KL UNIVERSITY

TECHNICAL PROFICIENCY & TRAINING-1 (19TS4005)

A Project Based Lab Report

On

Iot based calcultaion thermal comfort index using arduino

Submitted by

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VADDESWARAM, GUNTUR

November, 2021

CERTIFICATE

I hereby certify that the work which is being presented in the B.Tech. Project Report entitled "**"Iot based calcultaion thermal comfort index using arduino"**, submitted by, **CH.PRIYA-190040582**, **VENNE RAMYA -190040564** in partial fulfillment of the requirements for the award of the Bachelor of Technology in Electronics & Communication Engineering and submitted to the Department of Electronics & Communication Engineering of KLEF, Vaddeswaram, Guntur is an authentic record of my own work carried out during a period from June 2021 to November 2021, under the supervision of **Dr. China Satyanarayana ,** Asst. Professor, ECE Department.

Signature of Candidate

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Abstract:

As the smart system has been developed in the automobile industry, new features are implemented for the comfort of the customer. The main problem faced in an elevator is a power failure. Due to this people get struck in lift and suffer from suffocation as airflow is reduced. However, if a lift door is locked, creating a closed cabin, the people who struck, in the lift, cannot open the door or windows. The closed lift cabin may result in depletion of oxygen (O2). Concentrating on the problems that occurred due to suffocation in a car, it reveals that in the closed cabin the oxygen level decreases with a constant speed as the living being inhales the oxygen (O2) and exhales carbon dioxide (CO2), which results in the scarcity of oxygen (O2). Hence, this proposed work deals with the safety of loved ones in the closed lift cabin, which connects PIR motion sensors, temperature sensors, pressure sensors, wind sensors, humidity sensors, micro-controller, timer, GSM modem, air blower, lift buzzer. The micro-controller will make the decision regarding turning the buzzer and air blower on and sending electronic alert messages through the GSM modem. This system will help the toddlers to get out of the lift. In critical situations like if the temperature increases than a normal level then an alert message will be sent to the nearby hospital, lift service station, and police station and will turn on the lift buzzer to inform nearby people.

Introduction:

A temperature-humidity index (THI) is **a single value representing the combined effects of air temperature and humidity associated with the level of thermal stress**. This index has been developed as a weather safety index to monitor and reduce heat-stress-related losses. The ideal relative humidity for health and comfort is somewhere **between 30-50% humidity**, according to the Mayo Clinic. This means that the air holds between 30-50% of the maximum amount of moisture.

COMPONENTS REQUIRED:

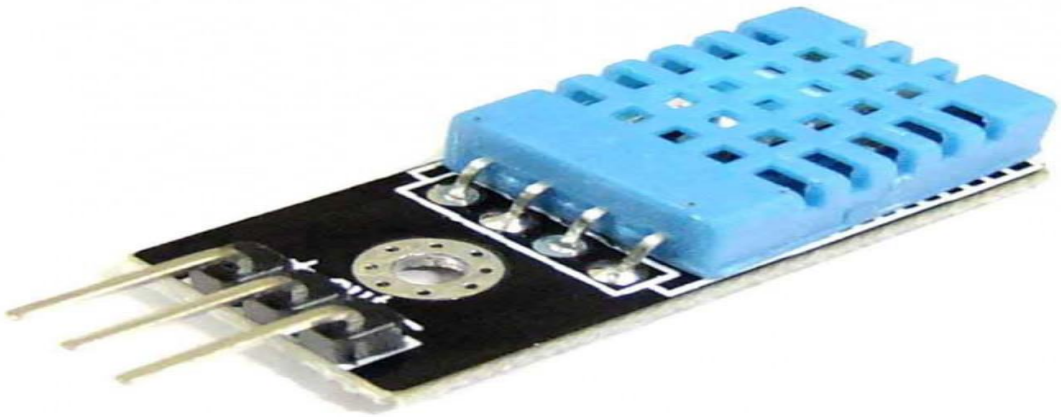
1.ARDUINO UNO
2.TEMPERATURE SENSOR
3.HUMIDITY SENSOR
4.2X LED
5. LCD DISPLAY
6.USB CABLE
7. POWER SUPPLY

SOFTWARE USED:

ARDUINO IDE

DHT11 HUMIDITY SENSOR:-

- The **DHT11** sensor has three or four pins in total. **3-PIN** sensors have two PINs (+ve and -ve) for power supply, one is a signal PIN used for data communication. The **DHT11 sensor** can work from 3 voltage to 5.5 volts. DHT11 transfers data from its single terminal to the microcontroller , DHT11 sensor sends signals to an active microcontroller sensor. After activation, the DHT11 sensor responds to starting a signal in the form of 40-bit data with relative humidity and temperature information.



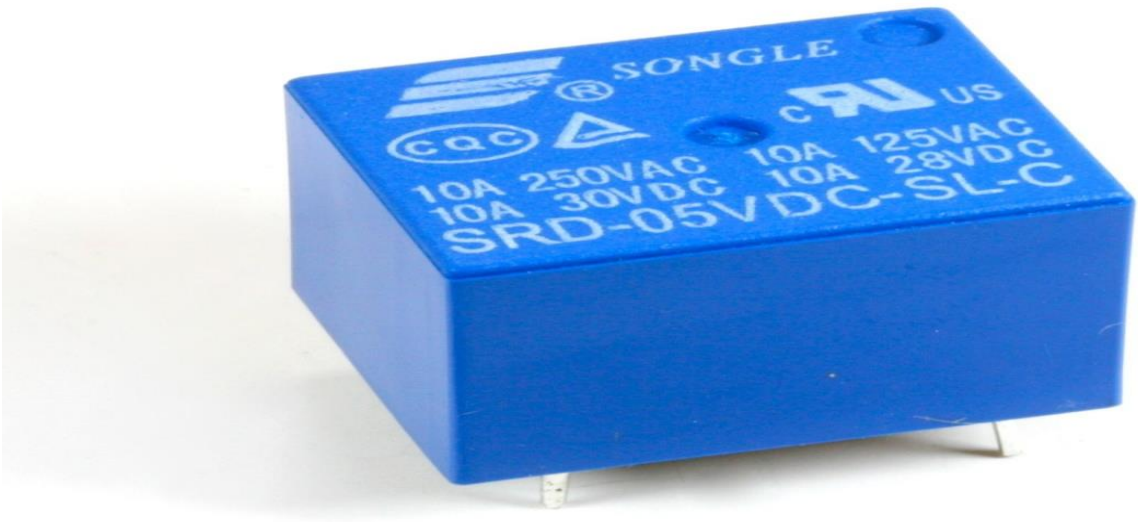
12C LCD BASICS:-

This type of LCD is ideal for displaying text and numbers, hence the name character LCD. The I2C LCDs that we are using in this tutorial come with a small add-on circuit mounted on the back of the module. This module features a PCF8574 chip (for I2C communication) and a potentiometer to adjust the LED backlight. The advantage of an I2C LCD is that the wiring is very simple. You only need two data pins to control the LCD, for more information about this topic go to 1**2C Liquid Crystal Display with Arduino in Proteus.**

PIN DIAGRAM OF 12C MODULE IC:-

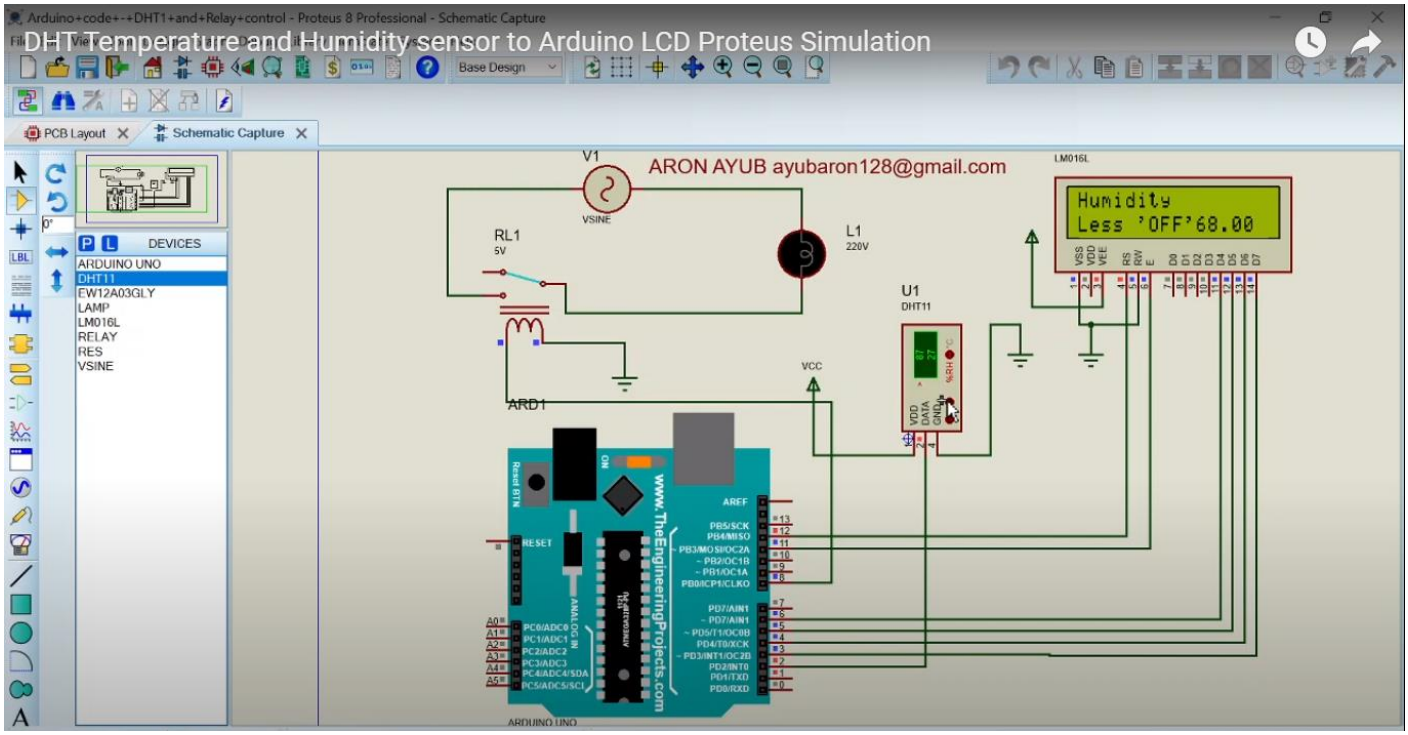
These ICs have very "Low Standby-Current" Consumption of only 10µA. The SDA, SLC and the Interrupt pins all need to be pulled up using pull-up resistors. This IC followed by the 3 jumpers for A0, A1 and A2 with high and low positions. Then we have the 8 I/O pins plus one Interrupt pin (P0 to P7). If we look at the back of the board the pins are all labelled starting from . There is a second variant of this IC available in the market called the PCF8574A.

RELAY:-



A Relay is an electromechanical device that can be used to make or break an electrical connection. It consists of a flexible moving mechanical part which can be controlled electronically through an electromagnet, basically, a relay is just like a mechanical switch but you can control it with an electronic signal instead of manually turning it on or off. Again this **working principle of relay** fits only for the electromechanical relay. There are many types of relay and each relay has its own application, a standard, and generally used relay is made up of electromagnets which in general used as a switch. Dictionary says that relay means the act of passing something from one thing to another, the same meaning can be applied to this device because the signal received from one side of the device controls the switching operation on the other side. So relay is a switch which controls (open and close) circuits electromechanically. The main operation of this device is to make or break contact with the help of a signal without any human involvement in order to switch it ON or OFF. It is mainly used to control a high powered circuit using a low power signal. Generally, a DC signal is used to control the circuit which is driven by high voltage like .

circuit Diagram:-



Program/code:-

```
#include <LiquidCrystal_I2C.h>

#include "DHT.h"   ;
    // Include the DHT library.

#include <DHT_U.h>

#define Type DHT11

#define DHTPIN 2
            // Set the DHT Pin.

#define DHTTYPE DHT11

   // Set the DHT type.


LiquidCrystal_I2C lcd(0x20,16,2);

int sensePin=2;

DHT HT(sensePin,Type);

float humidity;

float temperature;

int ledPin1=9;

int ledPin2=10;

void setup() {

// put your setup code here, to run once:

pinMode(ledPin1, OUTPUT);

pinMode(ledPin2, OUTPUT);

Serial.begin(9600);

HT.begin();

digitalWrite(ledPin1, HIGH);

digitalWrite(ledPin2, HIGH);

lcd.begin(16,2);

  lcd.setCursor(4,0);

  lcd.print("Hello!");

  lcd.setCursor(0,1);

  lcd.print(" Microdigisoft");
```

```
  delay(1000);
digitalWrite(ledPin1, LOW);
digitalWrite(ledPin2, LOW);
lcd.clear();
}
void loop() {
  // put your loop code here, to run continuesly:
humidity=HT.readHumidity();
temperature=HT.readTemperature();
digitalWrite(ledPin1, HIGH);
digitalWrite(ledPin2, LOW);
lcd.setCursor(1,0);
lcd.print("  Humidity: 26 ");
lcd.setCursor(4,1);
lcd.print(humidity);
lcd.print(" %");
delay(1000);
digitalWrite(ledPin1, LOW);
digitalWrite(ledPin2, LOW);
lcd.clear();
delay(1000);
lcd.setCursor(1,0);
lcd.print("Temperature:28 ");
lcd.setCursor(4,1);
lcd.print(temperature);
lcd.setCursor(10,1);
lcd.print( (char)223);
lcd.print("C");
digitalWrite(ledPin2, HIGH);
delay(1000);
digitalWrite(ledPin1, LOW);
```

```
digitalWrite(ledPin2, LOW);
lcd.clear();
delay(1000);
}
```

Hardware implementation: