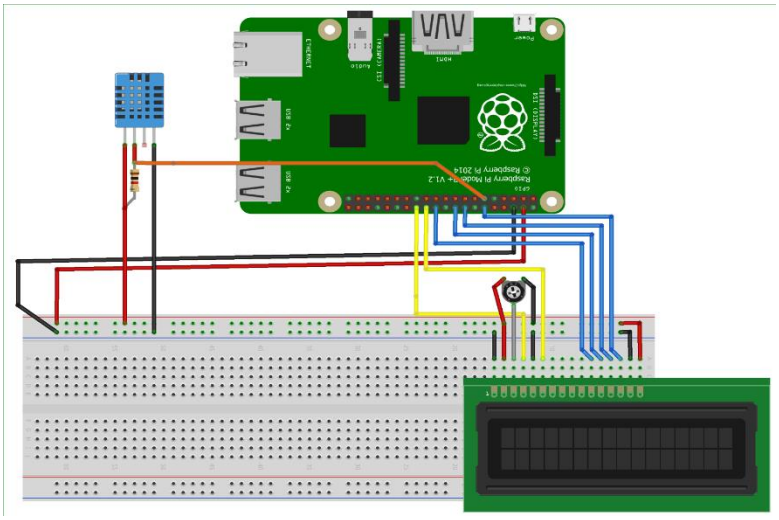
Ex. No : 10 Interface LCD with Raspberry Pi, write a program to print temperature and humidity readings on it.

Program:

```
import Adafruit_CharLCD as LCD #Import LCD library
import Adafruit_DHT #Import DHT Library for sensor

sensor_name = Adafruit_DHT.DHT11 #we are using the DHT11 sensor
sensor_pin = 17 #The sensor is connected to GPIO17 on Pi

lcd_rs        = 7  #RS of LCD is connected to GPIO 7 on PI

lcd_en        = 8  #EN of LCD is connected to GPIO 8 on PI

lcd_d4        = 25 #D4 of LCD is connected to GPIO 25 on PI

lcd_d5        = 24 #D5 of LCD is connected to GPIO 24 on PI

lcd_d6        = 23 #D6 of LCD is connected to GPIO 23 on PI

lcd_d7        = 18 #D7 of LCD is connected to GPIO 18 on PI

lcd_backlight =  0  #LED is not connected so we assign to 0

lcd_columns = 16 #for 16*2 LCD

lcd_rows    = 2 #for 16*2 LCD

lcd = LCD.Adafruit_CharLCD(lcd_rs, lcd_en, lcd_d4, lcd_d5, lcd_d6, lcd_d7,
                           lcd_columns, lcd_rows, lcd_backlight)   #Send all the pin details to library

lcd.message('DHT11 with Pi \n -CircuitDigest') #Give a intro message
time.sleep(2) #wait for 2 secs

while 1: #Infinite Loop

        humidity, temperature = Adafruit_DHT.read_retry(sensor_name, sensor_pin)

                        #read from sensor and save respective values in temperature and humidity varibale

        lcd.clear() #Clear the LCD screen

        lcd.message ('Temp = %.1f C' % temperature) # Display the value of temperature

        lcd.message ('\nHum = %.1f %%' % humidity)  #Display the value of Humidity

        time.sleep(2) #Wait for 2 sec then update the values
```

Circuit Diagram



Installing the Adafruit LCD library on Raspberry Pi:

Step 1: Install git on your Raspberry Pi by using the below line.

apt-get install git

Step 2: Execute the line to clone the project file on Pi home directory

git clone git://github.com/adafruit/Adafruit_Python_CharLCD

Step 3: Use the below command to change directory line

cd Adafruit_Python_CharLCD

Step 4: Inside the directory there will be a file called setup.py. Use the following code to install the library

sudo python setup.py install

Installing the Adafruit DHT11 library on Raspberry Pi:

Enter the four command lines one by one on the terminal to install the DHT library

git clone https://github.com/adafruit/Adafruit_Python_DHT.git

cd Adafruit_Python_DHT

sudo apt-get install build-essential python-dev

sudo python setup.py install