Lesson One - EEL 4730 Extra Class Project - Updated Fall 2021 V2

Lesson 1 MQTT Temp & Humidity

Order Parts : Amazon NOW!!!

NodeMCU DHT22



Example from Amazon: referenced on the class web site:

Setup Steps:

Install Arduino software IDE

INSTALL ARDUINO IDE: http://www.arduino.cc



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INSTALL USB DRIVERS - should work by default

CONFIGURE ARDUINO IDE - Install Boards Manager:

Start Arduino and open the Preferences window.

•Enter <u>https://arduino.esp8266.com/stable/package_esp8266com_index.json</u> into the File>Preferences>Additional Boards Manager URLs field of the Arduino IDE.



•Open Boards Manager from Tools > Board menu and install esp8266 platform (select your ESP8266 board from Tools > Board menu after installation)- <mark>Version</mark> <mark>2.74 <<<</mark>

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2 * Example	Manage Libraries	Ctrl+Shift+I	Boards Manager			
3 * IoT pla 4 * pressed	Serial Monitor	Ctrl+Shift+M				
5 *	Serial Plotter	Ctrl+Shift+L	🔾 Arduino Yún			
6 * This ex 7 * Button			Arduino Uno			
8 * LED con	WiFi101 / WiFiNINA Firmware Updater		🔘 Arduino Duemilanove or Diecimila			
9 * 10 * This ex	Board: "Arduino Uno"	>	🔾 Arduino Nano			
11 * Losant	Port: "/dev/ttyUSB0"	>	🔘 Arduino Mega or Mega 2560			
12 13 * Copyrig	Get Board Info		🔘 Arduino Mega ADK			
14 * <u>http://</u> 15 * Compile	Programmer: "Atmel JTAGICE3 (JTAG mode)"	>	🔘 Arduino Leonardo			
16 */ 17	Burn Bootloader		🔾 Arduino Leonardo ETH			
18 #include <	ESP8266WiFi.h> //<<<<<<		🔾 Arduino Micro			
19 #include <	WiFiClientSecure.h>	Arduino Esplora				
21 #include <losant.h></losant.h>						
22		O Arduno Mini				
23 // WiFi cr	edentials. * WIEL SEID - "my wifi coid":	 Arduino Ethernet 				
24 const char	" WIFI_SSID = MY-WITI-SSID"; * WTET DASS - "my wifi pass":	🔾 Arduino Fio				

install esp8266 platform !!! NOTE !!! Install 2.74 version, (not the 3.x versions)

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by I Boa Ger WiF Nod Boa min Oak <u>Onl</u> <u>Mor</u>	ESP8266 Con rds included ieric ESP8266 i Kit 8, Inven leMCU 1.0 (E rd, SweetPea i Lite, LOLINI , WiFiduino, ine Help e Info	mmunit in this Modu t One, SP-128 a ESP-2 (WeMo Ampe	t y versid packag ile, Gene XinaBo E Module 210, LOL os) D1 R rka WiFi	n 2.7.4 INSTALLED E: (Tric ESP8285 Module, Lifely Agrumino (CW01, ESPresso Lite 1.0, ESPresso I), Olimex MOD-WIFI-ESP8266(-DEV), IN(WEM05) DI R2 & mini, LOLIN(WE L, ESPino (ESP-12 Module), ThaiEasyE Slot, Seeed Wio Link, ESPectro Core,	.emon v4, ESPDuino (ESP-13 Modul ite 2.0, Phoenix 1.0, Phoenix 2.0, I Spark-Fun ESP8266 Thing, Spark-Fur IOS) D1 mini (done), LOLIN(WEMOS lec's ESPino, WifInfo, Arduino, 4D S Schirmilabs Eduino WiFi, ITEAD Son	le), Adafruit Feather HUZZAH ESF NodeMCU 0.9 (ESP-12 Module), n ESP8266 Thing Dev, SparkFun 5) D1 mini Pro, LOLIN(WEMOS) I ystems gen4 IoD Range, Digistu off, DOIT ESP-Mx DevKit (ESP82	28266, Blynk)1 Imp 85).	
Se	lect versi	~	Install	N		Update Rem	ove	

Select the Tools menu, and Select to "NodeMCU 1.0" Module. Board settings

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10 ^	E Lo	osant	Ruiltin Led: "2"	~	boards Manager	O LOLIN(WEMOS) D1 P2 8. mini
12 *	12 *		Juliand Grand H445000	Arduino AVR Boards		
13 *	- Ca - Int	opyrig ttp://		,	ESP8266 Boards (3.0.2) >	O LOLIN(WEMOS) D1 mini (cione)
15 *	C	ompile	CPU Frequency: "80 MHZ"	>		O LOLIN(WEMOS) D1 mini Lite
16 * 17	1		Flash Size: "4MB (FS:2MB OTA:~1019KB)"	>		LOLIN(WEMOS) D1 mini Pro
18 #i	nc	lude <	Debug port: "Disabled"	>		O LOLIN(WeMos) D1 R1
19 #i 20 #i	nc. nc	lude < lude <	Debug Level: "None"	>		C Lifely Agrumino Lemon v4
21 #i	nc	lude <	lwIP Variant: "v2 Lower Memory"	>		NodeMCLL0.9 (ESP-12 Module)
22 23 //	W	iFi cr	VTables: "Flash"	>		
24 co	onst	t char	C++ Exceptions: "Disabled (new aborts on oom)"	>		O Nodewico I.utesp-ize Module)
25 00	met	t char	Stack Protection: "Disabled"	>		 Olimex MOD-WIFI-ESP8266(-DEV)
Done S	Sav	ing.	Erase Flash: "Only Sketch"	>		O Phoenix 1.0
						O Phoenix 2.0

INSTALL LIBRARIES

Losant library page <u>https://github.com/Losant/losant-mqtt-arduino</u> Installing this library should include dependencies

Tools > Manage Libraries - filter for Losant

– File Edit Sketch Iools Help							
sketch_LosantMqttArduinoEsp8266							
1 /** 2 * Example ∞	Library Manager	~ ^ &					
3 * IoT pla 4 * pressed Type All	✓ Topic All ✓ Losant						
6 * This ex 7 * Button 8 * LED con 9 * 10 * This ex 11 * Losant 1 Iosant-mqtt-arduin by Brandon Cannaday MQTT library to easily More info	communicate with the Losant IoT platform. Wraps Joël Gähviler's MQTT Client for MQTT communication.	Install					
13 * Copyrig 14 * http:// 15 * Compile 16 * 17 */ 18 19 #include ≤							

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Install the library (Version 2.0.1) - which will also install dependencies



Dependencies:

ArduinoJson Losant Arduino MQTT Client

Assignment submission for grading

Compile NodeMCUButton and turn in output screen with YouTube URL<<<<<<<>><u>http://web.eng.fiu.edu/watsonh/eel4730/MQTT/sketch_NodeMCUButton/</u>

Compile and show screen shot of compiler output for your submission (and a URL of a short 15 second YouTube video with blinking LED)

```
//https://www.instructables.com/id/NodeMCU-Basic-Project-Blink-a-LED/
1.
2.
    //https://arduino.stackexchange.com/questions/55235/nodemcu-use-flash-button-as-input-in-loop
З.
        Use this for class instruction Works
   11
    11
4.
5.
    #define LED D0
                               // Led in NodeMCU at pin GPI016 (D0) pin 15
   #define BUTTON PIN D3
                              // On boad Flash button GPIOO (D3) pin 12
6.
7.
void blink(int);
9.
10. void setup() {
11. pinMode(LED, OUTPUT);
                             // LED pin as output.
12. pinMode(BUTTON_PIN, INPUT_PULLUP);
13. }
14.
15. void loop() {
      if(digitalRead(BUTTON_PIN))
16.
      {// off state
17.
            blink(500);
18.
19.
      }
20
        else
       { // on state
21.
            blink(100);
22.
23.
       }
24. }
25.
26. void blink(int duration)
27. {
          digitalWrite(LED, LOW); // turn the LED on.
28.
29.
          delay(duration); // wait for 0.1 second.
          digitalWrite(LED, HIGH);// turn the LED off.(Note that LOW is the voltage level but
30.
    actually
                             //the LED is on; this is because it is acive low on the ESP8266.
31.
          delay(duration);
32.
                                       // wait for 0.1 second.
33. }
```

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