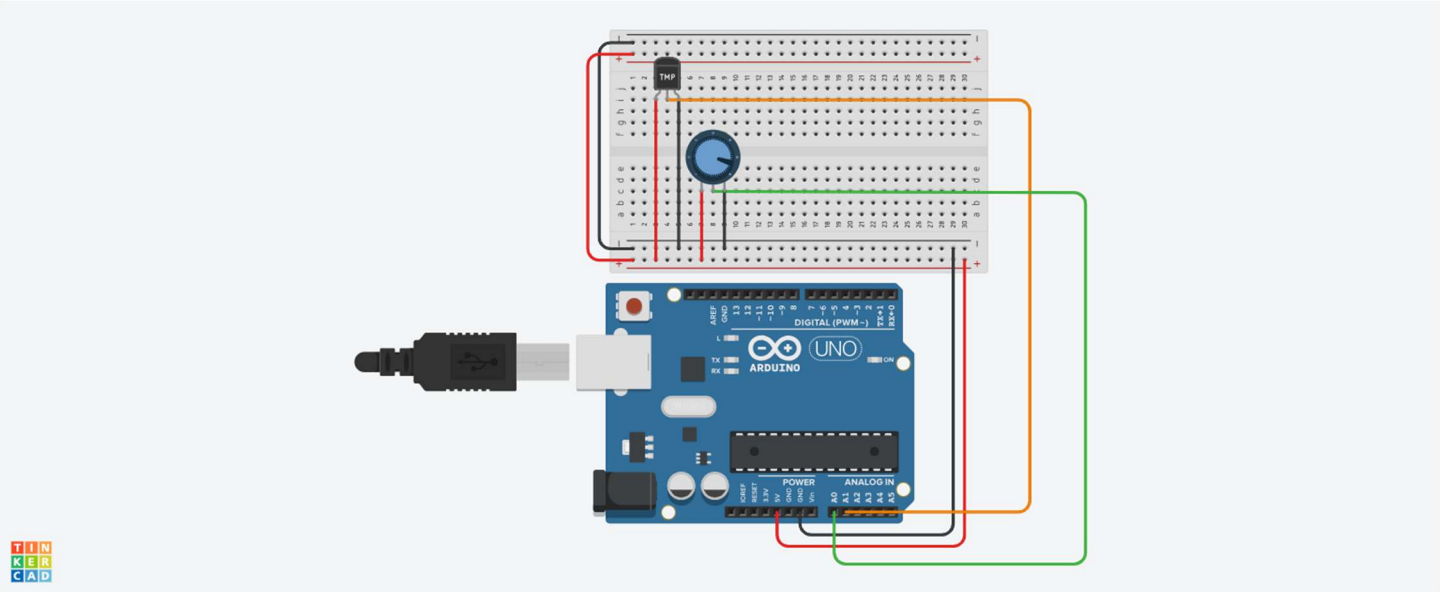
EXPERIMENT-4

AIM-To interface DHT11 sensor with Arduino/Raspberry Pi and write a program to print temperature and humidity readings.

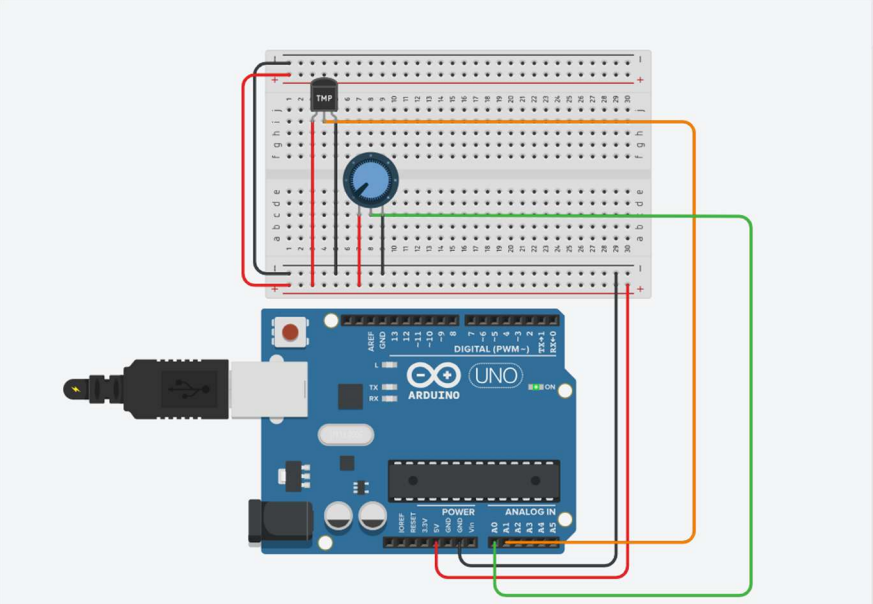
THEORY:-The **DHT11** is a basic and low-cost digital temperature and humidity sensor commonly used in microcontroller-based projects. It can measure both temperature and humidity, providing digital output that is easy to interface with microcontrollers like Arduino and Raspberry Pi.

The circuit is an Arduino-based temperature and humidity monitoring system using an LM35 temperature sensor to measure temperature and an optional humidity sensor on A1. The Arduino reads sensor data, converts it into °C and °F, and displays it on a 16x2 LCD and the Serial Monitor. A potentiometer adjusts the LCD contrast, and readings update every 5 seconds. Possible issues include an undefined analogIn variable (should be A0), random values from A1 if no humidity sensor is connected, and potential LCD contrast problems.

To stimulate DHT11 sensor with Arduino/Raspberry Pi



Program to print temperature and humidity readings



1 (Arduino Uno R3)

```
int analogIn = A0;
int humiditySensorOutput = 0;
int RawValue = 0;

float Voltage = 0;
float tempC = 0;
float tempF = 0;

void setup() {
    Serial.begin(9600);
    pinMode(A1, INPUT);
}

void loop() {
    RawValue = analogRead(analogIn);
    Voltage = (RawValue / 1023.0) * 5000;
    tempC = (Voltage - 500) * 0.1;
    tempF = (tempC * 1.8) + 32;

    Serial.print("Rawvalue=");
    Serial.print(RawValue);
    Serial.print("\t milliVolts=");
    Serial.print(Voltage, 0);
    Serial.print("\t Temperature in C=");
    Serial.print(tempC, 1);
    Serial.print("\t Temperature in F=");
    Serial.println(tempF, 1);

    humiditySensorOutput = analogRead(A1);
    Serial.print("humidity=");
    Serial.println(humiditySensorOutput); // Assuming you want to

    delay(5000);
}
```

RESULTS:-

```
ts=4990  Temperature in C=449.0  Temperature in F=840.2
humidity=153
Rawvalue=1021    milliVolts=4990         Temperature in C=449.0  Temperature in F=840.2
humidity=153
Rawvalue=1021    milliVolts=4990         Temperature in C=449.0  Temperature in F=840.2
humidity=153
Rawvalue=1021    milliVolts=4990         Temperature in C=449.0  Temperature in F=840.2
humidity=153
Rawvalue=389     milliVolts=1901         Temperature in C=140.1  Temperature in F=284.2
humidity=153
Rawvalue=430     milliVolts=2102         Temperature in C=160.2  Temperature in F=320.3
humidity=153
Rawvalue=511     milliVolts=2498         Temperature in C=199.8  Temperature in F=391.6
humidity=288
Rawvalue=511     milliVolts=2498         Temperature in C=199.8  Temperature in F=391.6
humidity=313
Rawvalue=511     milliVolts=2498         Temperature in C=199.8  Temperature in F=391.6
humidity=180
Rawvalue=511     milliVolts=2498         Temperature in C=199.8  Temperature in F=391.6
humidity=180
Rawvalue=104     milliVolts=508  Temperature in C=0.8    Temperature in F=33.5
humidity=180
```