Ex4. ESP32 collect sensor data

1. Code with comment and explaination

#include <WiFi.h>

#include "DHTesp.h"

#include <LiquidCrystal\_I2C.h>

#define LED\_PIN 26

#define DHT\_PIN 16

#define PIR\_SENSOR 14

#define PIN\_TRIG 0

#define PIN\_ECHO 2

DHTesp dhtSensor;

LiquidCrystal\_I2C lcd(0x27,20,4); // set the LCD address to 0x27 for a 16 chars and 2 line display

void setup() {

//setup for serial communication

**Serial**.begin(9600);

**Serial**.print("ESP32 collecting sensors data");

//setup for dht sensor

dhtSensor.setup(DHT\_PIN, DHTesp::DHT22);

//config LED\_PIN output

pinMode(LED\_PIN, OUTPUT);

pinMode(PIR\_SENSOR, INPUT);

pinMode(PIN\_TRIG, OUTPUT);

pinMode(PIN\_ECHO, INPUT);

lcd.init(); // initialize the lcd

// Print a message to the LCD.

lcd.backlight();

lcd.setCursor(1,0);

lcd.print("DHT sensor data ...");

delay(1000);

}

void loop() {

// Get data from dht sensor

TempAndHumidity data = dhtSensor.getTempAndHumidity();

int temp = data.temperature;

int humid = data.humidity;

// Convert to string with unit

String stemp = String(temp) + "C";

String shumid = String(humid) + "%";

// Print to Serial

**Serial**.println("Temp: " + stemp);

**Serial**.println("Humidity: " + shumid);

**Serial**.println("---");

// Print result to LCD

lcd.clear();

lcd.setCursor(0,0);

lcd.print("Temp: " + String(data.temperature, 2) + "C");

lcd.setCursor(0,1);

lcd.print("Humidity: " + String(data.humidity, 2) + "%");

delay(1000);

int pir\_value = digitalRead(PIR\_SENSOR);

if(pir\_value == 1){

digitalWrite(LED\_PIN, HIGH);

**Serial**.println("Motion detected");

delay(100);

}

else{

digitalWrite(LED\_PIN, LOW);

**Serial**.println("Motion ended");

delay(100);

}

// Start a new measurement:

digitalWrite(PIN\_TRIG, HIGH);

delayMicroseconds(10);

digitalWrite(PIN\_TRIG, LOW);

// Read the result:

int duration = pulseIn(PIN\_ECHO, HIGH);

**Serial**.print("Distance in CM: ");

**Serial**.println(duration / 58);

**Serial**.print("Distance in inches: ");

**Serial**.println(duration / 148);

}

2. Link to project <https://wokwi.com/projects/412954593834802177>

3. Screenshot

