GOVERNMENT COLLEGE OF ENGINEERING
BARGUR

(AUTONOMOUS)

PROJECT TITLE:

Environmental monitoring

TEAM MEMBERS:

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Objective :

The objective of this Environmental monitoring project is to design and build a low-cost, portable Environmental monitoring that can be used to measure and track levels of common temperatures and humidity. The monitor should be easy to use and accessible to people of all ages and backgrounds, and the data it collects should be publicly available so that it can be used to inform decision-making about Environmental monitoring improvement.

Goals of the project include:

- To design and build a low-cost, portable Environmental monitoring that is easy to use and accessible to people of all ages and backgrounds.
- To develop a calibration procedure for the monitor to ensure that it is providing accurate data.
- To collect and analyze temperature and humidity data from the monitor to identify trends and patterns in Environmental temperature.

- To make the Environmental monitoring data publicly available so that it can be used to inform decision-making about Environmental temperature and humidity improvement.

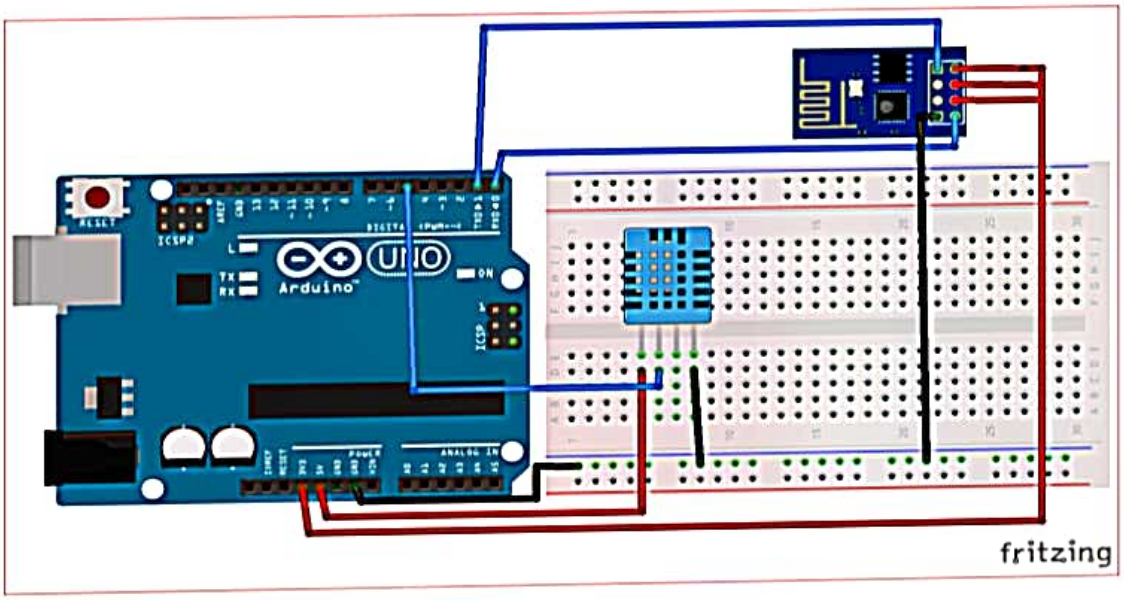
The project will be completed in two phases :

- Phase 1: Design and construction of the environmental monitoring. This phase will involve the selection of appropriate sensors and components, as well as the design and fabrication of the monitor enclosure.

- Phase 2: Deployment of the environmental monitoring. This phase will involve developing a calibration procedure for the monitor and deploying it in a suitable location to collect temperature and humidity data. The data collected will be analyzed and made publicly available.

- The environmental monitoring project is expected to have a significant impact on the local community by providing residents with access to real-time environment data. This data can be used to make informed decisions about activities and exposure to environment, and to advocate for policies that improve environmental.

IOT device setup:



Circuit Diagram of the setup .

Execution of the Main Program :

```
#include <SD.h>
#include "DHT.h"

#define DHTPIN 8
#define DHTTYPE DHT22

long seconds=00;
long minutes=00;
long hours=00;

int CS_pin = 10;

DHT dht(DHTPIN, DHTTYPE);
File sd_file;


void setup() {
 Serial.begin(9600);
 pinMode(CS_pin, OUTPUT);
 dht.begin();
 if (SD.begin()) {
  Serial.println(" Ready to initialized. ");
 }
 else {
  Serial.println("Failed");
  return;
 }
```

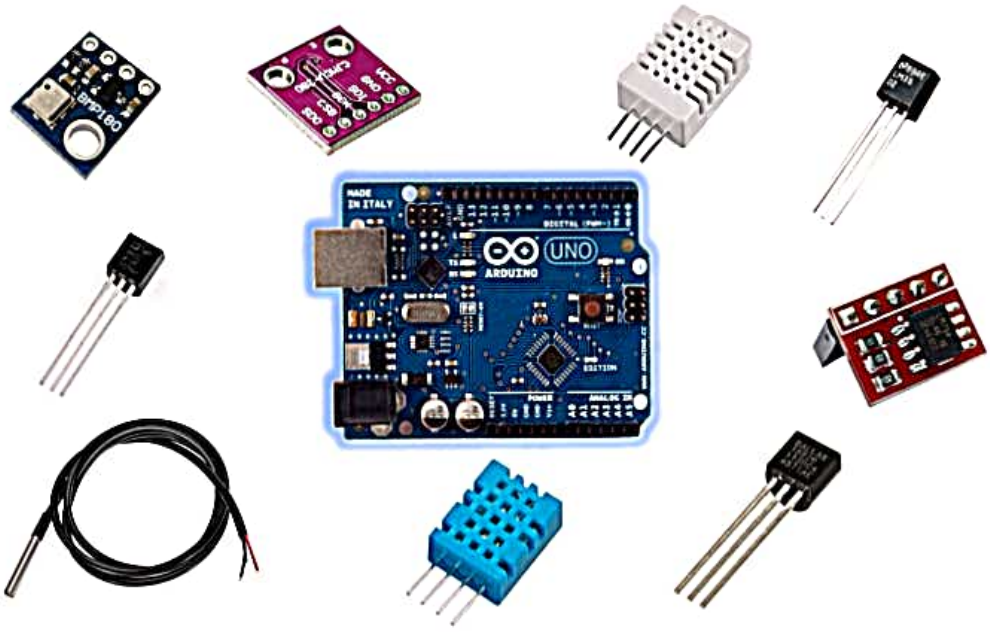
```
 File sd_file = SD.open("data.txt", FILE_WRITE);

 if (sd_file) {
  Serial.print("Time");
  Serial.print(",");
  Serial.print("Humidity");
  Serial.print(",");
  Serial.print("Temperature_C");
  Serial.print(",");
  Serial.print("Temperature_F");
  Serial.print(",");
  Serial.println("Heat_index");

  sd_file.print("Time");
  sd_file.print(",");
  sd_file.print("Humidity");
  sd_file.print(",");
  sd_file.print("Temperature_C");
  sd_file.print(",");
  sd_file.print("Temperature_F");
  sd_file.print(",");
  sd_file.println("Heat_index");
 }
 sd_file.close(); //closing the file
}

void loop() {
 File sd_file = SD.open("data.txt", FILE_WRITE);
 if (sd_file) {
  senddata();
 }
```

```
  // if the file didn't open, print an error:
  else {
    Serial.println("error opening file");
  }
  delay(1000);
}

void senddata() {
  for(long seconds = 00; seconds < 60; seconds=seconds+2) {
    float temp = dht.readTemperature(); //Reading the temperature as Celsius and
storing in temp
    float hum = dht.readHumidity();    //Reading the humidity and storing in hum
    float fah = dht.readTemperature(true);
    float heat_index = dht.computeHeatIndex(fah, hum);

    sd_file.print(hours);
    sd_file.print(":");
    sd_file.print(minutes);
    sd_file.print(":");
    sd_file.print(seconds);
    sd_file.print(",  ");
    sd_file.print(hum);
    sd_file.print(",    ");
    sd_file.print(temp);
    sd_file.print(",     ");
    sd_file.print(fah);
    sd_file.print(",     ");
    sd_file.println(heat_index);

    Serial.print(hours);
    Serial.print(":");
```

```
    Serial.print(minutes);
    Serial.print(":");
    Serial.print(seconds);
    Serial.print(",  ");
    Serial.print(hum);
    Serial.print(",    ");
    Serial.print(temp);
    Serial.print(",      ");
    Serial.print(fah);
    Serial.print(",     ");
    Serial.println(heat_index);

    if(seconds>=58)  {
      minutes= minutes + 1;
    }

    if (minutes>59)  {
      hours = hours + 1;
      minutes = 0;
    }

    sd_file.flush(); //saving the file

    delay(2000);
  }
  sd_file.close();   //closing the file
}
```

Model diagram:

Components Used



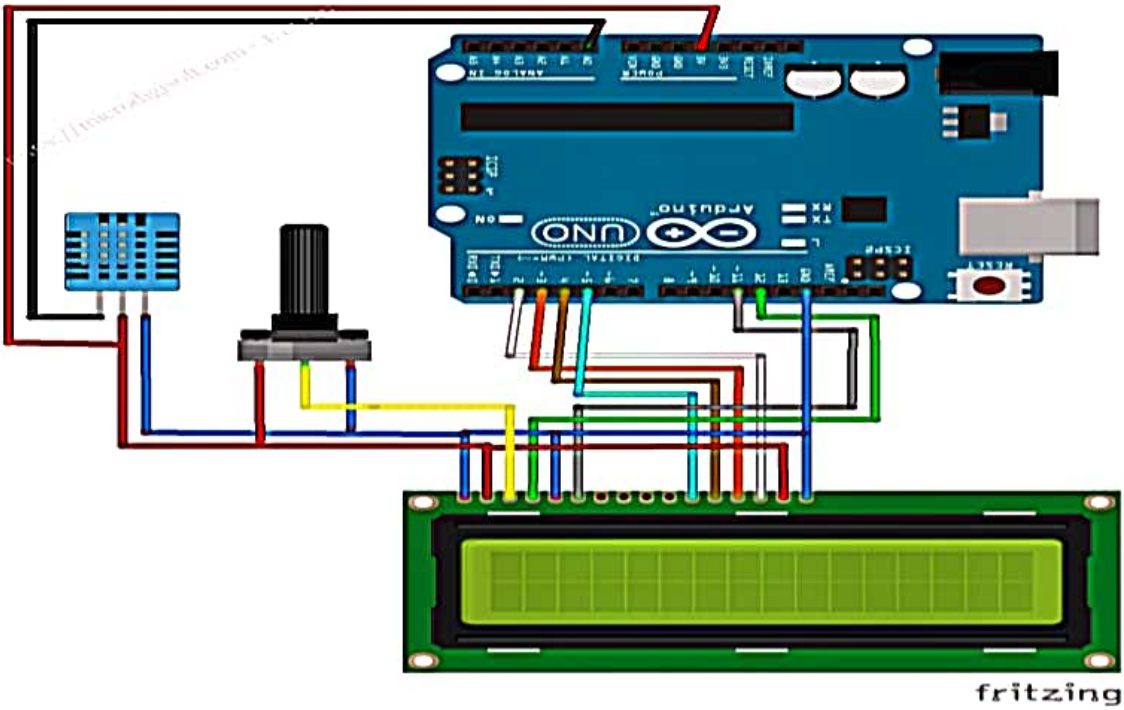
Hardware Components :

1. NodeMCU
2. DHT11 Sensor Module
3. Breadboard
4. Connecting Wires
5. AC-DC Adapters
6. Resistors
7. LCD display

SOFTWARE COMPONENTS :

1. WOKWI Website
2. Arduino IDE

Schematic Diagram:



Real-time environmental monitoring systems can raise public awareness about temperature of surrounding and health impacts in a number of ways:

By providing easy access to real-time data, real-time environmental monitoring systems allow people to understand the environmental in their community in real time. This information can be used to make informed decisions about activities and exposure, such as avoiding outdoor activities during periods of high temperature and humidity.

Real-time environmental monitoring systems can help to identify sources of environmental. This information can be used to develop and implement targeted interventions to reduce heat levels.

Real-time environmental monitoring systems can be used to track the temperature trends over time. This information can be used to assess the effectiveness of environmental policies and programs, and to identify areas where further action is needed.

Real-time environmental monitoring systems can be used to raise public awareness about the health impacts of over heat and cold. This information can be used to promote public support for policies and programs that improve air quality.

Here are some specific examples of how real-time environmental monitoring systems can be used to raise public awareness:

Government agencies and environmental organizations can use real-time temperature and humidity data to develop and distribute public service announcements and other educational materials about air quality and health.

Schools and businesses can use real-time temperature and humiditydata to inform decisions about outdoor activities and indoor environmental.

Media outlets can use real-time temperature data to report on temperature and humidity conditions in their communities.

By making real-time temperature and humidity data easily accessible and understandable to the public, real-time environmental monitoring systems can play a vital role in raising public awareness about heat and health impacts. This awareness can lead to informed decision-making, public support for environment improvement measures, and ultimately, better environment for everyone.