Exercise 4 – Interface Bluetooth Module HC-05 with Arduino and Send Temperature and humidity Data

Aim:
To interface Bluetooth module HC-05 with Arduino and send temperature and humidity data.

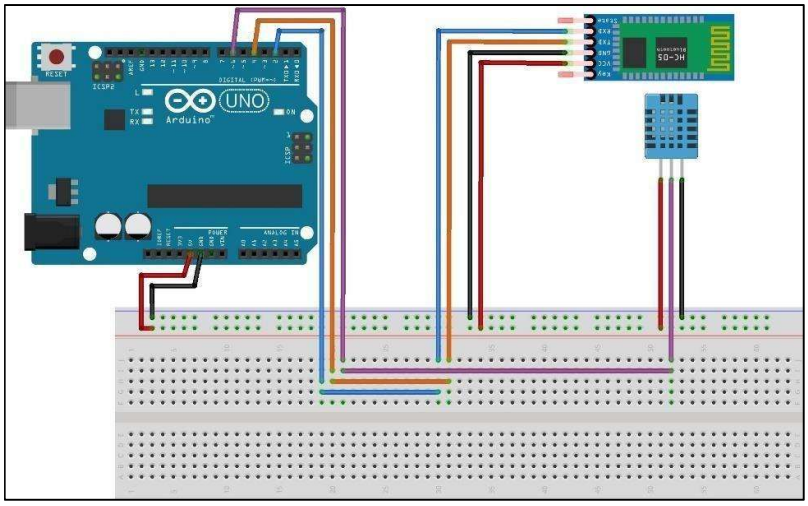
Apparatus Required:

Sign Number	Name of the Equipment	Quantity
1	Arduino UNO	1
2	Computer with Arduino IDE	1
3	USB Cable	1
4	HC-05 Bluetooth Module	1
5	Smartphone with Bluetooth Terminal HC-05 Application	1
6	Smartphone	1
7	Breadboard	1
8	Jumper Wires	As Required

Theory:

HC05 module is a Bluetooth module using serial communication, mostly used in electronics projects. HC-05 is a Bluetooth SPP (Serial Port Protocol) module designed for wireless communication. It can also be operated as a master or slave configuration.

Circuit Diagram:



Code:

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

#define DHT_PIN 2

SoftwareSerial bluetooth(2, 3); // Rx and Tx respectively.DHT dht(DHT_PIN,
DHT11);

float temperature, humidity;void

setup()
{
   pinMode(LED, OUTPUT);
```

```
    Serial.begin(9600);
    bluetooth.begin(9600);

    Serial.println("Ready to connect. Defualt password: 1234 or 0000.");
}

void loop()
{
    if(bluetooth.available())
    {
        temperature = dht.readTemperature();humidity =
        dht.readHumidity();

        if(isnan(temperature) || isnan(humidity))
        {
            Serial.println("ERROR: Unable to read temperature and humidity data.");
        }
        else
        {
            bluetooth.write(temperature);  bluetooth.write(humidity);
        }
        delay(1000);
    }
}
```

Procedure:

1. Make connections as per the circuit diagram.
2. Open the Arduino IDE in your computer and write the above sketch.
3. Compile the sketch and upload it to Arduino UNO.
4. Connect to HC-05 via your smartphone and send data to it with application named “Bluetooth Terminal HC-05.” Click here to download the app.
5. Once downloaded, setup the application to receive data.
6. Now, the Arduino UNO will fetch temperature and humidity data from DHT11 and send it to smartphone via Bluetooth.

Result:

Hence, Bluetooth module HC-05 is interfaced successfully with Arduino UNO and data is sent to smartphone via Bluetooth.