EXPERIMENT 6

AIM: To interface OLED with Arduino/Raspberry Pi and write a program to print temperature and humidity readings on it.

THEORY:

An OLED (Organic Light Emitting Diode) display is a self-emissive display technology that does not require a backlight, offering high contrast, low power consumption, and fast response times. These displays communicate with microcontrollers via I2C or SPI protocols, making them suitable for embedded systems like Arduino and Raspberry Pi.

WORKING PRINCIPLE:

The OLED display works by emitting light from organic compounds when an electric current is applied. The temperature and humidity readings are obtained using a DHT11 or DHT22 sensor, which measures:

- Temperature using a thermistor
- Humidity using a capacitive humidity sensor

The sensor transmits data to the microcontroller, which then processes the information and sends it to the OLED display for visualization.

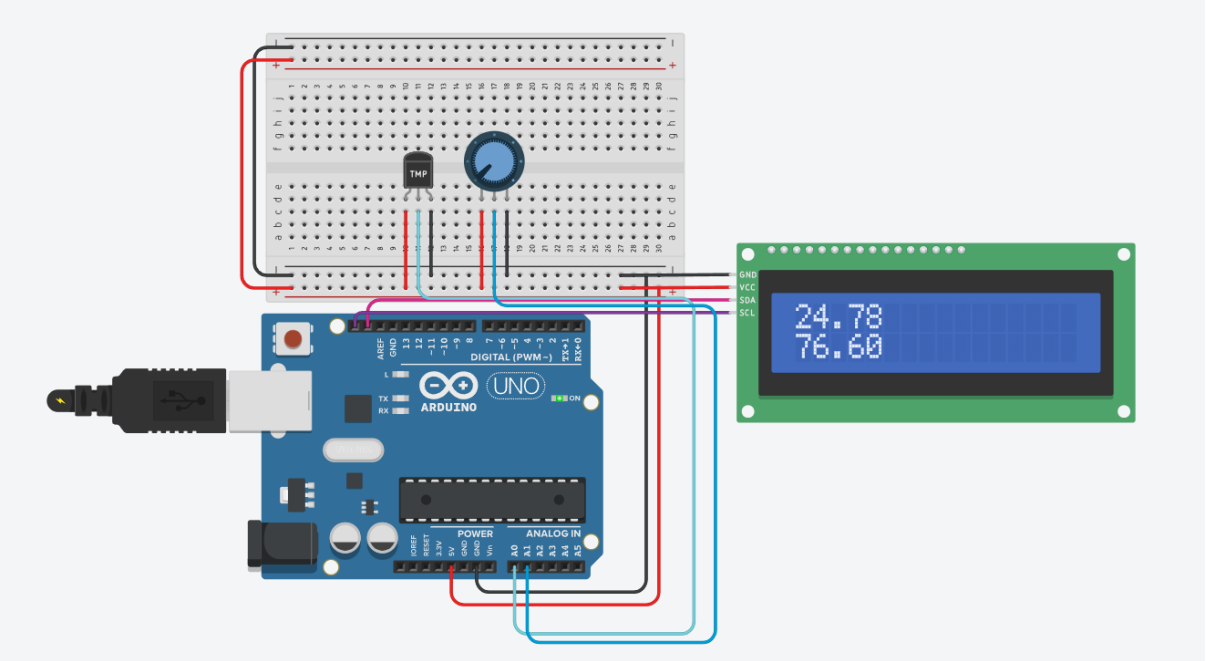
APPLICATIONS:

1. Weather Monitoring System
2. Smart Home Automation
3. Greenhouse Monitoring
4. Industrial Temperature and Humidity Control

CODE:

```
#include <Adafruit_LiquidCrystal.h>

Adafruit_LiquidCrystal lcd_1(0)

int analogIn=A0;

int humiditySensorOutput=0;

int RawValue=0;

float Voltage=0;

float tempC=0;

float tempF=0;

void setup()

{

  lcd_1.begin(16,2);
```

```
  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.print(humiditySensorOutput);
  lcd_1.setCursor(0,0);
    lcd_1.print(tempC);
    lcd_1.setBacklight(1);
  delay(100);
    lcd_1.setCursor(0,1);
    lcd_1.print(tempF);
  delay(5000);
}
```



RESULT: We have successfully implemented the OLED and have noted down the readings of temperature and humidity.