POLITEKNIK SULTAN SALAHUDDIN ABDUL AZIZ SHAH

DESIGN A TEMPERATURE BASED FAN SPEED CONTROLLER WITH MOTION SENSOR

NAME
SHARMITHAA A/P MOGAN

REGISTRATION NO
(08DEU20F2005)

JABATAN KEJURUTERAAN ELEKTRIK

SESI 2 2022/2023

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

JABATAN KEJURUTERAAN ELEKTRIK

SESI 2 2022/2023

CONFIRMATION OF THE PROJECT

The project report titled "Design a Temperature Based Fan Speed Controller with Motion Sensor" has been submitted, reviewed and verified as a fulfills the conditions and requirements of the Project Writing as stipulated

Checked by:

Supervisor's name :

Supervisor's signature:

Date :

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 : **SHARMITHAA A/P MOGAN**

Registration Number : **08DEU20F2005**

Date :

DECLARATION OF ORIGINALITY AND OWNERSHIP

TITLE : DESIGN TEMPERATURE BASED FAN SPEED CONTROLLER WITH MOTION SENSOR

SESSION: SESI 2 2022/2023

1. I, **1. SHARMITHAA A/P MOGAN**

   is a final year student of **Diploma in Electrical Engineering, Department of Electrical, Politeknik Sultan Salahuddin Abdul Aziz Shah**, which is located at **Persiaran Usahawan,40140 Shah Alam Selangor Darul Ehsan**. (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) **SHARMITHAA A/P MOGAN**)
(Identification card No: - 020315011344) ....…….
) **SHARMITHAA A/P MOGAN**

In front of me, Click here to enter text. (Click here to enter text.)) .....……
As a project supervisor, on the date:) **NAAGAJOOTHI A/P ADIN NARAINA**

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 Naagajoothi A/P Udin Naraina 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 (Electrical Department) for their kind co-operation and encouragement which help me incompletion 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

THIS PROJECT IS TO DESIGN AND DEVELOP A "THE MICROCONTROLLER TEMPERATURE BASED FAN SPEED CONTROLLER WITH MOTION SENSOR". THIS PROJECT WILL PRESENT THE DESIGN, DEVELOPMENT, CONTROL AND ANALYSIS THAT CAN BE IMPLEMENTED FOR HOME AUTOMATION SYSTEM. THE HOME AUTOMATION SYSTEM IS PIC MICROCONTROLLER BASED PROJECT WHICH FOCUSED ON A SYSTEM TO AUTOMATICALLY CONTROL THE SPEED OF A CEILING FAN ACCORDING TO THE SURROUNDING TEMPERATURE AND THE MOTION SENSOR DETECTS ON HUMAN PRESENCE. THIS CEILING FAN SYSTEM AND MOTION SENSOR CONTAINS COMBINATION OF SENSOR, CONTROLLER, DRIVER AND MOTOR WITH INTEGRATION OF EMBEDDED CONTROLLED PROGRAMMING WHICH MEANS IN THIS CASE USING PIC MICROCONTROLLER AS THE MAIN CONTROLLER. THIS PROJECT ALSO PRESENTS THE EXPECTED PERFORMANCE OF THE AUTOMATIC FAN SYSTEM AND MOTION SENSOR, CONSTRUCTION OF HARDWARE AND SOFTWARE DEVELOPMENT TO GATHER THE PERFORMANCE DATA. FINALLY, THIS SYSTEM PERFORMANCE WILL BE ANALYSED BY COMPARING PERFORMANCE DATA TO THE THEORETICAL. END OF THIS PROJECT WILL PRODUCE AN ADVANCE TECHNOLOGY WITH PROGRAMMABLE FEATURES WHICH CONTROL THE SPEED OF THE FAN IS DEPENDING ON THE CHANGES IN ROOM TEMPERATURE AND THE MOTION SENSOR DETECT THE PRESENCE OF A PERSON.

ABSTRAK

PROJEK INI ADALAH UNTUK MEREKA DAN MEMBANGUNKAN "PENGAWAL KELAJUAN KIPAS BERASASKAN SUHU DENGAN SENSOR PERGERAKAN". PROJEK INI AKAN MEMBENTANGKAN REKA BENTUK, PEMBANGUNAN, KAWALAN DAN ANALISIS YANG BOLEH DILAKSANAKAN UNTUK SISTEM PENGAUTOMASIAN RUMAH. SISTEM AUTOMATIK RUMAH ADALAH PROJEK BERASASKAN MICROCONTROLLER PIC YANG MEMBERI FOKUS KEPADA SATU SISTEM UNTUK MENGAWAL KELAJUAN KIPAS SILING SECARA AUTOMATIK MENGIKUT SUHU SEKITAR DAN PENDERIA PERGERAKAN MENGESAN KEHADIRAN MANUSIA. SISTEM KIPAS SILING DAN SENSOR PERGERAKAN INI MENGANDUNGI GABUNGAN PENDERIA, PENGAWAL, PEMANDU DAN MOTOR DENGAN INTEGRASI PENGATURCARAAN TERKAWAL TERTANAM YANG BERMAKNA DALAM KES INI MENGGUNAKAN PIC MICROCONTROLLER SEBAGAI PENGAWAL UTAMA. PROJEK INI JUGA MEMBENTANGKAN PRESTASI YANG DIJANGKA BAGI SISTEM KIPAS AUTOMATIK DAN PENDERIA PERGERAKAN, PEMBINAAN PERKAKASAN DAN PEMBANGUNAN PERISIAN UNTUK MENGUMPUL DATA PRESTASI. AKHIRNYA, PRESTASI SISTEM INI AKAN DIANALISIS DENGAN MEMBANDINGKAN DATA PRESTASI DENGAN TEORI. TAMAT PROJEK INI AKAN MENGHASILKAN TEKNOLOGI LANJUTAN DENGAN CIRI-CIRI YANG BOLEH DIATURCARAKAN YANG MENGAWAL KELAJUAN KIPAS BERGANTUNG PADA PERUBAHAN SUHU BILIK DAN PENDERIA PERGERAKAN MENGESAN KEHADIRAN SEORANG.

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CHAPTER 1

1 INTRODUCTION

1.1 Introduction

Intelligent systems are being introduced on a daily basis as technology advances. The demand for cutting-edge technologies and sophisticated electrical systems is increasing. Therefore, I decide to do a project which is microcontroller temperature based fan speed controller with motion sensor. Microcontrollers are crucial in the creation of smart systems because they provide the system with a brain. Microcontrollers are being used in a wide range of fields to perform more accurate automated activities. Because of its low power consumption and low cost, the electric fan is one of the most well-known electrical devices. The fan can be physically turned on and off by pressing the switch button. Whereas currently, changes in temperature have no effect on fan speed. Other than that, I am also adding a light sensor into this microcontroller temperature based fan speed conroller. Motion sensor will be working on a dim area whenever anyone pass by the motion sensor. As a result, an automatic temperature control system technology is required for changing fan speed based on temperature changes and also will be needed a motion sensor to detect a person in the night.

1.2 Background Research

Nowadays, nearly every house in the world, particularly in Southeast Asia, has at least one fan. In recent years, it has grown in popularity. Ceiling fans are designed to objectively control the room temperature to an appropriate level. There are numerous benefits to using a fan. People in South East Asia, for example, prefer to use fans instead of air conditioners because they are easier to install and maintain, and they are the most appropriate equipment for controlling room temperature. In fact, the fan can be used to blow wind and act as a drying agent.

1.3 Problem Statement

The idea of choosing a microcontroller temperature based fan speed controller with motion sensor was selected based on my experience observing my grandmother having difficulty setting the fan speed and also when she needed to go to washroom in the nights . So, now we can operate a range of household appliances remotely thanks to advances in electronics. However, there has not yet been explored with automatic control of ventilation systems, or more specifically with fan speed control. When controlling the speed of a fan, it is frequently required to physically adjust the fan in order to improve the degree of ventilation supplied. The ability to automatically vary the fan speed based on changes in the surrounding temperature would allow the user to feel comfortable without having to physically change the fan speed. The automatic control of this function would make it easier for those who are sick, disabled, or elderly to utilise such a fan. Furthermore, this microcontroller-based ceiling fan is a stride forward in fan technology. This innovative invention will meet a person's need to make life easier and more enjoyable. All of the mundane household activities are completed without having to think about them.

1.4 Research Objectives

The main objective of this research are :

1. To design and develop a hardware and software of microcontroller based ceiling fan.
2. To design a motion sensor based on human presence.

1.5 Scope of Research

The aim of this project is to design a home automation system that is ceiling fan based on the advanced technology without only using choke.

1.6 Chapter Summary

This chapter contains an introduction to the project, which is a temperature-based fan speed controller. Then, I make background research of the project, project objective and scope of the project for this project.

CHAPTER 2

2 LITERATURE REVIEW

2.1 Introduction

Today's engineers and students frequently conduct research on the project of temperature-based fan speed controller with motion sensor. This is because they became aware of the system and began researching it. For them, this project is crucial for the advancement of technology and for making people's lives easier in the future.

2.2 Table of 5 Journal

NO	TITLE/AUTHOR	OBJECTIVE	METHOD	RESULT
1	➢ **AUTOMATIC ROOM TEMPERATURE CONTROLLED FAN SPEED CONTROLLER USING PT-100** ➢ M. A. A. Mashud, Dilruba Yasmin, M. A. Razzaque and M. H. Uddin	to create intelligent system are to provide human being a more convenient life. The circuit was designed using electronic components available in local market to keep the cost at low level.	The system is divided into six main parts, namely, the low-voltage power supply, fixed voltage circuit, sensor & driver circuit, subtraction circuit, buffer circuit and fan dimmer circuit. The sensor & driver circuit consists with PT-	this device can easily control the fan automatically based on room temperature.

			100 temperature sensor with associative circuits.	
2	➢ **TEMPERATURE BASED FAN SPEED CONTROLLER** ➢ Biman Kr Pal , Sagar Ghosh , Subhankar Paul , Avijit Dhibar	This system is used to control the cooling system automatically based on the room temperature.	ARDUINO micro controller is the heart of the circuit as it controls all the functions. The temperature sensor LM35 senses the temperature and converts it into an electrical (analog) signal, which is applied to the micro controller. The sensed and set values of the temperature are displayed on the 16x2-line LCD. The micro controller drives Transistor to control the fan speed. This project uses regulated 12V, 2A power supply.	temperature protection circuit that will turn off the power of equipment when its temperature has reached a certain value.

3	➢ **Temperature based Fan Speed control and observing utilizing arduino** ➢ Dr. M. Nagabhushana Rao , P. Lalitha Devi , K. K. Mahitha , K. Prem Kumar	an independent programmed fan speed controller that controls the speed of an electric fan as indicated by the necessity.	The arduino is the core of the framework. It acknowledges contrbutions from the temperature sensor, LM35 which takes into account the estimation of the present room temperature, at that point the controller will give the activity to keep up the required fan speed . LCD is utilized to show the fan speed and room temperature.	if the temperature in the room is beyond the range the fan speed will increase automatically.
4	➢ **Temperature based Fan Speed Controller** ➢ *Srinivas P, Kavinkumar B , Arun Venkat A, Dr.R.Senthil Kumar*	to control the speed of the fan by difference in temperature. The Temperature variation in the fan is an different way to deal with the speed of the motor.	The working of this project is the temperature sensor LM35 senses the temperature and converts it into an electrical (analog) signal, which is applied	When the temperature crosses 30°C the fan starts rotating. A low-frequency pulse-width modulation (PWM) signal, whose duty cycle is varied to adjust

			to the ATmega328 microcontroller of the Arduino UNO Board. In this the Arduino UNO board converts the recorded signal from analog to digital signal. So that the recorded values of the temperature and speed of the fan are displayed on the LCD. When the temperature crosses 30°C the fan starts rotating.	the fan's speed is used.

5	➢ **Automatic Temperature Based Fan Speed Controller Using Arduino** ➢ Shivshankar Adsule ,Shivani Mohite ,Rahul Patil , Prof. Namrata Dhawas	To develop an low cost, user friendly automated temperature controlled fan regulator which reduces power consumption and also assist people who are unable to control the speed of fan from their locations.	change in the temperature will not give any change in the fan speed. Except the usage change the speed of the fan which is manually. So, an automatic temperature control system technology is needed for the controlling purpose in the fan speed according to the temperature changes	the fan speed will increment consequently if the temperature room is increased. As conclusion, the system which designed right now perform quite well, for any temperature change and can be named programmed control.

2.3 Chapter Summary

This chapter is about the literature review of 5 journal that related to this project that I find out. From this 5 journal, one they used and the other other they used arduino.

CHAPTER 3

3 RESEARCH METHODOLOGY

3.1 Introduction

A very detailed plan is being implemented in order to realize this project as a finished product with safety features. In order to finish the Project on time, a step-by-step process is followed. This involves gathering information on the environment's temperature and a sample of people's presence.

3.2 Project Design and Overview.

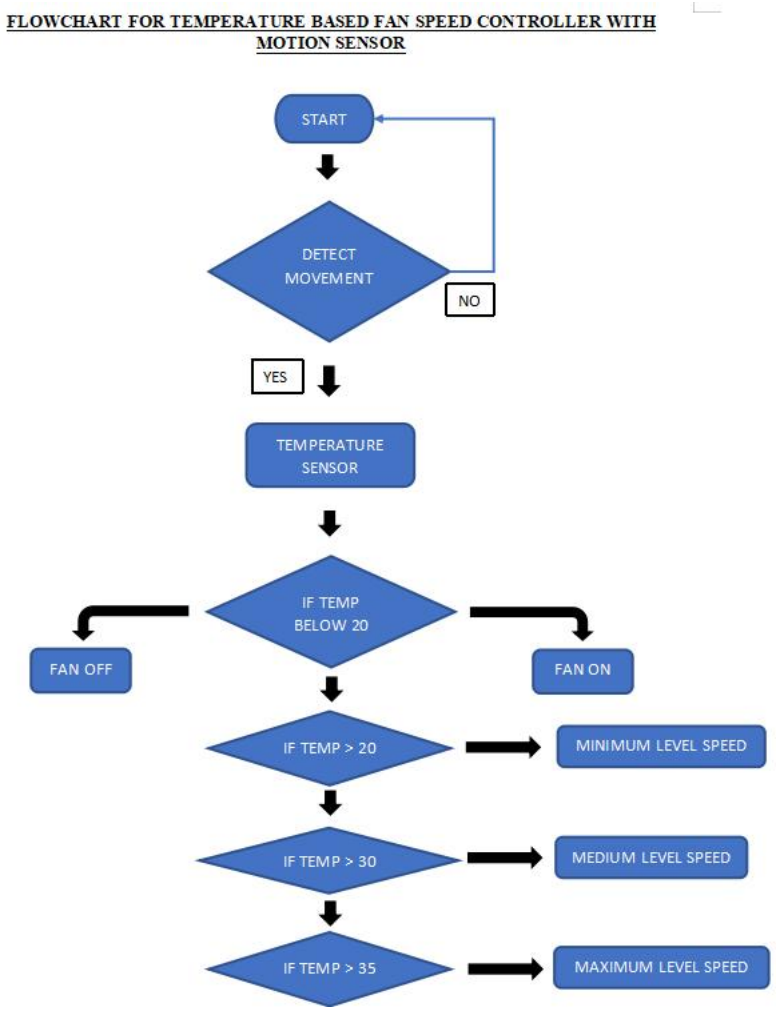
As mentioned in the previous chapter, the designed controller employs a closed-loop system with Arduino as the primary controller. The Arduino controller circuit is designed using Proteus software and then converted to a PCB circuit. This Arduino will give control to the temperature sensor to save data and read the temperature. For the second output, this Arduino will control for the motion sensor where it detect any presence of human.

3.2.1 Block Diagram of the Project

Figure 3.1 shows the block diagram of the whole system. It is show that

Figure 3.1: Block diagram of project operation

3.2.2 Flowchart of the Project



Description of Flowchart

In the flowchart above I've shown that the process of this project. First, there will be a detect movement section by the motion sensor. By the movement detection the sensor will light up. Then, there will be a temperature sensor section. If this temperature sensor detects the temperature below 20 the fan will turn off and if the temperature is above 20 then the fan will be working as given in the flowchart.

3.2.3 Project Description

This system serves two purposes. Controlling the fan's speed and turning it on and off based on human detection based on the temperature. Using DHT11, the fan's speed will be changed automatically in response to the temperature, and the when a person enters the room and the temperature rises to 27. When a person leaves, the fan will be turned off. A LED screen will show data about temperature and speed. DHT11 temperature sensor will detect the ambient temperature Using the PWM technique, the fan's speed is adjusted based on the ambient temperature. People entering or leaving the room are detected by PIR motion sensors. PIR motion sensors are used almost exclusively to determine whether a person has entered or exited a room because they can detect motion.

3.3 Project Hardware

As mention in the previous chapter, the designed controller is using Arduino and two sensor (DHT11 and PIR motion sensor). Then, The DHT11 sensor is a temperature sensor that records the ambient temperature and controls the fan's speed based on that temperature. When a motion is detected by the sensor, the PIR motion sensor activates.

3.3.1 Schematic Circuit

Figure 3.2 shows the overall circuit diagram of this Project

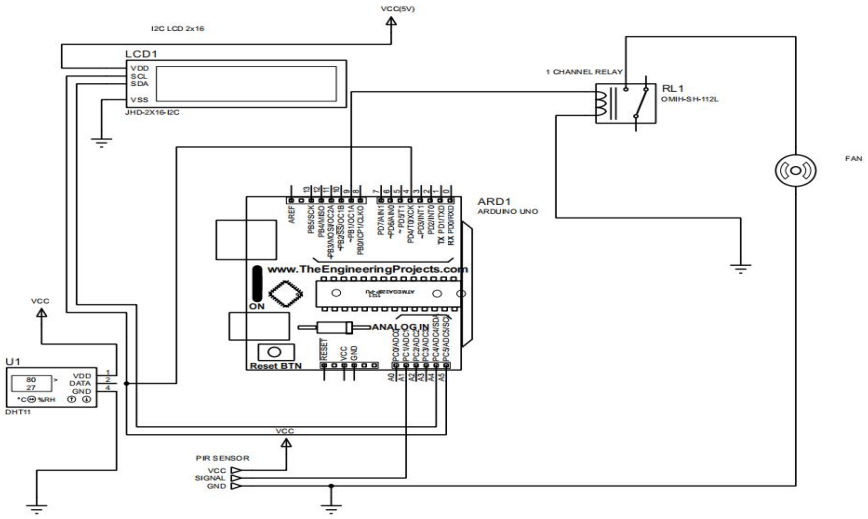


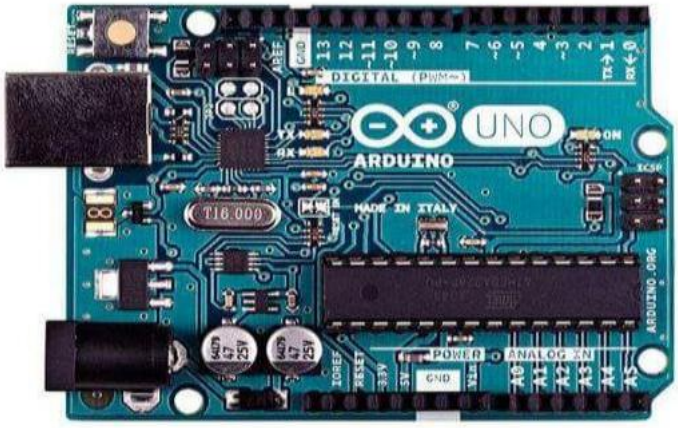
Figure 3.2: Schematic Diagram

3.3.2 Description of Component

This project includes four sections of the circuit.The first will be main component which is arduino. The next section is the sensor section, temperature sensor and motion sensor. Last section is the display section.

3.3.2.1 Component 1

ARDUINO



The ATmega328-based Arduino Uno is a microcontroller board (data sheet). It has 14 digital I/O pins (six of which are PWM outputs), 6 analogue inputs, a 16 MHz ceramic resonator, a USB connection, a power jack, an ICSP header, and a reset button. It comes with everything you need to support the microcontroller; simply connect it to a computer via USB or power it via an AC-to-DC adapter or battery to get started.

3.3.2.2 Component 2

Dht11 (Temperature and Humidity Sensor)

A popular temperature and humidity sensor is the DHT11. The sensor includes a dedicated NTC for temperature measurement and an 8-bit microcontroller for serial data output of temperature and humidity readings. Additionally factory calibrated, the sensor makes it simple to connect with other microcontrollers.

3.3.2.3 Component 3

PIR Motion sensor

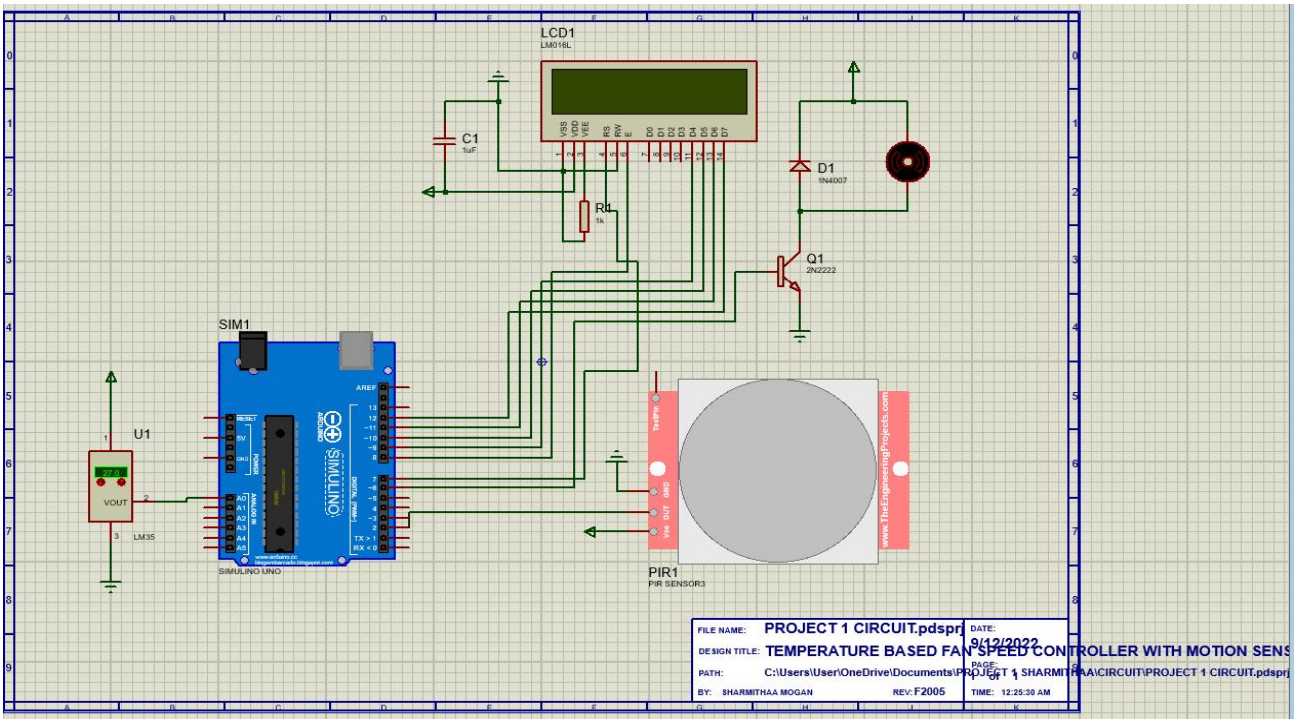
A passive infrared sensor detects motion by receiving infrared radiation. When a person walks past the sensor, the sensor detects a sudden change in infrared energy and sends a signal. PIR sensors are used for things like automatically turning on lights when someone walks into a room.

3.3.2.4 Component 4

LCD 16*2

LCD (Liquid Crystal Display) screens are electronic display modules that have many applications. A 16x2 LCD display is a very basic module that is widely used in a variety of devices and circuits. The ASCII value of the character to be displayed on the LCD is represented by the data.

3.3.3 Circuit Operation



3.4 Chapter Summary

This chapter is about the research methodology of the project. In this research methodology I've mentioned the block diagram of the project, circuit diagram, description of the components and the flowchart of this project.

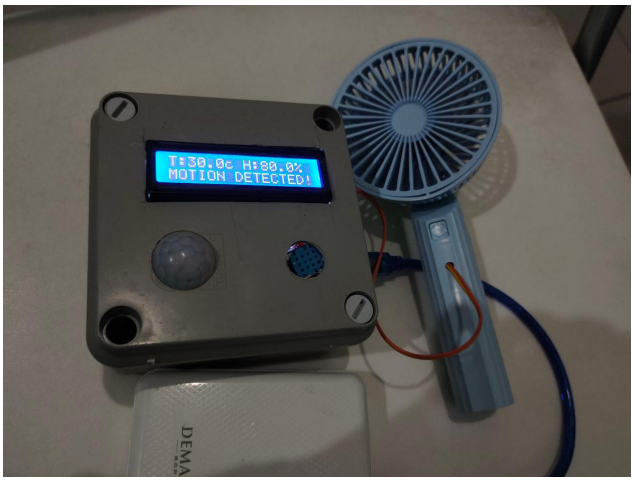
CHAPTER 4

4 RESULTS AND DISCUSSION

4.1 Introduction

Financial resources for this project, most of the basic components and materials used in this project are purchased with our own money because we do not have a sponsor. The projected cost is RM500. This cost is less than the budget and significantly less than the other projects. For the next six months, the development costs are still feasible. Based on the research, it is feasible and achievable.

4.2 Results and Analysis



According to the observations I made for my study, the surrounding environment had a temperature of 30 degrees Celsius and an 80 percent humidity level. As a result, the fan's speed was at a medium setting. The temperature and humidity of the surrounding were reduced while the project fan ran for around 10 minutes. Not cooler or hotter, it makes you feel warmer.

4.3 Discussion

This project is applicable to both the home. It aids in the conservation of energy and power.

- To monitor surroundings that are not comfortable or possible for humans to monitor, particularly for long periods of time.
- Prevents energy waste when it is not hot enough for a fan to be needed.
- To aid those who are impaired in automatically adjusting the fan speed.
- In the future, we will be able to monitor and manage more parameters such as humidity and light, as well as transfer data to a remote place by mobile or internet.

We can use this technology to create computer graphs of fluctuations in these parameters. And if the temperature exceeds the limit, an automatic dialler system will place a call to the specified number.

4.4 Chapter Summary

Overall, the project's financial resources came from within the project's own budget, and the cost prediction was reasonable. Successful conception and execution of the system's interface and data structure.

CHAPTER 5

5 CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This project is successful because it aims to design and create a microcontroller-based fan's hardware and software. In addition, a motion sensor based on human presence was designed. The project can now be scaled up to its maximum potential, and it is gradually becoming apparent how pertinent the subject is to engineering careers.

5.2 Conclusion

At the end of this project, we hope that this project called temperature based fan speed controller with motion sensor will contribute and benefit everyone, especially our country. This project has applications in both the home and the workplace. This will aid in energy or electricity conservation. To monitor environments that are not comfortable or possible for humans to monitor, especially for long periods of time. Prevents energy waste when it isn't hot enough for a fan to be needed.

5.3 Suggestion for Future Work

This project is a small project for customer choose whether can or not to be install it in their house, office and etc . According to the research results, the best recommendation for future projects is to use this directly to the house or office to make their lives easier and more user friendly. So, customers then must have this device installed in their home or office

5.4 Chapter Summary

In conclusion, the project was effective in achieving all of these objectives. The major objective of reducing time waste has been fulfilled with the introduction of the temperature-based fan speed controller with motion sensor. The procedure is expedited and made more effective by the fan speed controller.

CHAPTER 6

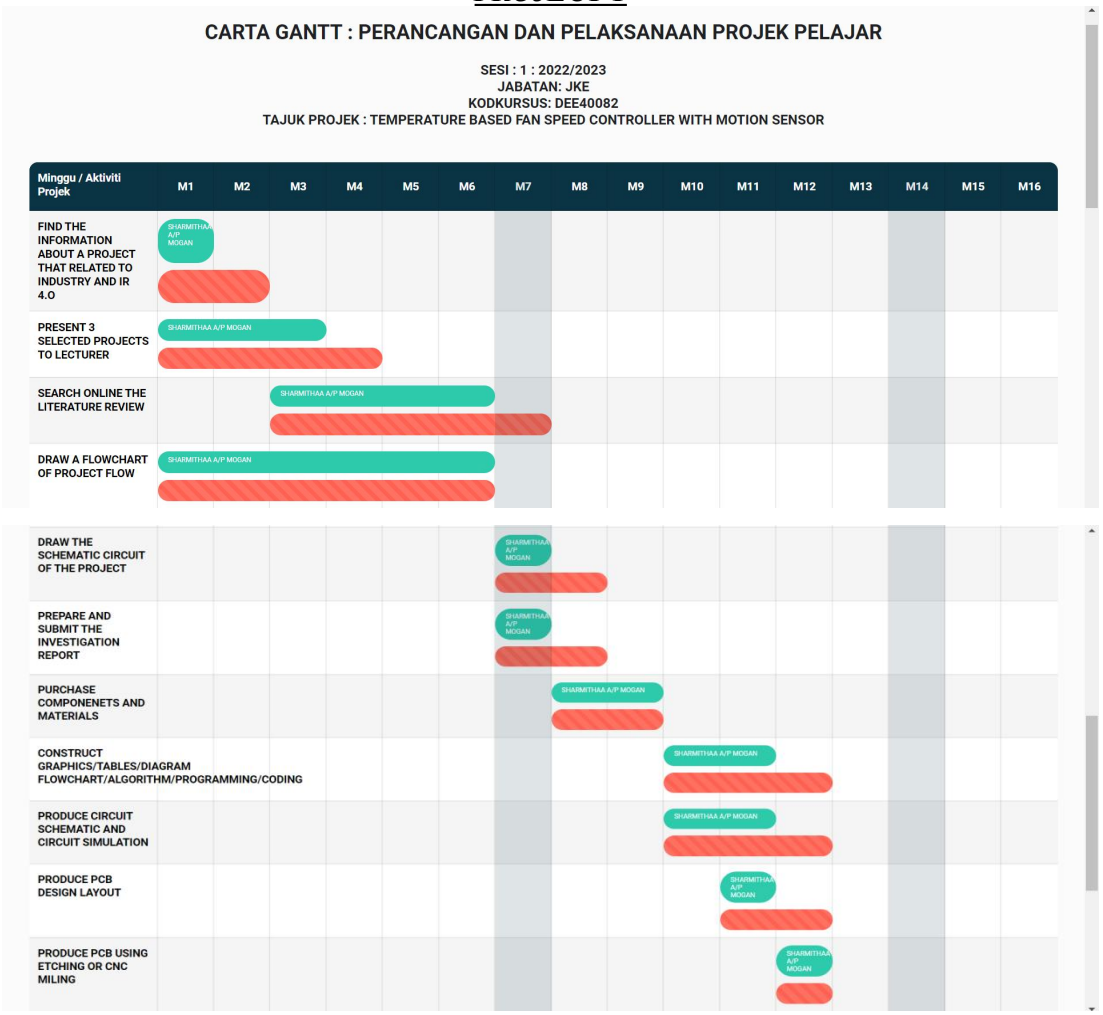
6 PROJECT MANAGEMENT AND COSTING

6.1 Introduction

Financial resources for this project, most of the basic components and materials used in this project are purchased with our own money because we do not have a sponsor. The projected cost is RM500. This cost is less than the budget and significantly less than the other projects. For the next six months, the development costs are still feasible. Based on the research, it is feasible and achievable.

6.2 Gant Chart and Activities of the Project

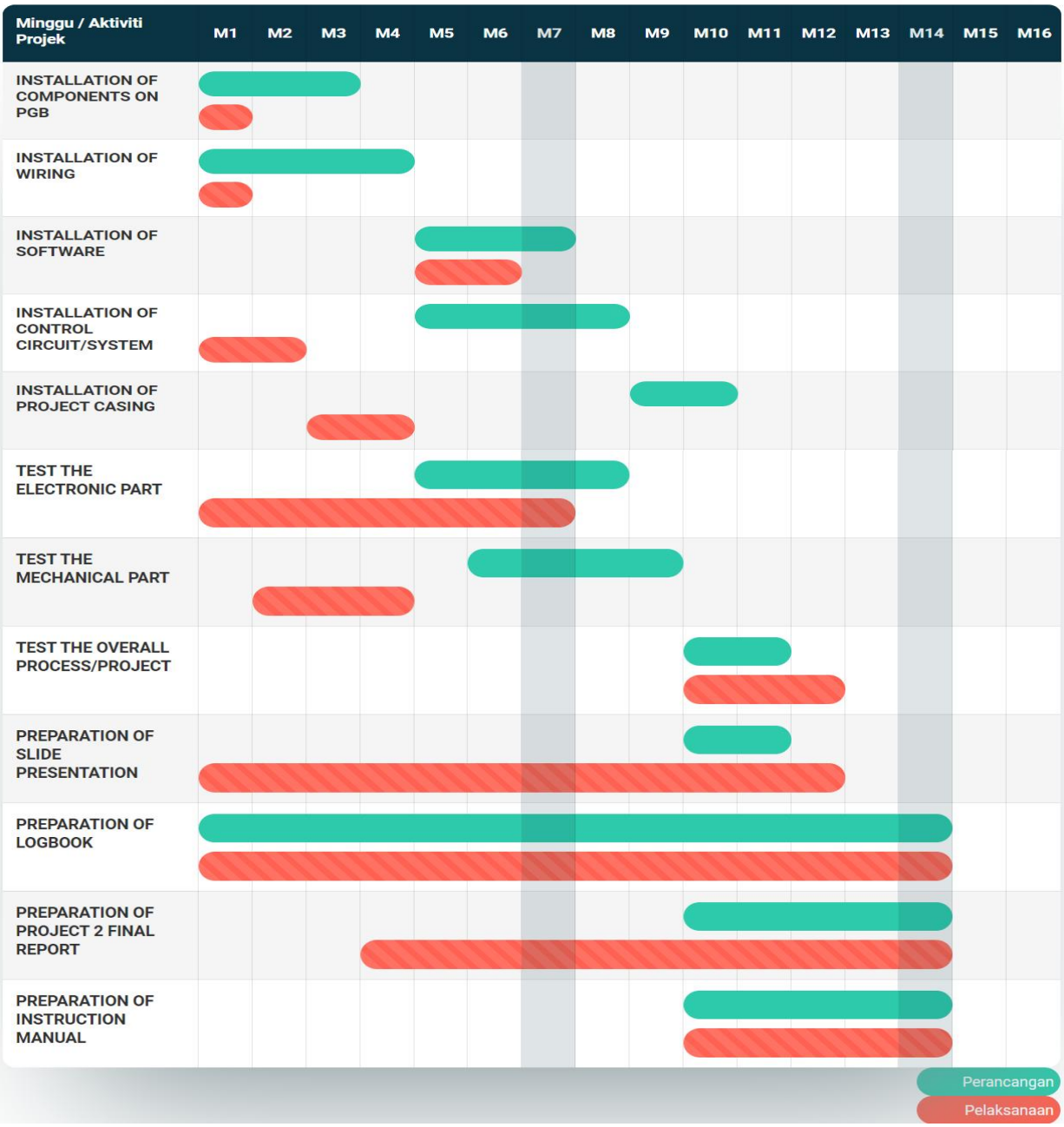
PROJECT 1



PROJECT 2

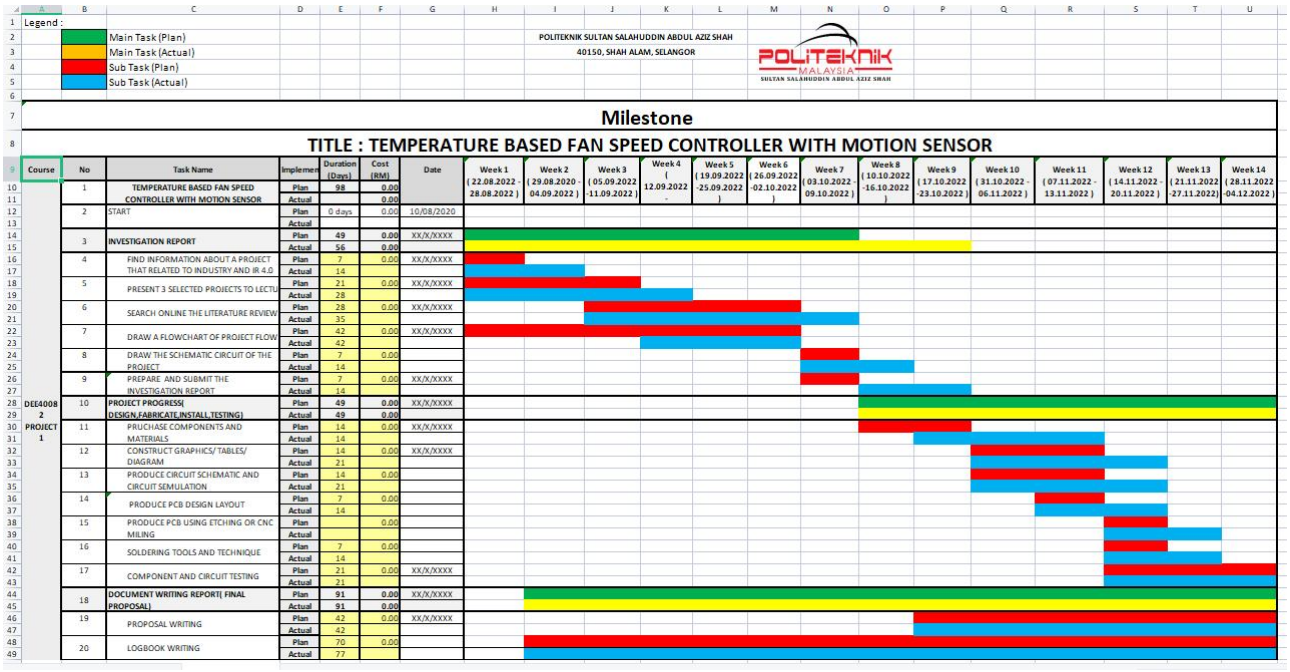
CARTA GANTT : PERANCANGAN DAN PELAKSANAAN PROJEK PELAJAR

SESI : 2 : 2022/2023
JABATAN: JKE
KODKURSUS: DEE50102
TAJUK PROJEK : TEMPERATURE BASED FAN SPEED CONTROLLER WITH MOTION SENSOR



6.3 Milestone

PROJECT 1



Legend :
Main Task (Plan)
Main Task (Actual)
Sub Task (Plan)
Sub Task (Actual)

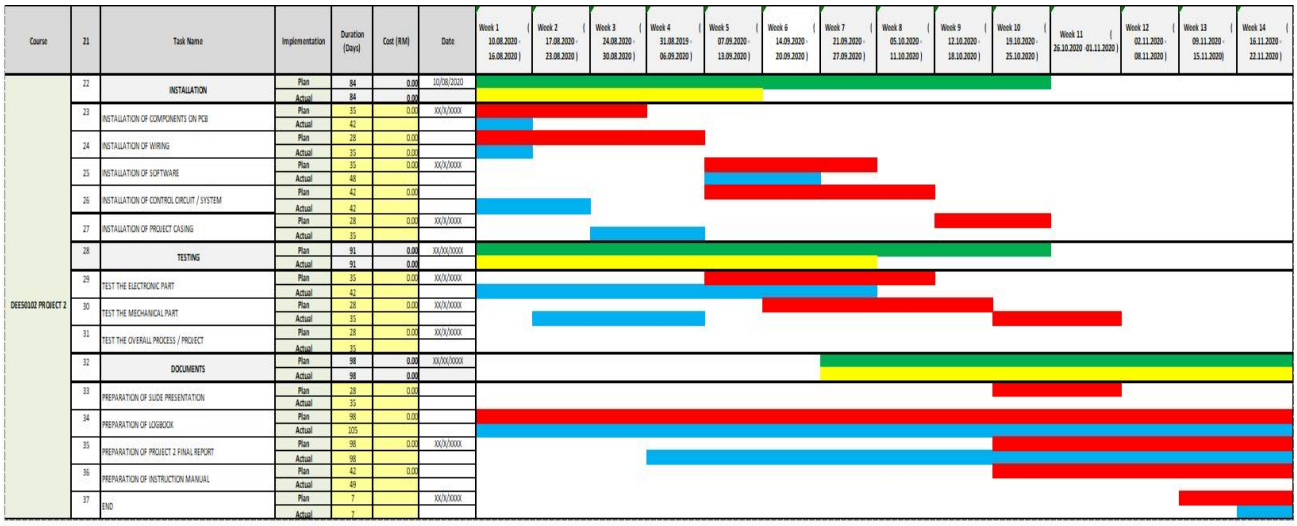
POLITEKNIK SULTAN SALAHUDDIN ABDUL AZIZ SHAH
40150, SHAH ALAM, SELANGOR

Milestone

TITLE : TEMPERATURE BASED FAN SPEED CONTROLLER WITH MOTION SENSOR

Course	No	Task Name	Implement	Duration (Days)	Cost (RM)	Date	Week 1 (22.08.2022 - 28.08.2022)	Week 2 (29.08.2020 - 04.09.2022)	Week 3 (05.09.2022 -11.09.2022)	Week 4 (12.09.2022 -	Week 5 (19.09.2022 -25.09.2022)	Week 6 (26.09.2022 -02.10.2022)	Week 7 (03.10.2022 - 09.10.2022)	Week 8 (10.10.2022 -16.10.2022)	Week 9 (17.10.2022 -23.10.2022)	Week 10 (31.10.2022 - 06.11.2022)	Week 11 (07.11.2022 - 13.11.2022)	Week 12 (14.11.2022 - 20.11.2022)	Week 13 (21.11.2022 -27.11.2022)	Week 14 (28.11.2022 -04.12.2022)
	1	TEMPERATURE BASED FAN SPEED CONTROLLER WITH MOTION SENSOR	Plan	98	0.00															
			Actual		0.00															
	2	START	Plan	0 days	0.00	10/08/2020														
			Actual																	
	3	INVESTIGATION REPORT	Plan	49	0.00	XX/X/XXXX														
			Actual	56	0.00															
	4	FIND INFORMATION ABOUT A PROJECT THAT RELATED TO INDUSTRY AND IR 4.0	Plan	7	0.00	XX/X/XXXX														
			Actual	14																
	5	PRESENT 3 SELECTED PROJECTS TO LECTU	Plan	21	0.00	XX/X/XXXX														
			Actual	28																
	6	SEARCH ONLINE THE LITERATURE REVIEW	Plan	28	0.00	XX/X/XXXX														
			Actual	35																
	7	DRAW A FLOWCHART OF PROJECT FLOW	Plan	42	0.00	XX/X/XXXX														
			Actual	42																
	8	DRAW THE SCHEMATIC CIRCUIT OF THE PROJECT	Plan	7	0.00															
			Actual	14																
	9	PREPARE AND SUBMIT THE INVESTIGATION REPORT	Plan	7	0.00	XX/X/XXXX														
			Actual	14																
DEE4008 2 PROJECT 1	10	PROJECT PROGRESS(DESIGN,FABRICATE,INSTALL,TESTING)	Plan	49	0.00	XX/X/XXXX														
			Actual	49	0.00															
	11	PRUCHASE COMPONENTS AND MATERIALS	Plan	14	0.00	XX/X/XXXX														
			Actual	14																
	12	CONSTRUCT GRAPHICS/TABLES/ DIAGRAM	Plan	14	0.00	XX/X/XXXX														
			Actual	21																
	13	PRODUCE CIRCUIT SCHEMATIC AND CIRCUIT SEMULATION	Plan	14	0.00															
			Actual	21																
	14	PRODUCE PCB DESIGN LAYOUT	Plan	7	0.00															
			Actual	14																
	15	PRODUCE PCB USING ETCHING OR CNC MILING	Plan		0.00															
			Actual																	
	16	SOLDERING TOOLS AND TECHNIQUE	Plan	7	0.00															
			Actual	14																
	17	COMPONENT AND CIRCUIT TESTING	Plan	21	0.00	XX/X/XXXX														
			Actual	21																
	18	DOCUMENT WRITING REPORT(FINAL PROPOSAL)	Plan	91	0.00	XX/X/XXXX														
			Actual	91	0.00															
	19	PROPOSAL WRITING	Plan	42	0.00	XX/X/XXXX														
			Actual	42																
	20	LOGBOOK WRITING	Plan	70	0.00															
			Actual	77																

PROJECT 2



Course	21	Task Name	Implementation	Duration (Days)	Cost (RM)	Date	Week 1 (10.08.2020 - 16.08.2020)	Week 2 (17.08.2020 - 23.08.2020)	Week 3 (24.08.2020 - 30.08.2020)	Week 4 (31.08.2019 - 06.09.2020)	Week 5 (07.09.2020 - 13.09.2020)	Week 6 (14.09.2020 - 20.09.2020)	Week 7 (21.09.2020 - 27.09.2020)	Week 8 (05.10.2020 - 11.10.2020)	Week 9 (12.10.2020 - 18.10.2020)	Week 10 (19.10.2020 - 25.10.2020)	Week 11 (26.10.2020 -01.11.2020)	Week 12 (02.11.2020 - 08.11.2020)	Week 13 (09.11.2020 - 15.11.2020)	Week 14 (16.11.2020 - 22.11.2020)
DEE50102 PROJECT 2	22	INSTALLATION	Plan	84	0.00	10/08/2020														
			Actual	84	0.00															
	23	INSTALLATION OF COMPONENTS ON PCB	Plan	35	0.00	XX/X/XXXX														
			Actual	42																
	24	INSTALLATION OF WIRING	Plan	28	0.00															
			Actual	35	0.00															
	25	INSTALLATION OF SOFTWARE	Plan	35	0.00	XX/X/XXXX														
			Actual	48																
	26	INSTALLATION OF CONTROL CIRCUIT / SYSTEM	Plan	42	0.00															
			Actual	42																
	27	INSTALLATION OF PROJECT CASING	Plan	28	0.00	XX/X/XXXX														
			Actual	35																
	28	TESTING	Plan	91	0.00	XX/XX/XXXX														
			Actual	91	0.00															
	29	TEST THE ELECTRONIC PART	Plan	35	0.00	XX/X/XXXX														
			Actual	42																
	30	TEST THE MECHANICAL PART	Plan	28	0.00	XX/X/XXXX														
			Actual	35																
	31	TEST THE OVERALL PROCESS / PROJECT	Plan	28	0.00	XX/X/XXXX														
			Actual	35																
	32	DOCUMENTS	Plan	98	0.00	XX/XX/XXXX														
			Actual	98	0.00															
	33	PREPARATION OF SLIDE PRESENTATION	Plan	28	0.00															
			Actual	35																
	34	PREPARATION OF LOGBOOK	Plan	98	0.00															
			Actual	105																
	35	PREPARATION OF PROJECT 2 FINAL REPORT	Plan	98	0.00	XX/X/XXXX														
			Actual	98																
	36	PREPARATION OF INSTRUCTION MANUAL	Plan	42	0.00															
			Actual	49																
	37	END	Plan	7		XX/X/XXXX														
			Actual	7																

6.4 Cost and Budgeting

This project involves the cost of purchasing components and materials throughout its implementation components involving cost are hardware Arduino, LM35 temperature sensor, Motion sensor, LCD display module with 12C adapter, 12V DC fan, 12V power supply, LED, resistor, NPN transistor and electrolytic capacitor.To make things easier and save money, all of these components are purchased online. There are some online shops can be purchased at discounted price. According to Table 1, the overall gross budget estimate for the implementation of this project is RM 200.00, with other expenses at RM 72.8. Based on this budget cost, this project can be considered a less expensive project when compared to other projects that can cost over a thousand ringgit. The project's cost is also consistent with one of the key characteristics of a good project developer: low cost but high quality.

No.	Component and materials	The unit price	Quantity	Total
1	Arduino UNO Set	RM 23.50	2	RM 47
2	DHT11 Temperature Sensor	RM 5.00	2	RM 10.00
3	12V DC Fan	RM 7.00	1	RM 7.00
4	16*2 LCD Display Module	RM 30.90	1	RM 30.90
5	2N2222 NPN Transistor	RM 0.30	1	RM 0.30
6	1kΩ resistor	RM 5.00	1	RM 5.00
7	10 µF Electrolytic capacitor	RM 0.40	1	RM 0.40
8	5mm LED	RM 0.10	1	RM 0.10
9	12V Power Supply	RM 16.00	1	RM 16.00
10	Jumper Wire	RM 2.50	1	RM 2.50
11	PIR Motion Sensor	RM 8.00	1	RM 8.00
12	Other expenses			RM 72.8
			Total :	**RM 200.00**
			Overall total	**RM200.00**

6.5 Chapter Summary

Project management and costing have been discussed in this chapter. I've included a gantt chart, milestone and budget list for the project with component amounts.

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- Xiaodong Xia, Based on Single Chip MicrocomputerRemote Wireless Control System Design. Coal Mine Machinery, vol. 32 (8), 2011, pp. 202-204.
- T. R. F Fulford-Jones, W. Gu-Yeon, and M Welsh, "A portable, low power, wireless two-lead EKG system," Proceedings of the 26th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC-04), 1-5 Sept. 2004 , pp.2141-2144.

7 APPENDICES

APPENDIX A - PROGRAMMING

```
#include <SoftwareSerial.h>

#include <Wire.h>
#include <dht.h>


dht DHT;


SoftwareSerial ss(2, 3); //(RX,TX)



#include <LiquidCrystal_I2C.h>

LiquidCrystal_I2C lcd(0x27, 16, 2);


#define PIR A1
#define Buzz 8
#define ALARM 13
#define FAN 9

#define DHT11_PIN A2

int Mode=0;
float Press;

int Alm1=0;
int Alm2=0;
int Alm3=0;
float val=0;
int tempPin = 1;
float Flame;

int TIMER=40;



float SPD=0;
float Smoke1=0;
int Timerx=0;
String Status="STOP";
float Hum,Temp,Sens1;
float Sens2,WP;
float Speed=125;
int ST=0;
float Smoke;
```

```
void setup(void)
{
  pinMode(FAN,OUTPUT);
  digitalWrite(FAN,LOW);
 Serial.begin(9600);
 ss.begin(9600);
 pinMode(PIR,INPUT);
 pinMode(Buzz,OUTPUT);
  pinMode(ALARM,OUTPUT);
lcd.begin();
lcd.clear();
 lcd.setCursor(0, 0);
  lcd.print("    WELCOME");
delay(3000);
digitalWrite(Buzz,HIGH);
delay(40);
digitalWrite(Buzz,LOW);
delay(40);
digitalWrite(Buzz,HIGH);
delay(40);
digitalWrite(Buzz,LOW);
delay(40);


}

void loop(void)
{

int chk = DHT.read11(DHT11_PIN);

  switch (chk)
  {
    case DHTLIB_OK:
    //Serial.print("OK,\t");
    break;
    case DHTLIB_ERROR_CHECKSUM:
    //Serial.print("Checksum error,\t");
    break;
    case DHTLIB_ERROR_TIMEOUT:
    //Serial.print("Time out error,\t");
    break;
    case DHTLIB_ERROR_CONNECT:
        //Serial.print("Connect error,\t");
        break;
    case DHTLIB_ERROR_ACK_L:
        //Serial.print("Ack Low error,\t");
        break;
    case DHTLIB_ERROR_ACK_H:
        //Serial.print("Ack High error,\t");
        break;
    default:
    //Serial.print("Unknown error,\t");
    break;
  }
```

```
  Temp=DHT.temperature ;
  Hum=DHT.humidity;



lcd.clear();
 lcd.setCursor(0, 0);
  lcd.print("T:");
  lcd.print(Temp,1);
  lcd.print("c");

    lcd.print(" H:");
  lcd.print(Hum,1);
  lcd.print("%");

if (digitalRead(PIR)==1){
   lcd.setCursor(0, 1);
  lcd.print("MOTION DETECTED!");

  if (ST==0){
    ST=1;
    digitalWrite(FAN,HIGH);
    delay(100);
    digitalWrite(FAN,LOW);

  }
   TIMER=20;


}

 if (TIMER>0){
    TIMER--;
    Serial.println(TIMER);

    if (TIMER==0){
      if (ST==1){
    digitalWrite(FAN,HIGH);
    delay(100);
    digitalWrite(FAN,LOW);
    delay(100);
    digitalWrite(FAN,HIGH);
    delay(100);
    digitalWrite(FAN,LOW);
    delay(100);
    digitalWrite(FAN,HIGH);
    delay(100);
    digitalWrite(FAN,LOW);
    ST=0;
      }
    }
  }

if (digitalRead(PIR)==1){
```

```
}
 //#################################################

   delay(800);

}
```