In modern terminology, it is similar to but less sophisticated a system on chip. It may include a microcontroller as one of its components. Microcontroller are designed for embedded applications in contrast to the microprocessors used in personal computers or other general purpose applications consisting of various discrete chips. Microcontrollers are mostly designed for embedded applications and are heavily used in automatically controlled electronic devices such as cellphones, cameras, microwave ovens, washing machines, etc.

2.2.2 Arduino

Arduino Uno is an open-source microcontroller board based on the Microchip ATmega microcontroller and developed by Arduino. The board is equipped with sets of digital and analog input/output (I/O) pins that may be interfaced to various expansion boards (shields) and other circuits. The board has 14 Digital pins, 6 Analog pins, and programmable with the Arduino IDE (Integrated Development Environment) via a type B USB cable. It can be powered by the USB cable or by an external 9-volt battery, though it accepts voltages between 7 and 20 volts. The Arduino Uno has a number of facilities for communicating with a computer, another Arduino board, or other microcontrollers.

2.3 Chapter Summary

This section focusing on the different topics based on the sub topics the first is the research that we have found an written in the literature review and the components that been use in this project.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

In order to realize this project as a product that ready to use with safety characteristic, a very comprehensive plan is undertaking. A step by step procedure is done so that the project can be completed in time.

3.2 Project Design and Overview.

As mention in previous chapter, the main controller is using Arduino. The design of the controller circuit using Arduino is realize using Proteus Software to make sure the circuit is run as we desired. Futhermore, we can transmit the data and receive it through the controller and the data that we receive give a signal through Arduino and can be viewed using a Blynk apps that has been upload into it by using the Arduino Uno and Wifi ESP8266-01 module.

Arduino Uno will react as microcontroller will receive and fetch data of the measurement from the transmitter and receiver which is transmit through frequency or wave. ESP8266 is a WiFi module, it is one of the leading platform for Internet of Things. It can transfer data to IOT cloud.

3.2.1 Block Diagram of the Project

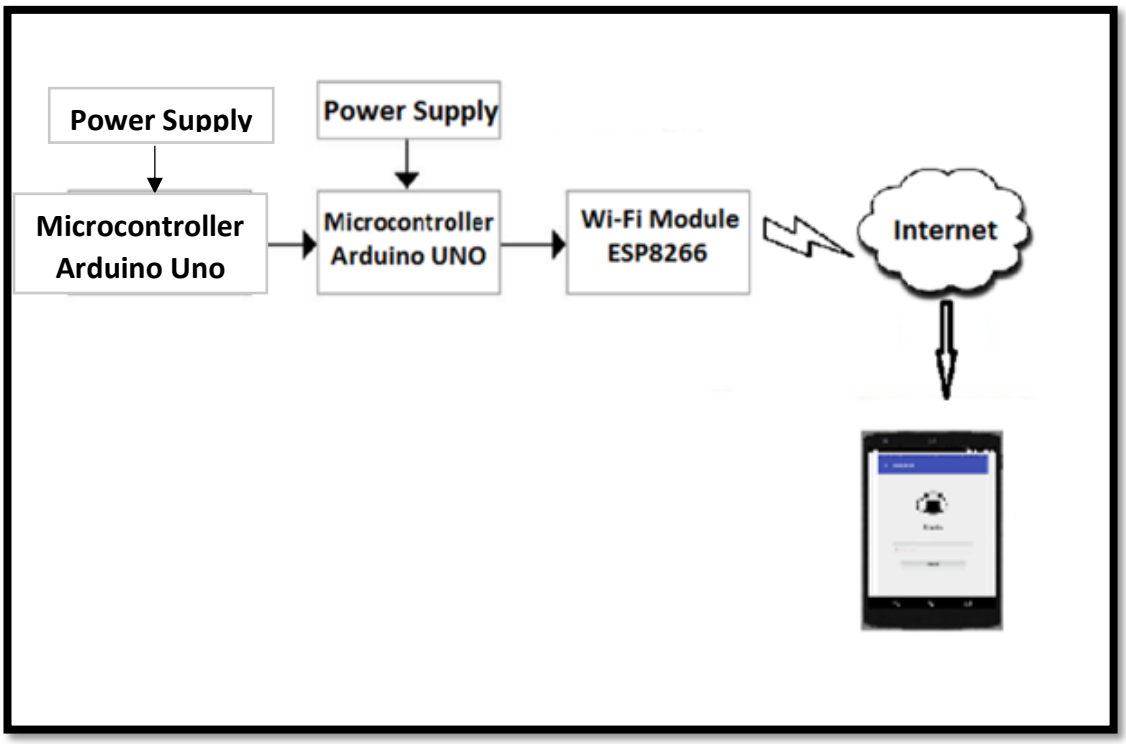

Figure 3. 2: Block diagram of the Project

3.2.2 Flowchart of the Project

Figure 3. shows the circuit diagram of the whole system. It is shows that the Microcontroller will connect with the required sensors which is the receiver and transmitter. Then, the microcontroller will process the data from sensor. Next, the data will be sent to the cloud using Wi-Fi module. Develop an application to read the data means we have to use the IoT platform such as Blynk Android Apps to read the data in the smartphone. The data will plot the graph and display the value of the percentage reading in the Blynk Android Apps. In addition, if the percentage reading is above the set point, it will alert the user using Blynk Apps.

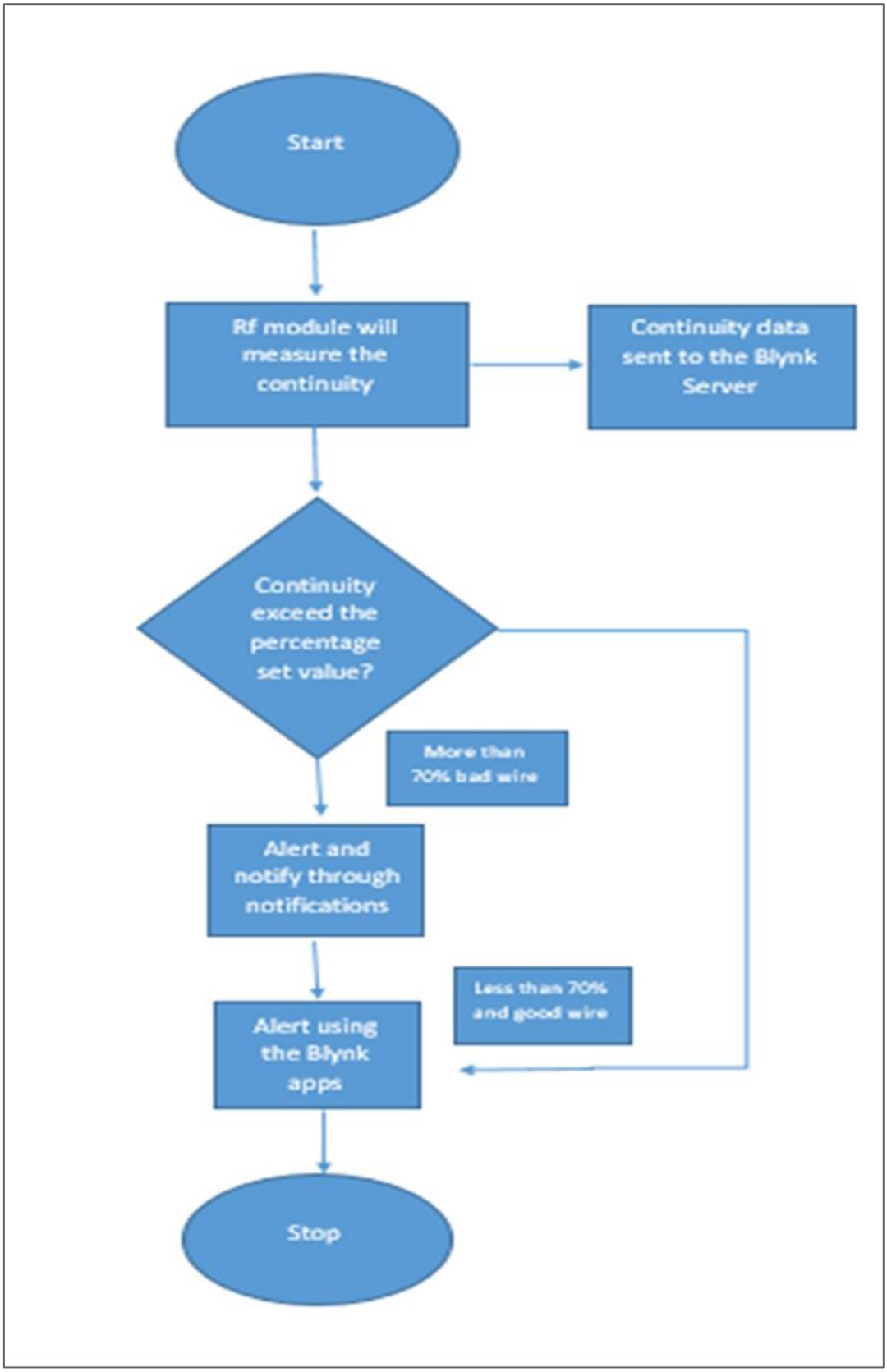

Figure 3. 2: Flow chart of operation of the system

3.3 Project Hardware

As As mention in previous chapter, the main controller is Arduino. The measure wave that is going to be use is transmitter and receiver. The Arduino will process data from the sensor and after that the data will give it to a ESP8266 module. ESP8266 is a WiFi module, it is one of the leading platform for Internet of Things. It can transfer a data to IOT cloud.

3.2.3 Schematic Circuit

Figure 3. 3 shows the overall circuit diagram of this project

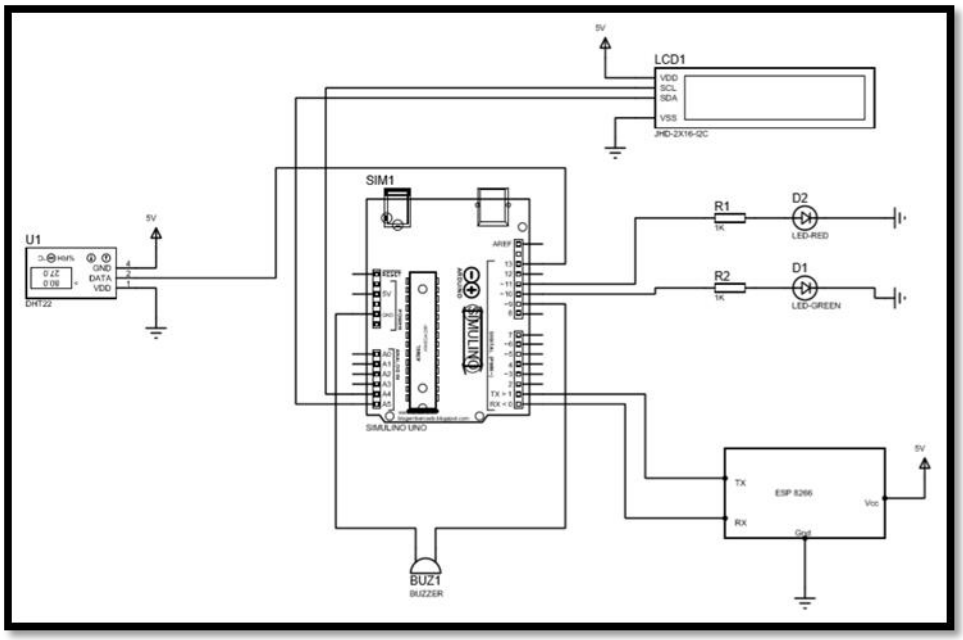

Figure 3. 3: Circuit Diagram

3.2.4 Description of Main Component

The main component is Receiver and Transmitter. This two sensor features a special properties of it which is the electric current that oscillate at radio frequencies have special properties not shared by direct current or alternating current of lower frequencies. The energy in RF current can radiate off a conductor into space as electromagnetic waves, this is the basis of the radio technology. RF current does not penetrate deeply into electrical conductors but tends to flow along their surfaces. This is known as the skin effect. stability.

3.2.4.1 Component 1 : ESP8266 WiFi Module

The ESP8266 WiFi Module is a self contained SOC with integrated TCP/IP protocol stack that can give any microcontroller access to your WiFi network. The ESP8266 is capable of either hosting an application or offloading all Wi-Fi networking functions from another application processor.

3.2.4.2 Component 2 : Arduino Uno

The Arduino Uno is a microcontroller board based on the ATmega328. It has 20 digital input/output pins (of which 6 can be used as PWM outputs and 6 can be used as analog inputs), a 16 MHz resonator, a USB connection, a power jack, an in-circuit system programming (ICSP) header, and a reset button.

3.2.4.3 Component 3 : LCD

We come across LCD displays everywhere around us. Computers, calculators, television sets, mobile phones, digital watches use some kind of display to display the time. An LCD is an electronic display module which uses liquid crystal to produce a visible image. The 16×2 LCD display is a very basic module commonly used in DIYs and circuits. The 16×2 translates o a display 16 characters per line in 2 such lines. In this LCD each character is displayed in a 5×7 pixel matrix.

3.2.5 Circuit Operation

When the power supply is feed to the Arduino, the other component also will be power up. The Arduino will process the data from the Receiver and Transmitter sensor and then the WiFi module will sent the data through the cloud using internet connection.

3.3 Project Software

Software that is used during this project is Blynk Apps for Smartphone. Blynk is a Platform with IOS and Android apps to control Arduino, Raspberry Pi and the likes over the Internet. It’s a digital dashboard where you can build a graphic

interface for your project by simply dragging and dropping widgets. The UI of the Apps is shown below :

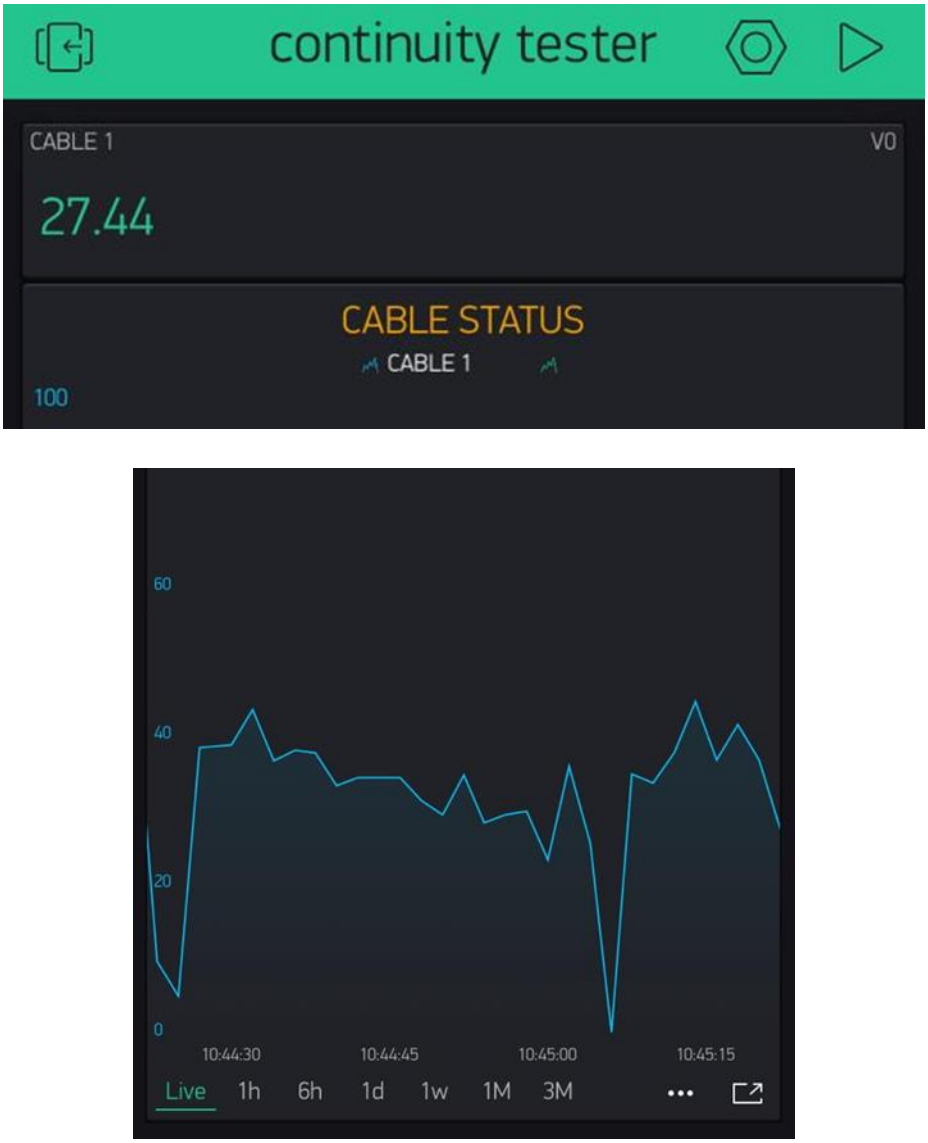

Figure 3. 4: UI of the Blynk Apps

3.4 Prototype Development

For prototype development, we have completed some of these projects by doing a mini-project. The mini-project includes Arduino, LED and RF 433 module.. The prototype development of the project is shown below :

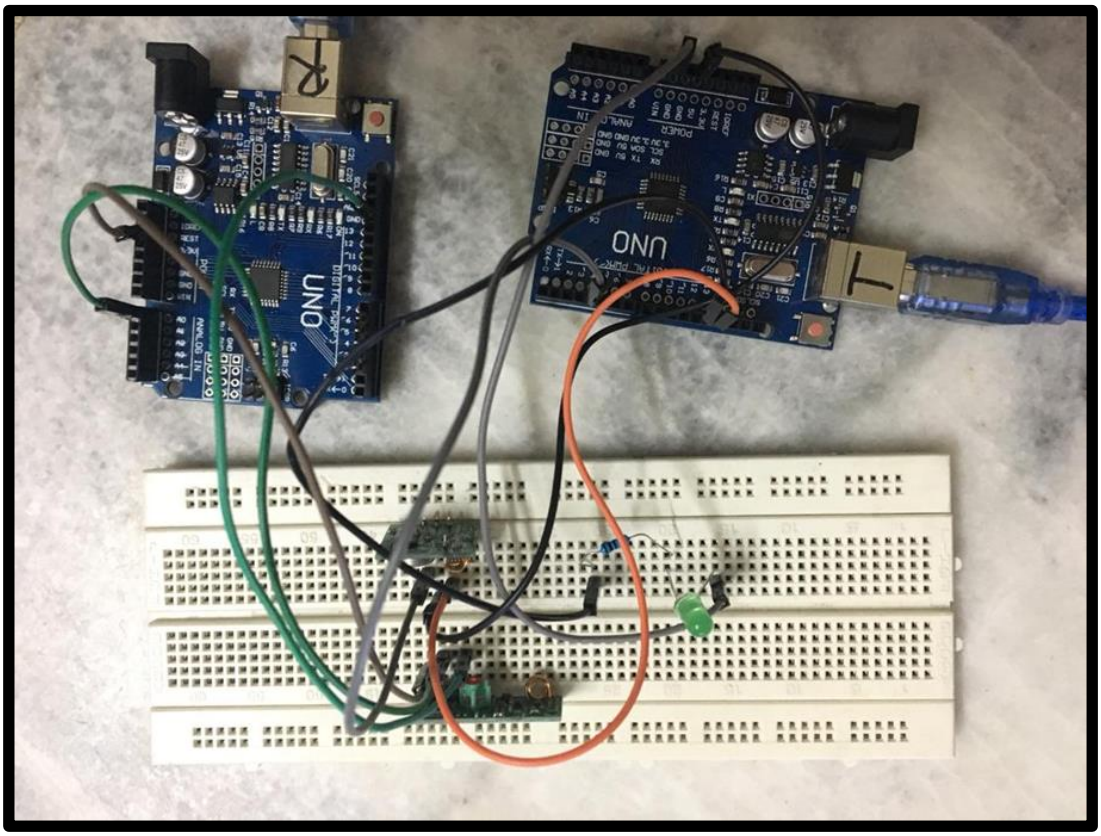

Figure 3. 5: Prototype Development

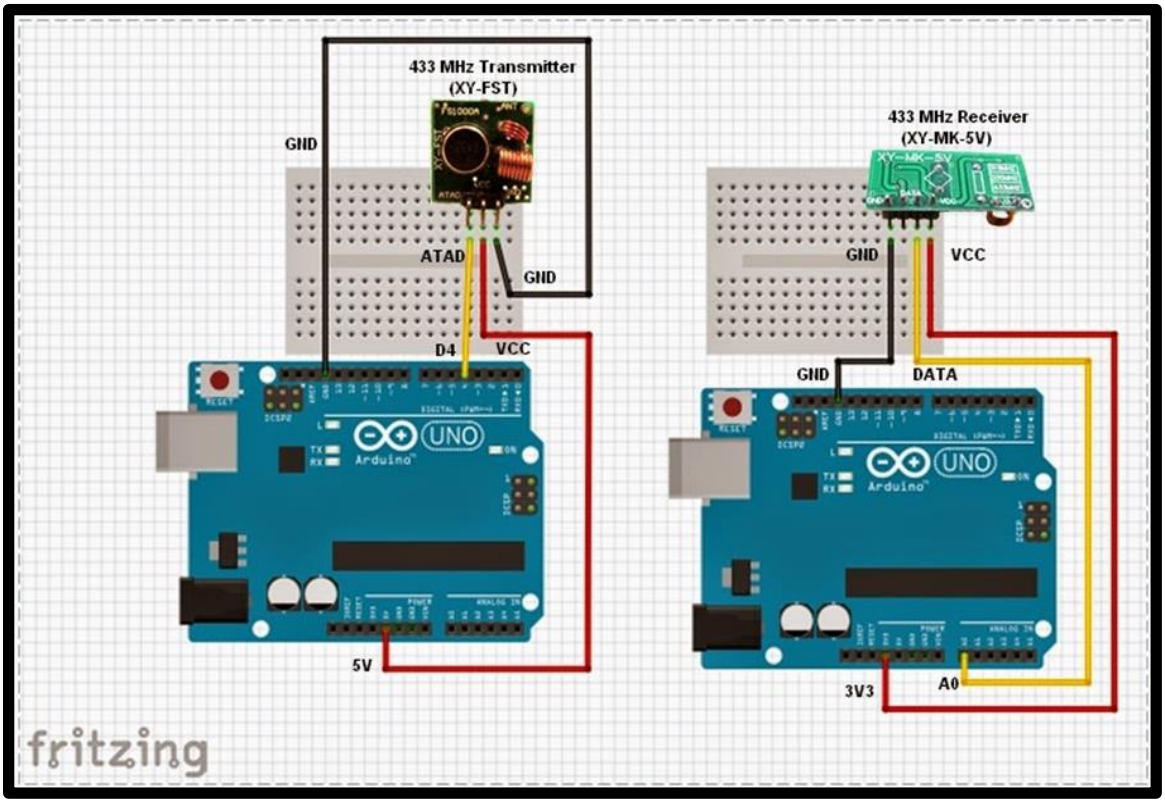

Figure 3. 6: Circuit of Prototype Development

3.4.1 Mechanical Design/Product Layout

Figure 3. 7: Front view of the project

3.5 Sustainability Element in The Design Concept

The design show that the component is in the small box, so it is easy to place it everywhere and easy to carry as well as it can be used end to end wire within 5 meter length.

3.6 Chapter Summary

So this chapter is discuss about the project design and overview such as flowchart of the project and also the block diagram of the project. Besides, this chapter also discuss about the component that is used in this project.

CHAPTER 4

RESULTS AND DISCUSSION

4.1 Introduction

To find out more about the results, testing and running the whole process of the project have been made. The purpose is also to observe the performance and how well the project works.

4.2 Results and Analysis

A type of wire jumper that have been used to test the project.

Data of the measurement wire of jumper wire that have been tested as below :

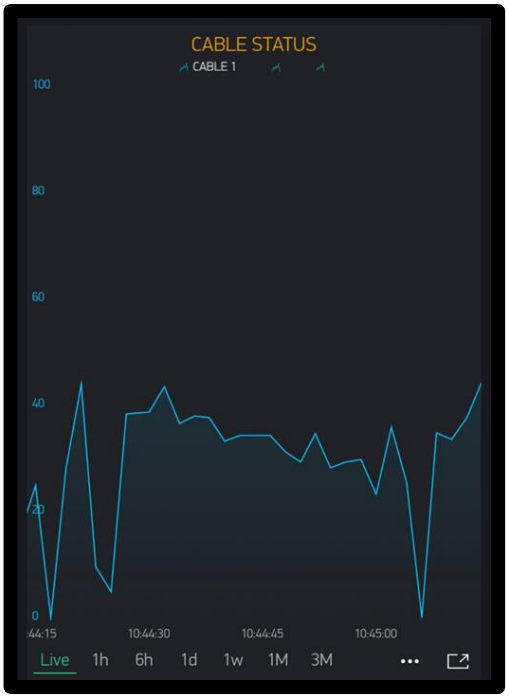

Table 4. 1: Data measurement of wire jumper shown in the Blynk Apps

4.3 Discussion

A wire jumper had been tested to observe the measure and conditions of the wire and also to test the function of the project. When the receiver and transnmitter done their part by transmit the data the LCD will display the temperature readings. The ESP8266 that was connected with the smartphone will send the data of the measurement of the percentage of the wire jumper to the Blynk server and the Blynk Application in the smartphone will display the same readings of a wire jumper as the LCD. Since the project is using a wire jumper as the example the code program in Arduino has to set the value to lower than 70% bad wire to notify the user if the wire is safe or in a a probability to having a short circuit if using the wire to make any connections. So if the readings of temperature are below 30% bad, the Blynk Apps will sending one notifications to the smartphone, but if the readings exceed to above 40% bad, the Blynk Apps will alert and keep an update on the graph user.

4.4 Chapter Summary

There are two sections in this chapter, the first section is discuss about the wire jumper that has been used to test the project. The second section discuss about testing and running the whole process of the project and also observing what happens to the software and the hardware part if the temperature exceeds the set value in the code program.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

To summarize the overall results, the conclusion must be drawn in order to see the benefits of the project and also to improve the project to its fullest potential.

5.2 Conclusion

This project is highly recommended by focusing on the workers such as technicians and engineers. An innovation that we created in order to advance our technology especially in electrical industry by using the Arduino Uno and wifi module as main controller.

5.3 Suggestion for Future Work

The project is expected to perform extensive testing and also suggested to upgrade the need to set the value of the voltage or ampere for the project since it is only read the percentage of the wire condition for continuity tester.

5.4 Chapter Summary

This chapter discuss about the significance of the project and also discuss about the future work suggestion to increase its functionality for widely usage.

CHAPTER 6

PROJECT MANAGEMENT AND COSTING

6.1 Introduction

As we all know, every project needs to spend money and make a better plan to make sure the project is possible. So this chapter will discuss about the project planning and the budget that is used.

6.2 Gant Chart and Activities of the Project

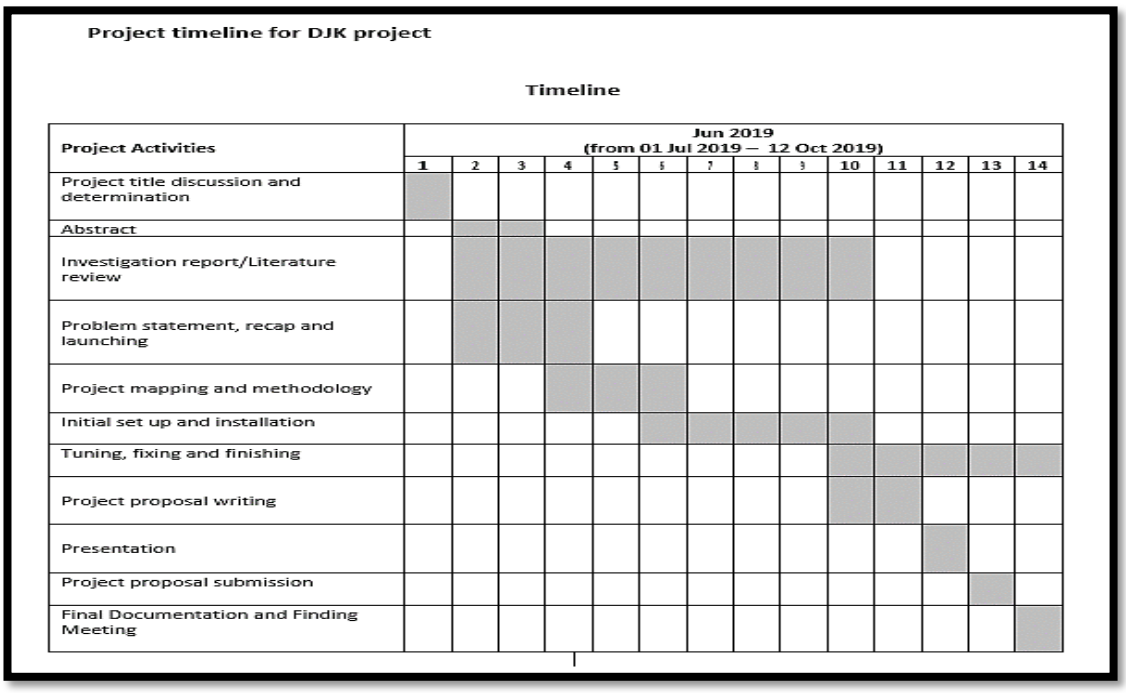

Table 6. 1: Gant Chart for Project 1 in Semester 4

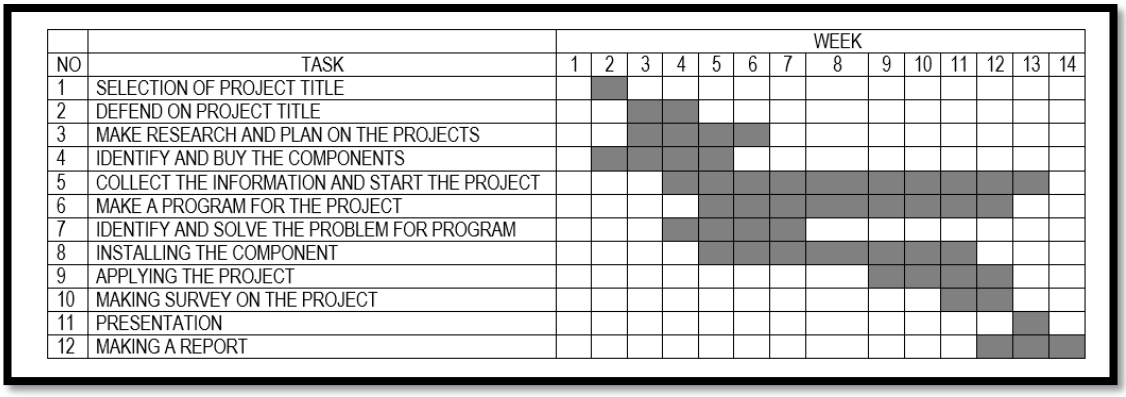

Table 6. 2: Gant Chart for Project 2 in Semester 5

6.3 Milestone

Course	No	Task Name	Implementatic	Duration (Days)	Cost (RM)
DEE40082 PROJECT 1	1	**FREEZER / REFRIGERATOR MONITORING SYSTEM USING IOT**	**Plan**	**98**	**50.00**
			Actual		**73.00**
	2	START	**Plan**	0 days	0.00
			Actual		
	3	**INVESTIGATION REPORT**	**Plan**	**49**	**0.00**
			Actual	**56**	**0.00**
	4	FIND INFORMATION ABOUT A PROJECT THAT RELATED TO INDUSTRY AND IR 4.0	**Plan**	7	0.00
			Actual	14	0.00
	5	PRESENT 3 SELECTED PROJECTS TO LECTURE	**Plan**	21	0.00
			Actual	28	0.00
	6	SEARCH ONLINE THE LITERATURE REVIEW	**Plan**	28	0.00
			Actual	35	0.00
	7	DRAW A FLOWCHART OF PROJECT FLOW	**Plan**	42	0.00
			Actual	42	0.00
	8	DRAW THE SCHEMATIC CIRCUIT OF THE PROJECT	**Plan**	7	0.00
			Actual	14	0.00
	9	PREPARE AND SUBMIT THE INVESTIGATION REPORT	**Plan**	7	0.00
			Actual	14	0.00
	10	**PROJECT PROGRESS(DESIGN,FABRICATE,INSTALL,TESTING)**	**Plan**	**49**	**50.00**
			Actual	**49**	**73.00**
	11	PURCHASE COMPONENTS AND MATERIALS	**Plan**	14	50.00
			Actual	14	73.00
	12	CONSTRUCT GRAPHICS/ TABLES/ DIAGRAM FLOWCHART/ALGORITHM/PROGRAMMING/C	**Plan**	14	0.00
			Actual	21	0.00
	13	PRODUCE CIRCUIT SCHEMATIC AND CIRCUIT SEMULATION	**Plan**	14	0.00
			Actual	21	0.00
	14	PRODUCE PCB DESIGN LAYOUT	**Plan**	7	0.00
			Actual	14	0.00
	15	PRODUCE PCB USING ETCHING OR CNC MILING	**Plan**	7	0.00
			Actual	7	0.00
	16	SOLDERING TOOLS AND TECHNIQUE	**Plan**	7	0.00
			Actual	14	0.00
	17	COMPONENT AND CIRCUIT TESTING	**Plan**	21	0.00
			Actual	21	0.00
	18	**DOCUMENT WRITING REPORT(FINAL PROPOSAL& LOGBOOK)**	**Plan**	**91**	**0.00**
			Actual	**91**	**0.00**
	19	WRITING THE FINAL PROPOSAL	**Plan**	42	0.00
			Actual	42	0.00
	20	WRITING THE LOGBOOK	**Plan**	70	0.00
			Actual	77	0.00

Table 6. 3: Milestone for Project 1 in Semester 4

Course	21	Task Name	Implementation	Duration (Days)	Cost (RM)
		FREEZER / REFRIGERATOR MONITORING SYSTEM USING IOT	**Plan**	**98**	**100.00**
			Actual		**105.00**
	22	**INSTALLATION**	**Plan**	**84**	**80.00**
			Actual	**84**	**85.00**
	23	INSTALLATION OF COMPONENTS ON PCB	**Plan**	35	0.00
			Actual	42	0.00
	24	INSTALLATION OF WIRING	**Plan**	28	50.00
			Actual	35	60.00
	25	INSTALLATION OF SOFTWARE	**Plan**	35	0.00
			Actual	48	0.00
	26	INSTALLATION OF CONTROL CIRCUIT / SYSTEM	**Plan**	42	0.00
			Actual	42	0.00
	27	INSTALLATION OF PROJECT CASING	**Plan**	28	30.00
			Actual	35	25.00
	28	**TESTING**	**Plan**	**91**	**20.00**
			Actual	**91**	**20.00**
	29	TEST THE ELECTRONIC PART	**Plan**	35	20.00
			Actual	42	20.00
DEE50102 PROJECT 2	30	TEST THE MECHANICAL PART	**Plan**	28	0.00
			Actual	35	0.00
	31	TEST THE OVERALL PROCESS / PROJECT	**Plan**	28	0.00
			Actual	35	0.00
	32	**DOCUMENTS**	**Plan**	**98**	**0.00**
			Actual	**98**	**0.00**
	33	PREPARATION OF SLIDE PRESENTATION	**Plan**	28	0.00
			Actual	35	0.00
	34	PREPARATION OF LOGBOOK	**Plan**	98	0.00
			Actual	105	0.00
	35	PREPARATION OF PROJECT 2 FINAL REPORT	**Plan**	98	0.00
			Actual	98	0.00
	36	PREPARATION OF INSTRUCTION MANUAL	**Plan**	42	0.00
			Actual	49	0.00
	37	END	**Plan**	7	
			Actual	7	

Table 6. 4: Milestone for Project 2 in Semester 5

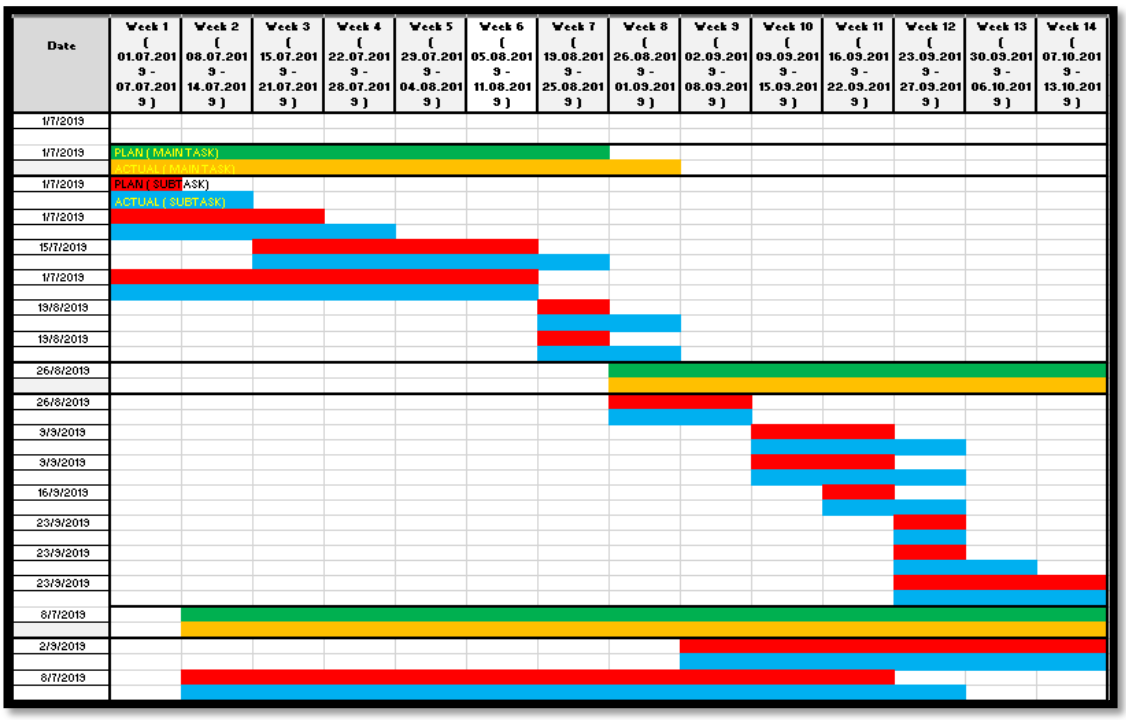

Table 6. 5: Milestone Bar for Project 1 in Semester 4

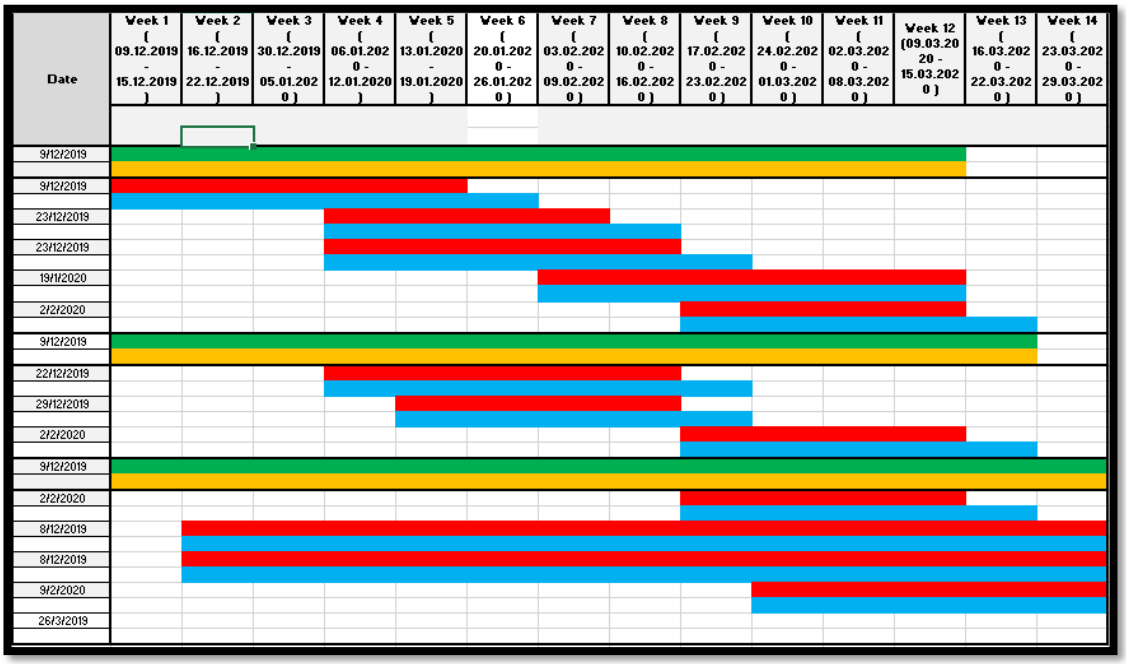

Table 6. 6: Milestone Bar for Project 2 in Semester 5

6.4 Cost and Budgeting

Cost Estimation Project

No.	Component	Cost	Quantity	Total
1	Arduino UNO	RM30	2	RM60
2	Wire Jumper – 3 Types	RM3	3	RM9
3	Breadboard	RM12	2	RM24
4	Wifi Module ESP8266	RM15	1	RM15
5	Battery 9V	RM4	2	RM8
6	Receiver	RM15	1	RM15
7	Transmitter	RM15	1	RM15
8	Resistor 3.3KΩ	RM1	1	RM1
10	Battery holder	RM1	1	RM1
11	Solder	RM25	1	RM25
12	Sucker	RM10	1	RM10
			TOTAL	RM 183

Table 6. 7: Cost Estimation Project

6.5 Chapter Summary

So this chapter shows about the budget that is used, and the activities that had been done since week 1 to week 14 for Semester 4 and Semester 5.

REFERENCES

Editor, T. (2017, April 13). Retrieved from http://www.polytechnichub.com: http://www.polytechnichub.com/advantages-disadvantages-microcontroller/

Howard E. Wilson The School Review Vol. 34, No. 9 (Nov., 1926), pp. 679-684 Published by: The University of Chicago Press available at

https://www.jstor.org/stable/1079811BBC

MEDEA. (2008). Arduino FAQ – With David Cuartielles August 3, 2019, available at http://medea.mah.se/2013/04/arduino-faq/

https://www.instructables.com/id/RF-315433-MHz-Transmitter-receiver-Module-and-Ardu/

https://lastminuteengineers.com/433mhz-rf-wireless-arduino-tutorial/

APPENDICES

APPENDIX A- DATA SHEET

APPENDIX B- PROGRAMMING

APPENDIX C- PROJECT MANUAL/PRODUCT CATALOGUE