FACULTY OF ELECTRICAL ENGINEERING
UNIVERSITI TEKNOLOGI MARA
PULAU PINANG

FINAL REPORT:
TEMPERATURE SMART CONTROL SYSTEM

MUHAMAD AMIRUL HAFIS BIN LOKMAN MAZIDIN

MUHAMMAD FAISAL BIN YOHYA

SUPERVISOR:
CIK FARIDAH ABDUL RAZAK

ABSTRACT

Temperature control system is a device that detects, show and control the temperature of the laptop. This circuit can cool the heat generate by the laptop by operating a DC fan when the temperature in its vicinity increases above the trigger temperature. This project is to design a circuit that have LM35 as a sensor that can be attached with a microcontroller PIC16F877A. Other than that is to study the process and function of microcontroller and sensor that can be works together in one circuit. Moreover, to measured and read the temperature in a digital sign and overcome the problem.

The simulation that is use in this project is Proteus. This project also is tested to breadboard to test the overall circuit. Microcontroller, PIC16F877A covert the temperature from analog signal to digital signal and send the data to the LCD to show the current and trigger temperature that has been set at the programming at the microcontroller PIC16F877A.

If the temperature is higher than trigger temperature, the motor that act as cooling system will operate to cool down the laptop.

ACKNOWLEDGEMENTS

Firstly we would like to thanks to Allah S.W.T because give a strength to us to complete the final year project. We also like to thanks to our supervisor Cik Faridah Abd Razak to guide, help also give advice and motivation to us from beginning until the end of the project because without her we cannot complete this project. We also like to thank to PCB laboratory technician, En. Nahar to printed the PCB film and guide us when we do a PCB at the laboratory. Not forgotten, En. Nasir, drills and hardware technician to teach and guide how to use a drill machine to drill at PCB board and give permission to use oscilloscope to check the signal of the microcontroller. We also want to thanks to our friends to help us and give a advise to complete this project. Lastly, we offer our regards and blessings to my colleagues and all of those who support our in any respect during the completion of the project.

TABLE OF CONTENT

ACKNOLEDGEMENTS.....i

ABSTRACT.....ii

LIST OF FIGURES.....iii

LIST OF TABLES.....v

LIST OF ABBREVIATION.....vi

CHAPTER 1 INTRODUCTION.....1

1.1 Background of study.....1

1.2 Problem statement.....2

1.3 Objectives of research.....3

1.4 Scope of study.....4

CHAPTER 2 MATERIALS AND METHODS.....5

2.1 methodology.....5

2.1.1 Design flow chart.....5

2.2 Equipment and Component.....7

2.3 Experimental Setup.....8

CHAPTER 3 CIRCUIT DESIGN AND OPERATIONS.....11

3.1 PCB design.....11

3.2 PCB fabrication

3.2.1 Cleaning the board.....12

3.2.2 Laminating process.....13

3.2.3 UV exposition process.....15

3.2.4 Chemical Immerse.....16

3.2.5 PCB Cutting.....19

3.2.6 Drilling.....20

3.3 Safety precaution 21

CHAPTER 4 RESULT AND DISCUSSION.....22

4.1 Software Simulation Result.....22

4.2 Hardware Implementation.....25

4.3 Circuit Testing And Troubleshooting.....27

4.3.1 Circuit Testing.....27
4.3.2 Troubleshooting.....30
4.4 Data Analysis and Discussion.....31
CHAPTER 5 CONCLUSION AND RECOMMENDATION.....32
5.1 Conclusion.....32
5.2 Recommendation.....33
REFERENCES.....34
APPENDICES.....36