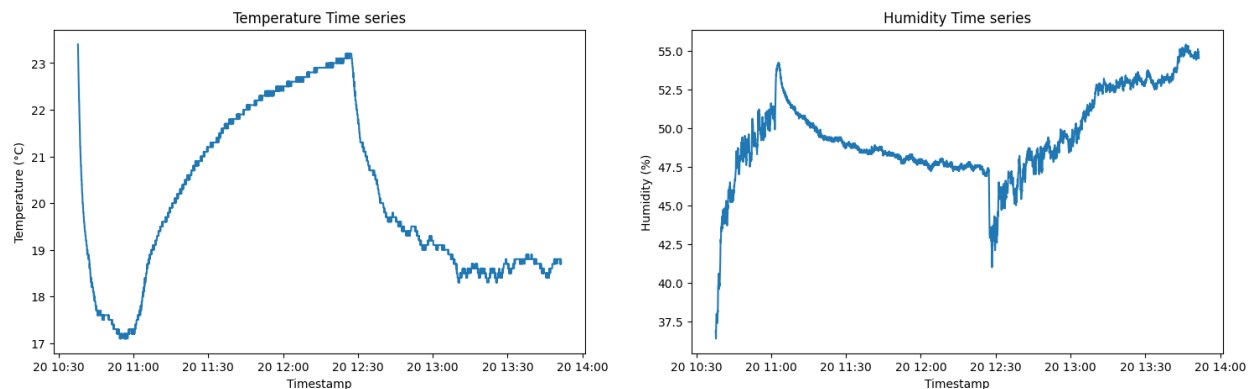


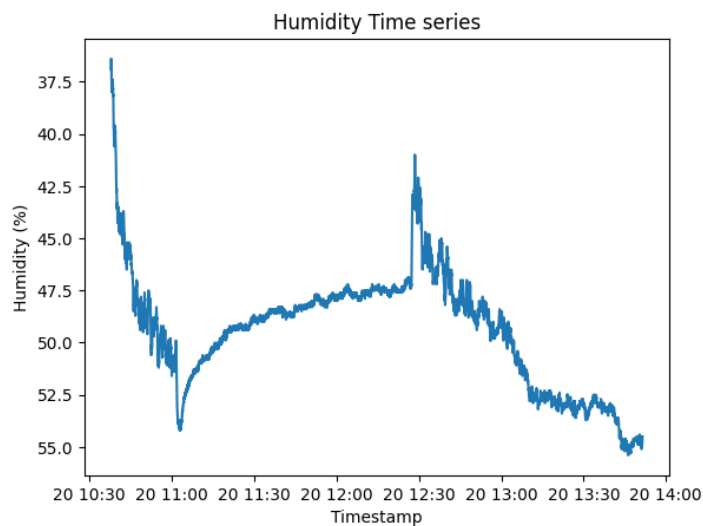
Weekly activity.

Q2.

I have used the DHT22 to record the temperature and humidity data in my room from around 10:30AM to 2PM. In the Temperature plot, initially, the temperature is quite high, since that was when I just turned off the heating and opened the window. Then the temperature started to drop from 23 to 17 degrees. After which, I felt cold, so I closed the window and turned on the heating. Then at around 12:30AM, I felt hot again, so I turned off the heating and opened the window, so the Temperature once again dropped. The humidity data seems to be reverse of the temperature data. So, when the temperature is high, the humidity is low, and vice versa when the temperature is low, the humidity is high.



Here is a plot of Humidity when I reverse the y-axis.



Q3.

In the Arduino code, I just record the temperature and humidity. I set the delay to 2 seconds, which is the minimum interval DHT22 can update the data.

```
#include <DHT.h>

#define DHTPIN 10 // digital pin number
#define DHTTYPE DHT22 // DHT type 11 or 22
DHT dht(DHTPIN, DHTTYPE);

// variables to store data.
float hum, temp;

void setup() {
  // Set baud rate for serial communication
  Serial.begin(9600);

  // initialise DHT library
  dht.begin();
}

void loop() {
  // read data
  hum = dht.readHumidity();
  temp = dht.readTemperature();

  // Print data to serial port - a compact way
  Serial.println(String(hum) + "," + String(temp));

  // wait 2 seconds before updating the data
  delay(2000);
}
```

Python script is used to take the DHT22 data from Arduino, add a timestamp for each row of data, and write it in a csv file.

```
import serial
import time
from datetime import datetime
import os

# Function to get the current time
def timestamp():
    return datetime.now().strftime('%Y%m%d%H%M%S')

# Serial port and saving csv file in desire destination
ser = serial.Serial('COM4', 9600)
filename = os.path.join(r'C:\Users\tomde\OneDrive\Documents\Deakin\Deakin-Data-Science\T1Y2\SIT225 - Data Capture Technologies\Week 2 - Working with Sensors in Arduino\2.1P\temp_humid_record', 'dht22.csv')

try:
    while True:
        # Check if data is waiting in serial buffer
        if ser.in_waiting > 0:
            data = ser.readline().decode('utf-8').strip() # read data from serial port and decode it
            formatted_data = f"{timestamp()}, {data}"

            # Add data to csv file
            with open(filename, 'a') as file:
                file.write(formatted_data + '\n')

            print(f"{formatted_data}")

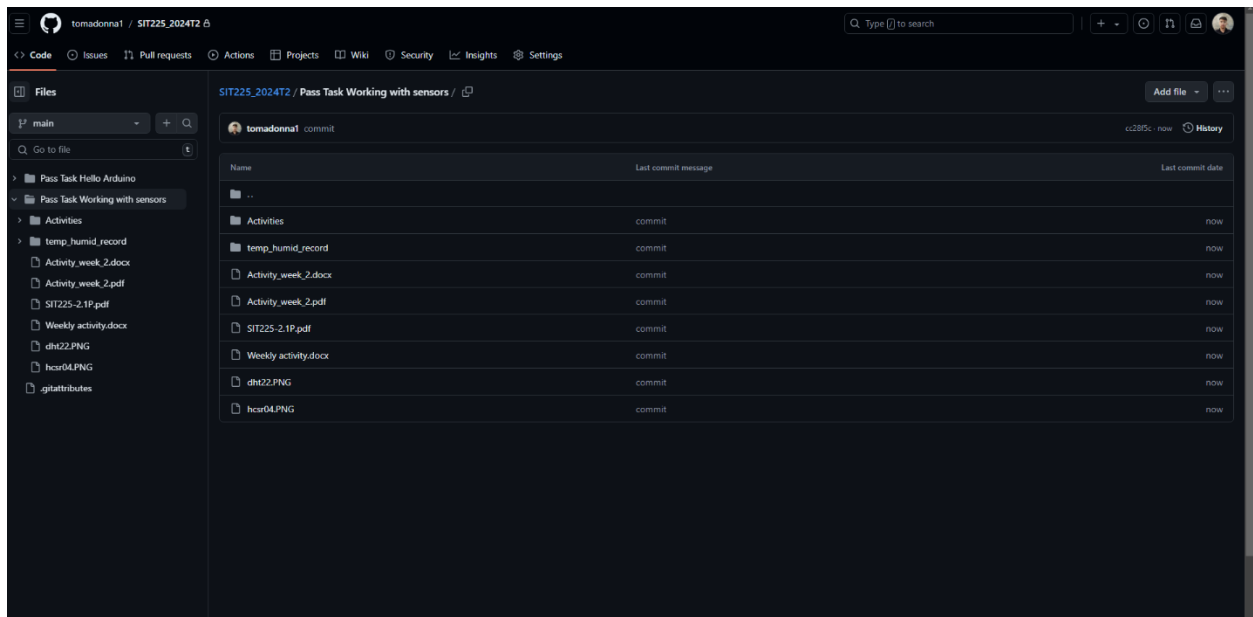
            time.sleep(1)
except KeyboardInterrupt:
    print("Forced stop by user.")

finally:
    ser.close()
    print("Serial port closed.")
```

Q4.

<https://www.youtube.com/watch?v=TMYPK64tUzOI>

Q5.



https://github.com/tomadonna1/SIT225_2024T2/tree/main/Pass%20Task%20Working%20with%20sensors