LAB REPORT

IRE 212 : IoT Architecture and Technologies Sessional

PREPARED BY

Mehrin Farzana
ID: 2101013
Session: 2021-2022
Date: 08/09/2024

SUPERVISED BY

Suman Saha
Lecturer
Department of IRE, BDU

BANGABANDHU SHEIKH MUJIBUR RAHMAN DIGITAL UNIVERSITY

(BDU)

List of Problems

1. Temperature and Humidity Monitoring and Display Using Arduino and LCD in Tinkercad

Problem No.: 01

Problem Statement:
Temperature and Humidity Monitoring and Display Using Arduino and LCD in Tinkercad

Code:

```
#include <LiquidCrystal.h>

const int rs = 11, en = 10, d4 = 4, d5 = 5, d6 = 6, d7 = 7;
LiquidCrystal lcd(rs, en, d4, d5, d6, d7);

const int tempSensorPin = A0;
const int humiditySensorPin = A1;

int rawValue = 0;
double voltage = 0;
double tempC = 0;
double tempF = 0;

void setup() {
  Serial.begin(9600);
  pinMode(humiditySensorPin, INPUT);

  lcd.begin(16, 2); // Initialize the LCD with 16 columns and 2 rows
  lcd.print("Temp & Humidity");
  delay(2000); // Delay to show the initial message
  lcd.clear(); // Clear the screen
}

void loop() {
  // Temperature reading
  rawValue = analogRead(tempSensorPin);
  voltage = (rawValue / 1023.0) * 5000; // Convert to millivolts
  tempC = (voltage - 500) * 0.1; // Convert to Celsius
  tempF = (tempC * 9 / 5) + 32; // Convert to Fahrenheit

  // Display temperature on Serial Monitor
  Serial.print("Raw Value = ");
  Serial.print(rawValue);
  Serial.print("\t Voltage = ");
  Serial.print(voltage, 0);
  Serial.print(" mV\t Temperature in C = ");
  Serial.print(tempC, 1);
  Serial.print(" C\t Temperature in F = ");
  Serial.println(tempF, 1);

  // Humidity reading
```

```
  int humiditySensorOutput = analogRead(humiditySensorPin);
  int humidity = map(humiditySensorOutput, 0, 1023, 10, 70);

  // Display humidity on Serial Monitor
  Serial.print("Humidity: ");
  Serial.print(humidity);
  Serial.println("%");

  // Display temperature and humidity on LCD
  lcd.clear();
  lcd.setCursor(0, 0); // Set cursor to the first row
  lcd.print("Temp: ");
  lcd.print(tempC, 1);
  lcd.print(" C");

  lcd.setCursor(0, 1); // Set cursor to the second row
  lcd.print("Humidity: ");
  lcd.print(humidity);
  lcd.print("%");

  delay(5000); // Wait 5 seconds before next update
}
```

Circuit:

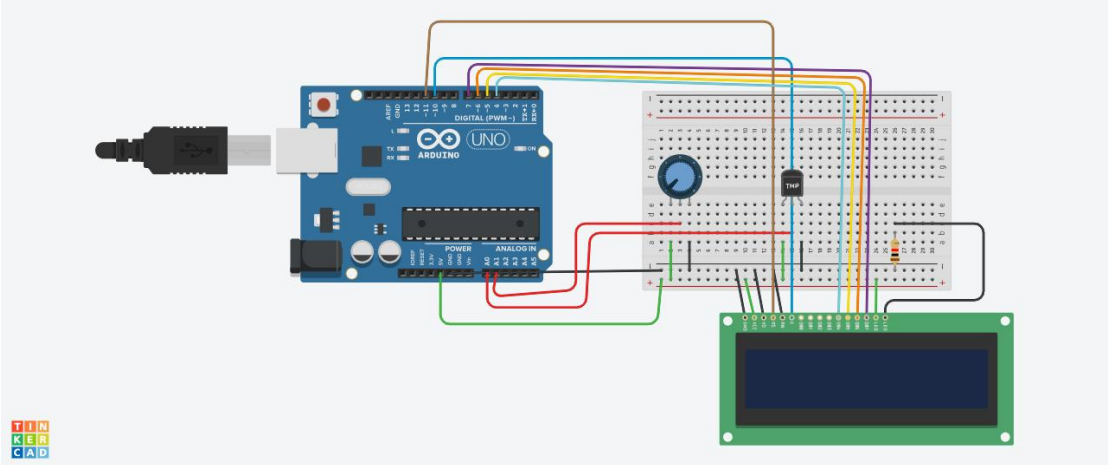

Figure 1.1: Circuit design on a simulator

Output:

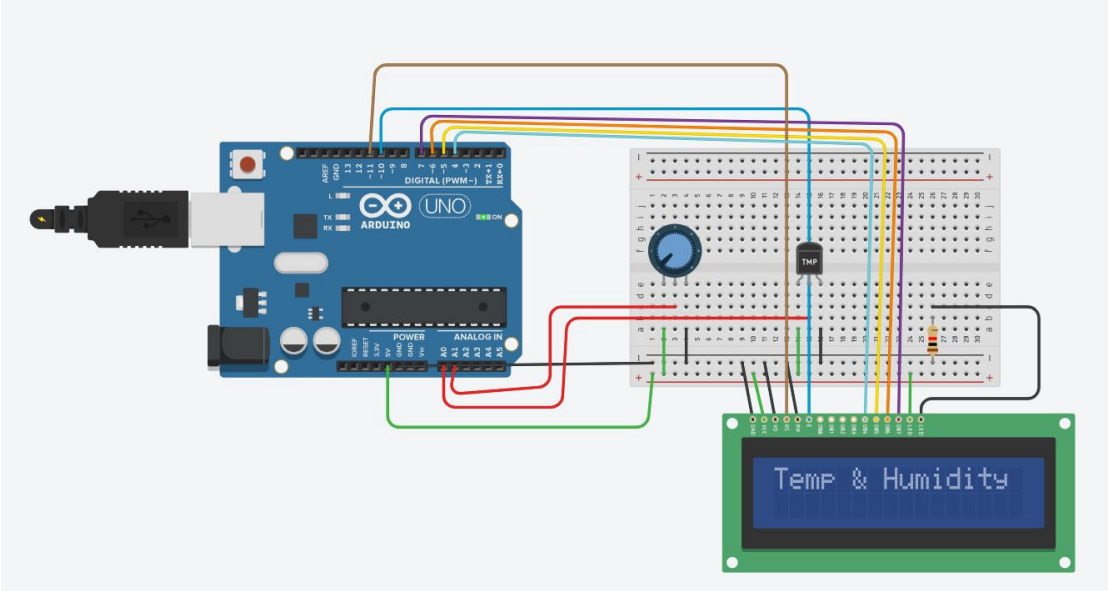

Fig 1.2: Output on simulator.

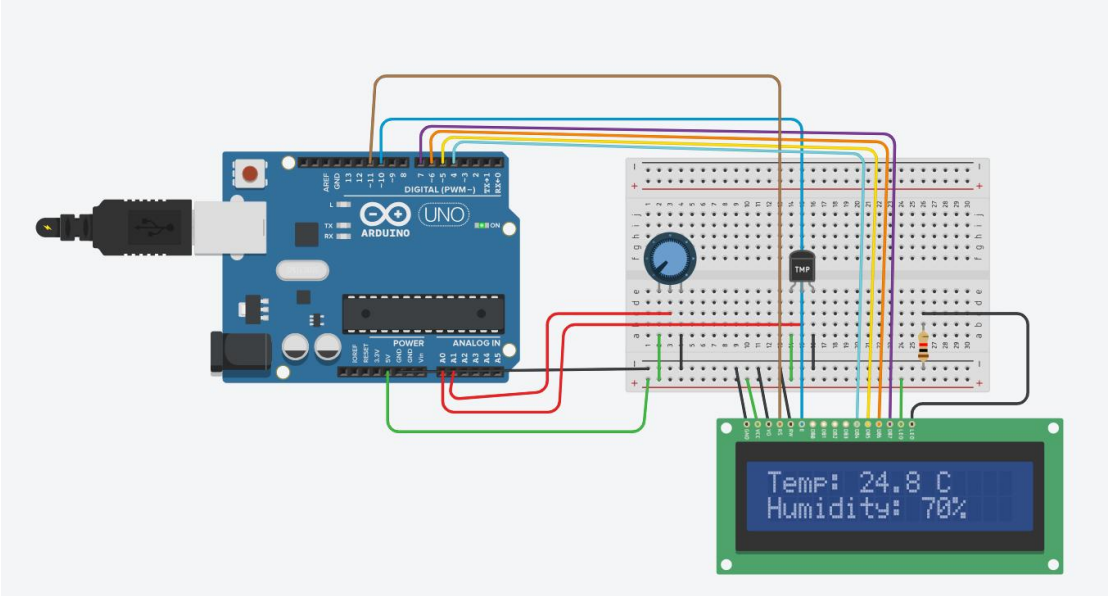

Fig 1.3: Output on simulator.