ELECTRONIC SHOES DRYER

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PROJECT REPORT COMFORMATION

I hereby declare that the work in this report is my own except for quotations and summaries which have been duly acknowledged.

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PUAN NASROLAYUZE BINT MD SAAD

Dedicated to,

Thanks to Allah,

For give me a good health and strength while making this report.

My beloved father and mother,

Mahsuri Bin Rabun & Normah Binti Sabran

Ibrahim Bin Shamsudin & Hamidah Binti MohdSalleh

Who has always been my epitome of love and always pray for my strength to finish up this report.

My beloved relatives,

My siblings,

Thank you for your support and pray.

The person who has been very understanding and helpful,

Madam Nasrolayuze Binti MD Saad

For the support and guidance. Hope that I always be remembered.

My unforgettable friends,

My housemate, my coursemate and all DEP students intake June 2016,

Our struggle not yet ends.

Finally, friends that always together during this third years study,

Hopefully achieved what we aspired.

ACKNOWLEDGEMENT

Every work accomplished is a pleasure – a sense of satisfaction. However a number of people always motivate, criticize and appreciate a work with their objectives ideals and opinions, hence we would like to use this opportunity to thank all, who have directly or indirectly helped us to accomplish this project.

Firstly I would like to thanks PUAN NASROLAYUZE BINTI MD SAAD, without whose support this project could not be completed. Next we would like to thank all the people, who gave their valuable time and feedback to this project. We would also like to thank my college for supporting us with resources, which beyond any doubt have helped me.

Let me also use this opportunity to thank our team members who have contributed to this project with their invaluable opinions and suggestions, which has gone a long way in soothing our rough edges as a teammate.

ABSTRACT

This project is about Development of Simple Shoe Dryer Apparatus that can be used to helps people drying shoes in a short time. The objectives in this project are to create an easy method to dry a shoe in a short time and it can be used in many situations. Besides that, to design and fabricate an apparatus that can help in drying the shoes with simple action. This project involves the process of designing the simple shoe dryer by considering the functionality, shape, environment fitting, heating element, and the manufacturing cost for people to use it. After all the process had been done, this simple shoe dryer apparatus may help us to understand the fabrication and designing process that involved in this project.

ABSTRAK

Projek ini adalah mengenai Pembangunan Mudah Alatan Mengering Kasut yang boleh digunakan untuk membantu orang mengeringkan kasutdalam masa yang singkat. Objektif projek ini adalah untuk mewujudkan satu kaedah mudah untuk mengeringkan kasutdalam masa yang singkat dan ianya boleh digunakan dalam pelbagai situasi. Selain itu, untuk mereka bentuk dan mereka-reka satu alat yang boleh membantu dalam pengeringan kasut dengan tindakan mudah. Projek ini melibatkan proses mereka bentuk pengering kasut mudah dengan mempertimbangkan fungsi, bentuk, persekitaran yang sesuai, elemen pemanas, dan kos pengeluaran bagi orang ramai untuk menggunakannya. Selepas semua proses yang terjadi itu, alat pengering kasut mudah ini boleh membantu kita untuk memahami proses fabrikasi dan reka bentuk yang terlibatdalam projek ini.

CHAPTER 1
INTRODUCTION

CHAPTER 1 INTRODUCTION

1.1 Background Research

The results of the discussions and the views expressed by the partners have decided to make a project of shoe dryers. Where the purpose of the project is to facilitate the peoples. The project operates shoe dryer where heat from the dryer will heat the shoes by temperature programmed in the microcontroller. Dc motors used for this project in order to heat the entire surface of the shoe by means of motor rotates

1.2 Problem Statement
- Peoples often face difficulties for drying shoes and other equipment on rainy days.
- Waste times and efforts on drying shoes.
- Need for an early warning system/an assistant to take care of when the process of drying up

1.3 Objective
- To create an easy method to dry a shoe in a short time and it can be used in many situations.
- to design and fabricate an apparatus that can help in drying the shoes with simple action.
- To create a light shoes dryer that easier to carry

1.4 Scope of Research
The advantage of the shoes dryer is to solve the problem of wasting times and efforts of the users to dry up their shoes or other suitable equipment that can be put on the machine. This shoes dryer machine operates when the machine is been set up the max temperature and the timer. The machine automatically off when the temperature is more than has be set up as it have temperature sensor on it and automatically off when it reach the time that has been set up. This system is for safety procedure to ensure from damaging the shoes for being to long on drying process

1.5 Research Interests
- To provide suitable drying process using suitable temperature as they is sensor signal processing features that capable to detect the temperature
- To display the temperature and timer through lcd displays that are located at the machine for easier looked up

CHAPTER 2

LITERERATURE REVIEW

ELECTRONIC

SHOES DRYER

2.1 Introduction of Electronic Shoes Dryer

The Electronic Shoes Dryer is machine create to solve the problem of wasting times and efforts of the users to dry up their shoes or other suitable equipment that can be put on the machine. This shoes dryer machine were connected with temperature sensor to ensure a suitable temperature drying process and a LCD display for easier operating process.It operates when the machine is been set up the max temperature and the timer. The machine automatically off when the temperature is more than has be set up as it have temperature sensor on it and automatically off when it reach the time that has been set up. This system is for safety procedure to ensure from damaging the shoes for being too long on drying process.The LCD display the timer and temperature while the machine is processing.

2.2 Concept of the Project

In order to accomplish the project successfully, the concept that are studied in our project are sensitivity control.

2.3 Previous Research

Before this, there is a machine to dry up the shoes but it is not create specific for shoes. It would be inconvenient for users to damaging their beloved shoes as it is important equipment in our daily life. Therefore, our project are created to solve this problem, especially for the users that want to keep their shoes stay preserved.

2.4 Block Diagram

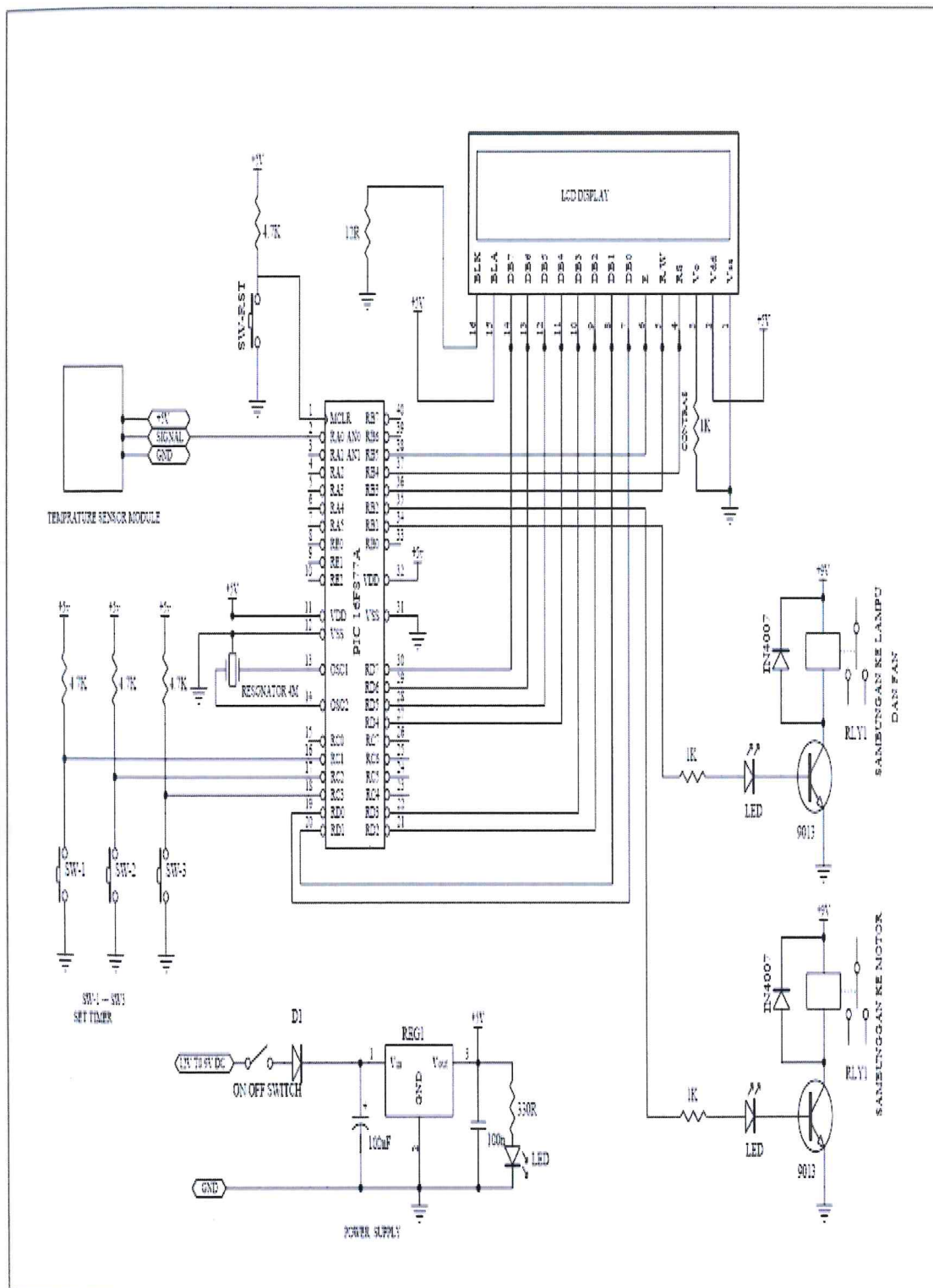| ZD-TEMPRATURE SENSOR MODULE LM35 | → | | | |
SWITCH SW1-SW3	→	PIC16F877A Mikropengawal	→	LCD DISPLAY
			→	RELAY
			→	RELAY
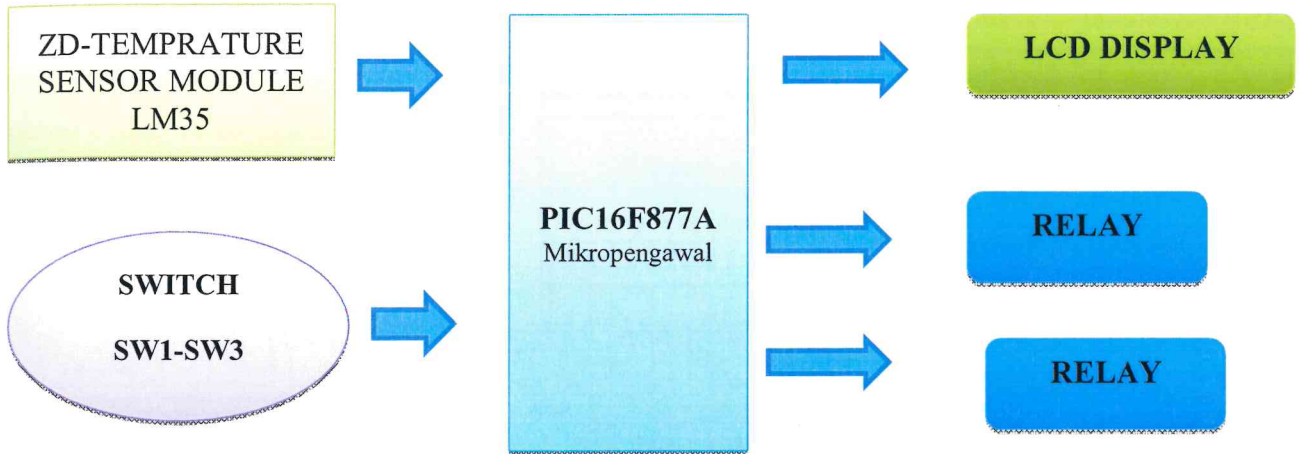
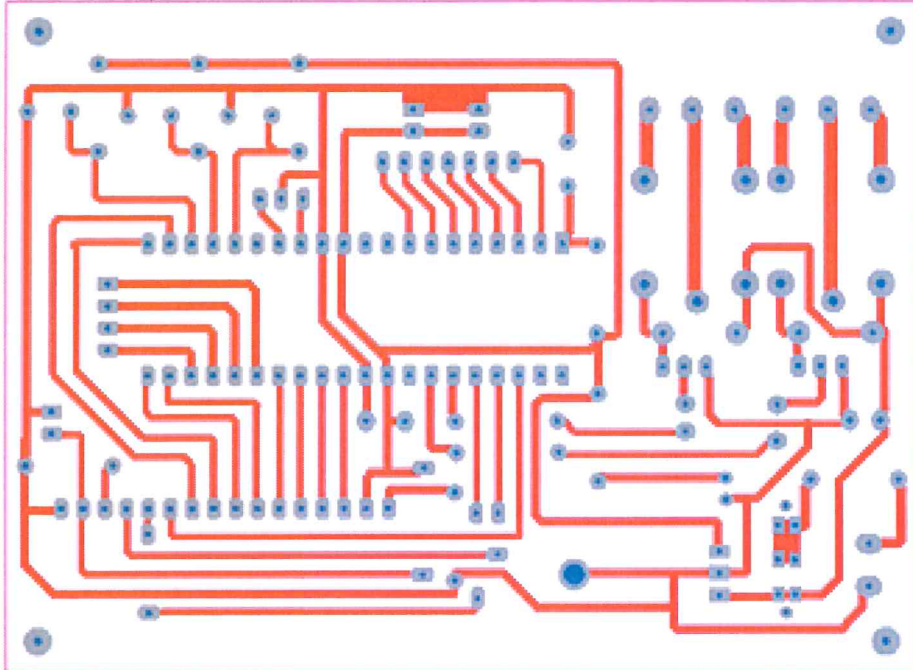INPUT   PROSES   OUTPUT

2.5 Design and Simulation

CIRCUIT OF ELECTRONIC SHOES DRYER

2.5.1 Circuit of Electronic Shoes Dryer

ARTWORK OF ELECTRONIC SHOES DRYER

2.5.2.Artwork of Electronic Shoes Dryer

DRIVER CIRCUIT FOR RELAY
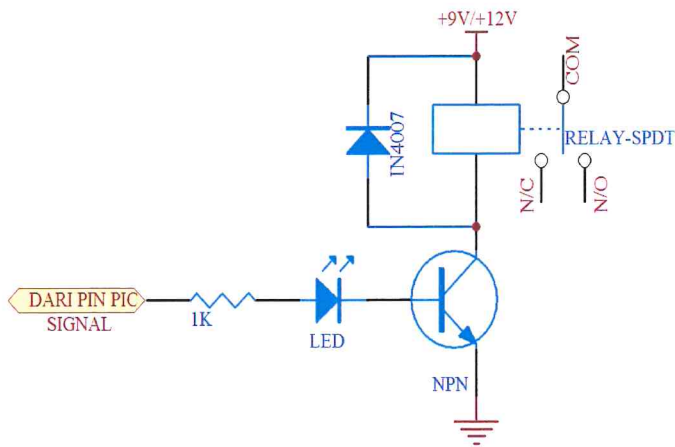
2.5.3 Driver Circuit for Relay

.

Use this circuit is to turn on the relay. When PIC sends a signal + 5V via a resistor and it will be LEDs. The purpose of the resistor and this is to limit the LED current to voltage transistor Base feet. PIC will send a + 5V LED will light up at the same time walk transistor base will get signal. Flow from the Collector will continue to Emitter (GND) and this will be a complete circuit (Relay will be active). Diode also avoid interference currents on the relay coil.

2.5.4 RELAY
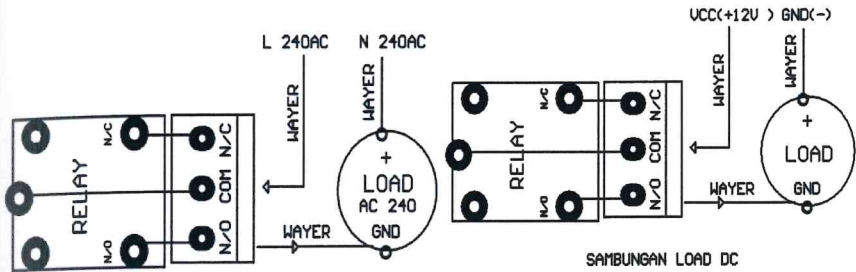
SAMBUNGAN LOAD AC

2.5.4.1 Relay connection

Relay is used as a switch to connect the load in either AC @ DC depending on relay that is in use. The diagram above shows how the relay connection to AC and DC load

2.5.5 LCD Display

LCD display diagram
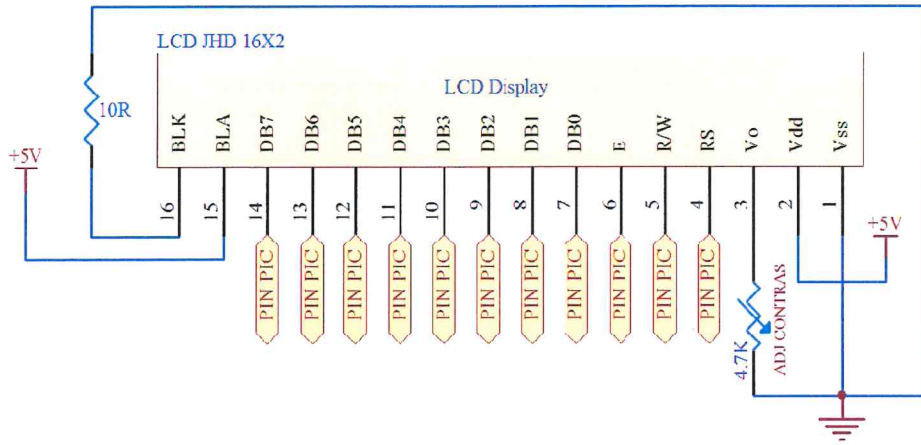
2.5.5.1 LCD display diagram

LCDs are used are sized 16x2. The purpose is used is presenting results in the programming examples such as exposure to temperature, time and so forth. LCD has a 16-foot (pin). Resistor be barrel (preset) (1K value -10k) is used to change the brightness stage that in the mentioned article, by the way it is connected to the leg 3 LCD. Aside from our presets may also use 1K barrier by means of the connecting pin into the foot 3 LCD and another to gnd (-). Legs 15 and 16 LCD is for lighting (LED) LCD. Resistor on foot connection 16 is used for the flow in order to circumvent LED limitation of Damaged.

2.5.6 Clock oscillating
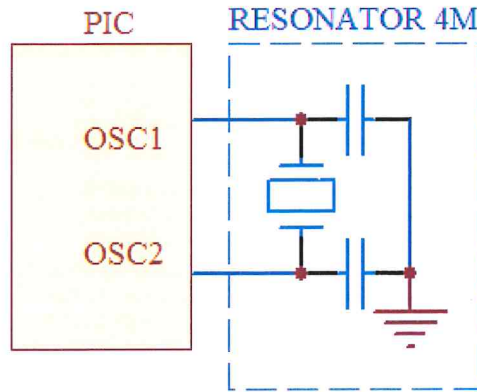
2.5.6.1 Clock oscillating diagram

This is an oscillating circuit, it's important to give a pulse to the circuit microcontroller. On this circuit I'm using 4MHz ceramic resonator. Apart from the ceramic resonator we can also use cystal oscillator with 2 seed capacitor. The advantages of ceramic resonator is already there in 2 seed capacitor. Ceramic resonator has 3 legs, left and right will be connected to the OSC1 and OSC2 and foot center will be connected to the GND.

2.5.7 MICROCONTROLLER (PIC16F877A)

40-Pin PDIP

```
                    MCLR/Vpp ──►│ 1      40 │◄──► RB7/PGD
                    RA0/AN0 ◄──►│ 2      39 │◄──► RB6/PGC
                    RA1/AN1 ◄──►│ 3      38 │◄──► RB5
             RA2/AN2/VREF-/CVREF ◄──►│ 4      37 │◄──► RB4
              RA3/AN3/VREF+ ◄──►│ 5      36 │◄──► RB3/PGM
            RA4/T0CKI/C1OUT ◄──►│ 6      35 │◄──► RB2
          RA5/AN4/SS/C2OUT ◄──►│ 7      34 │◄──► RB1
                  RE0/RD/AN5 ◄──►│ 8      33 │◄──► RB0/INT
                  RE1/WR/AN6 ◄──►│ 9      32 │◄── VDD
                  RE2/CS/AN7 ◄──►│ 10     31 │◄── VSS
                         VDD ──►│ 11     30 │◄──► RD7/PSP7
                         VSS ──►│ 12     29 │◄──► RD6/PSP6
                   OSC1/CLKI ──►│ 13     28 │◄──► RD5/PSP5
                   OSC2/CLKO ◄──│ 14     27 │◄──► RD4/PSP4
              RC0/T1OSO/T1CKI ◄──►│ 15     26 │◄──► RC7/RX/DT
              RC1/T1OSI/CCP2 ◄──►│ 16     25 │◄──► RC6/TX/CK
                   RC2/CCP1 ◄──►│ 17     24 │◄──► RC5/SDO
                RC3/SCK/SCL ◄──►│ 18     23 │◄──► RC4/SDI/SDA
                   RD0/PSP0 ◄──►│ 19     22 │◄──► RD3/PSP3
                   RD1/PSP1 ◄──►│ 20     21 │◄──► RD2/PSP2
```

PIC16F874A/877A

2.5.5.1 Microcontroller diagram

PIC16F77A in 2.2V-5V operation, so this circuit is connected to a 5V power supply. PIC16F77A has Port A, Port B, Port C, Port D and Port E for input and output. Any components required in the circuit will be connected to the 35 pin I / O's.

Although PIC16F77A has an internal oscillator, external oscillator is required to stabilize the operating and determine the operating frequency. At Pin 13 and 14 connected to the microcontroller or resonator 4Mhz cystal.
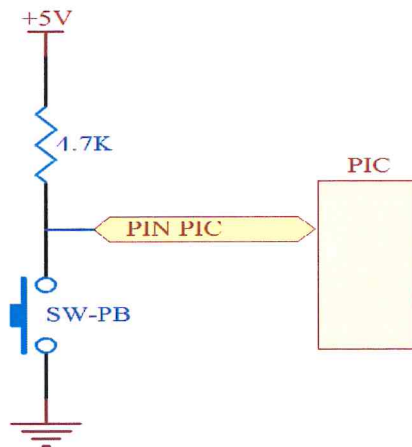
2.5.8 Voltage Regulator (7805)
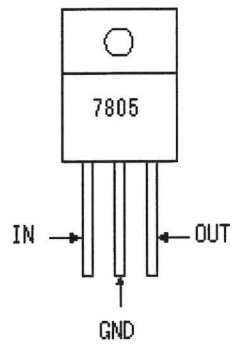
2.5.8.1 Voltage regulator diagram

This is a voltage regulator supply of +5V. The maximum current for this regulator is 1AMP.

## 2.5.9 SWITCH INPUT TO THE PIC MICROCONTROLLER

2.5.9.1 Switch input schematic diagram

2.5.9.2 Switch input diagram

An I / O pin of PIC microcontroller connected to the PUSH BUTTON SWITCH as entry. PUSH BUTTON SWITCH Penyambunggan as example 2. I / O pin is placed as PULL UP resistor. (The 1K resistor between -10k) .Sample above named ACTIVE LOW for entry. PUSH BUTTON SWITCH When pressed I / O pin will condition 0 (gnd) .In normal circumstances input readings at the I / O pin is a condition 1 (+ 5V) .Sample below shows examples of commonly used switches.

2.6 MICROCONTROLER/INTERFACE TEMPERATURE MODULE LM35
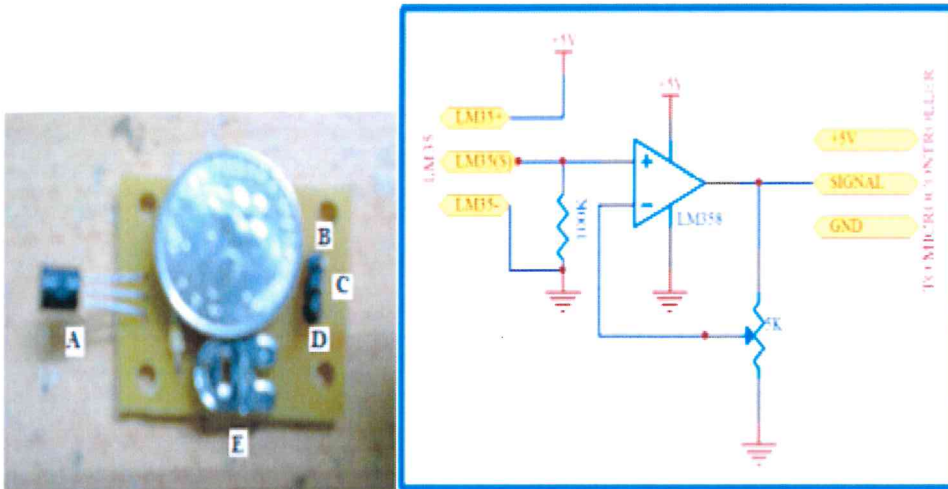
2.6.1 Picture and Schematic circuit of Temperature Module of LM 35

TOP VIEW

LABEL	FUNCTION	LABEL	FUNCTION
A	Sensor Temperature (LM35)	D	Pin header to connect GND (-)
B	Pin header to connect GND (-)	E	Preset
C	Pin header to connect input pic(analog)		

2.7 Connection of the Temperature Module
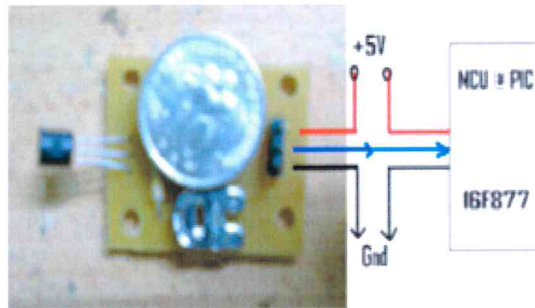
Explanation

The LM35 Temperature Sensor is based on the semiconductor LM35 temperature sensor. The LM35 Temperature Sensor can be used to detect ambient air temperature. Adjust VR for get the sensitivity. The LM35 module temperature sensor pin definitions:

1) +5V
2) Signal O/p (analog signal)
3) GND
* Pin signal LM35 can connect to pin PIC @ MCU (microcontroller) at pin no 2 or 3, there is analog pin MCU @ PIC(16F877)

CHAPTER 3
METHODOLOGY

CHAPTER 3 METHODOLOGY

3.1   Fabrication & Measurement Process

3.1.1 Started with PCB Wizard
PCB wizard is a highly innovative package for designing single-sided and double-sided printed circuit boards (PCBs). It provides a comprehensive range of tools covering all steps in PCB production, including schematic diagram, schematic capture, component placement, and automatic routing.

To draw a printed circuit, a few guidelines to be followed is as follows:
- The distance between components with one other component is not too close and not too far away.
- Using an appropriate measure of size and the components used.
- Design and arrange the printed circuit, avoid from use jumpers.

3.1.2 Step of Project Implementation

In the process of setting up a project there are some steps that need to be implemented and in going through, to get a project that perfect and have good quality in all the required. Among the measures that should be made is a schematic diagram of the circuit, the circuit ionizing process in PCB, etching, punch a hole PCB, and insert component. Next is a description in detail about the process: -

3.1.3 Schematic diagram of the circuit

The move is an important step to start painting printed circuits. Printed circuit in the painting is a sketch of the circuit where it needs to invert when she explosives in trace on a circuit board or PCB. When was ready to print on the PCB board, the circuit re-examined to make sure all the connections are correct circuit and right.

3.1.4Etching process

After the circuit has been in PCB etching process is done. The etching process is a process that aims to dissolve the Courant undesired circuit board. The circuit boards will be in etching using ferric chloride acid. Between steps need to be followed when pouring explosive running the etching process is as follows: -

• Etching powder is dissolved in the mark that has been filled with water. Water is used to dissolve the powder earlier etching.

• Circuit boards that are ready painted later in soak in the etching solution.

• Former was swaying or shaking to facilitate more copper surfaces are not required eroded.

• We will find the formation painting above PCB circuit board PCB are in want. Make sure the connection is not disconnected circuit and short circuit, how the examination is to use a multimeter.

3.1.5Cleaning Circuit Boards

PCB were remove from the container and cleaned using clean water. After the circuit at the trace on the PCB board is cleaned using thinner oil. Then there is a healthy one complete circuit board.

3.1.6The process to make a Hole to the PCB (Drilling)

This process must drill a hole using a drill bit that corresponds to this component seeks feet away in the components enter into the board happy for the solder. Be sure to punch holes PCB carefully to avoid breakage and damage the PCB circuit.

3.1.7Installing Components

Foot component on the PCB board shall enter in the bend to facilitate the next process (Speaker Components). Make sure the components are in place in terms of polarity is correct, the right place before running soldering.

3.1.8Soldering components

This process is done to connect the components on the PCB board and form a complete circuit, and works perfectly. Soldering steps are as follows:

• Preheat the soldering iron first

• Clean the surface of the PCB board

• Clean the components you want in the solder.

• Melt the lead solder with a soldering iron on the surface of the circuit connection

• Ensure sufficient to grip the lead solder on the PCB board.

• Soldering iron transferred from the surface of the PCB board

• Solder lead will harden and stick to the copper surface with the component foot.

Once the components have been in the solder feet firmly, feet should be cut with a side cutter. These cuts are intended to prevent the occurrence of short circuits due to the length of the foot component may be affected each other.

3.1.9 Examples of picture process of Project Implementation
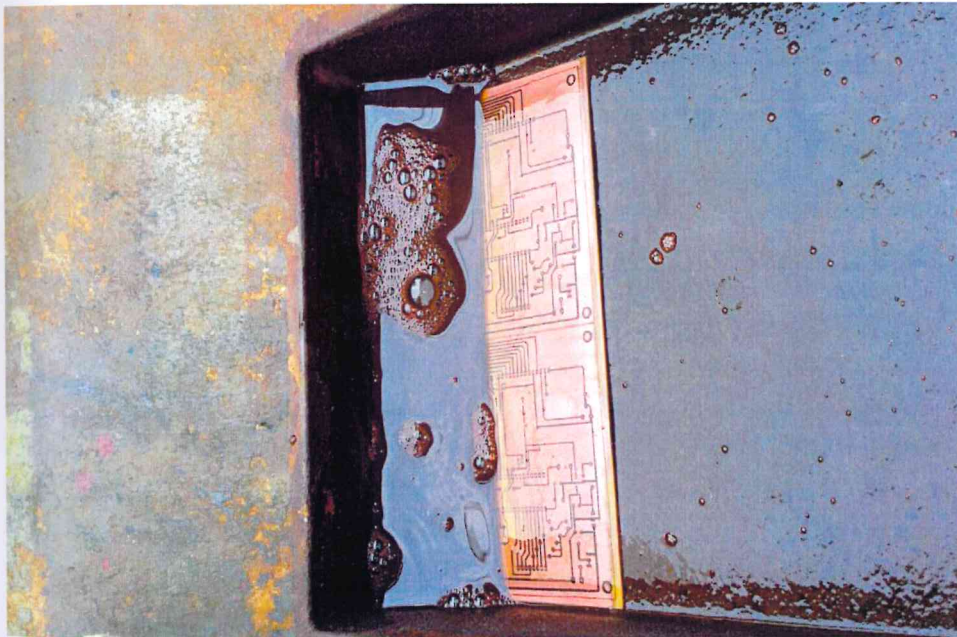
9.1 The figure show the process of etching.

9.2 Figure show process of drilling the board