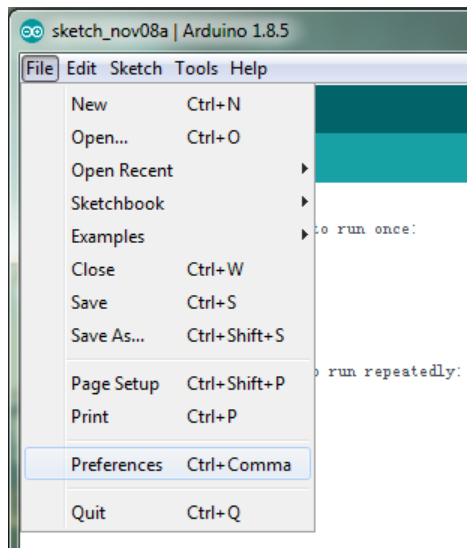


THE HONG KONG POLYTECHNIC UNIVERSITY
Department of Electronic and Information Engineering

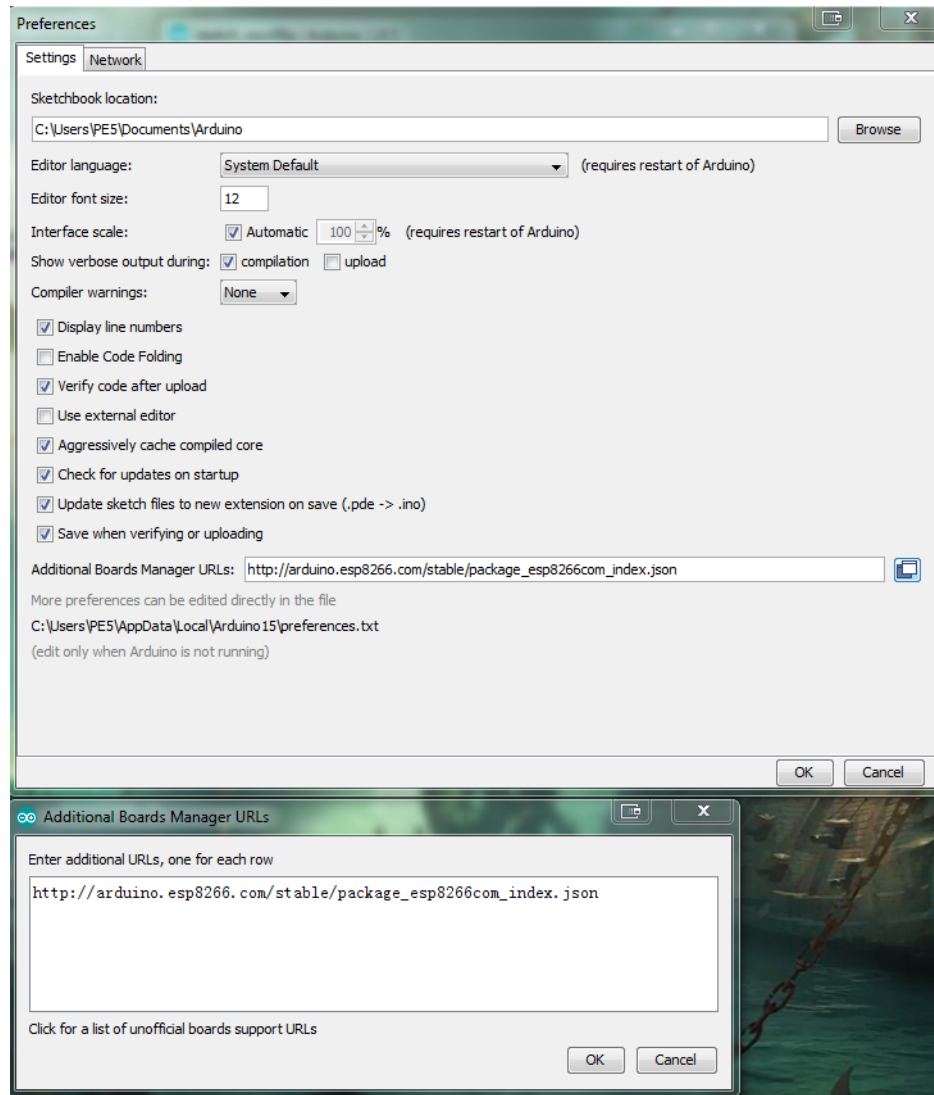
EIE568 IoT – Tools and Applications
Environment Setup for the LoRa Arduino System

To setup the environment

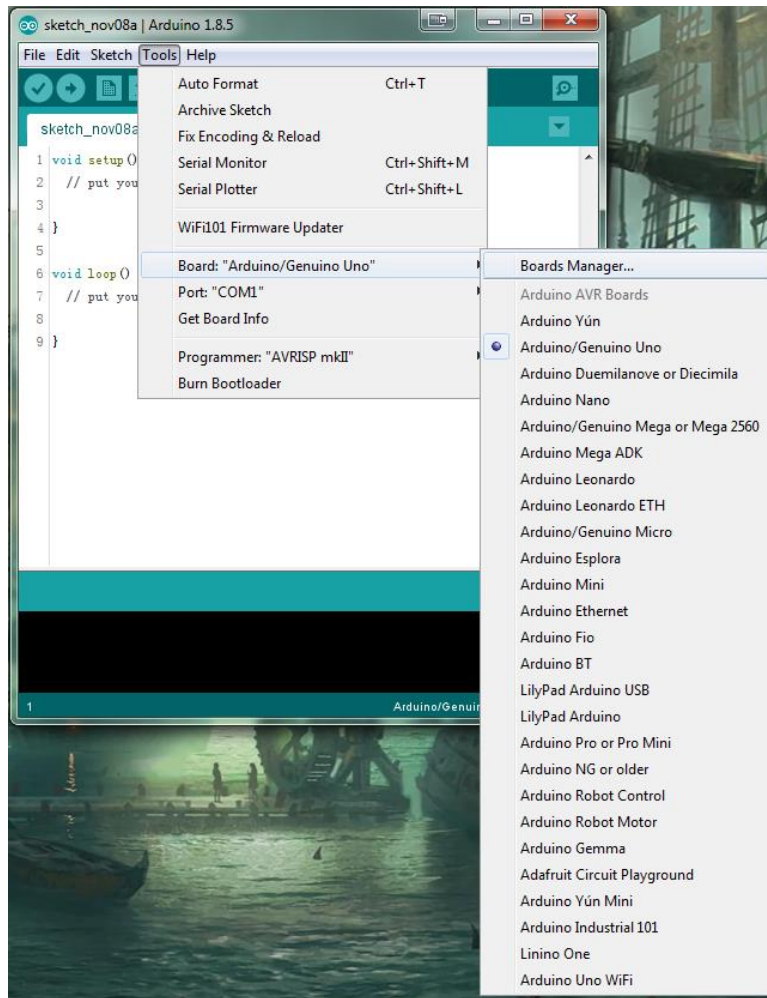
1. Download and install Arduino version 1.8.5
2. Install esp8266 for Arduino
 - a. File -> Preference,



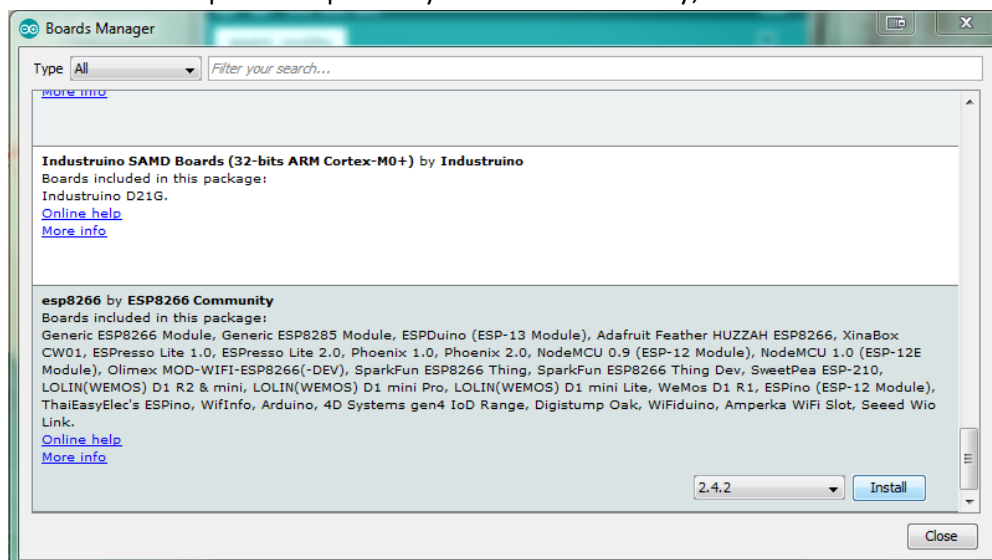
- b. Configure as follows



- c. Additional Boards Manager URLs, input:
http://arduino.esp8266.com/stable/package_esp8266com_index.json
- d. Select Tools → Board: “Arduino/Genuion Uno” → Boards Manager...



e. We can find component esp8266 by ESP8266 Community, select and install it



3. Download the following libraries:

ESP8266 WIFI dependent libraries:

pubsubclient

<https://github.com/knolleary/pubsubclient/archive/master.zip>

DHT11

https://roboindia.com/tutorials/admin/source32145898/surbhi/Arduino%20UNO/DHT_sensor_library.zip

espsoftwareserial

<https://github.com/plerup/espsoftwareserial/archive/master.zip>

Sensor device dependent libraries:

lora module

https://github.com/Seeed-Studio/Grove_LoRa_433MHz_and_915MHz_RF/archive/master.zip

DHT11

https://github.com/Seeed-Studio/Grove_Temperature_And_Humidity_Sensor/archive/master.zip

LED Bar

https://github.com/Seeed-Studio/Grove_LED_Bar/archive/master.zip

Collector device dependent libraries:

lora module

https://github.com/Seeed-Studio/Grove_LoRa_433MHz_and_915MHz_RF/archive/master.zip

DHT11

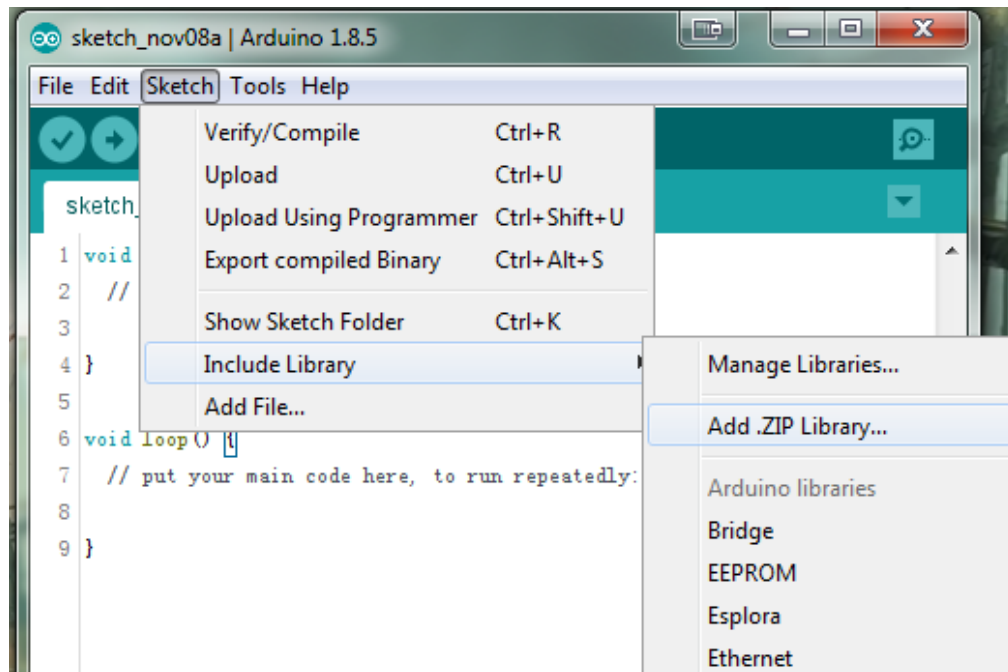
https://github.com/Seeed-Studio/Grove_Temperature_And_Humidity_Sensor/archive/master.zip

Adafruit Sensor

https://github.com/adafruit/Adafruit_Sensor

Alternatively, the libraries are available in the 'libraries' folder on Blackboard

4. Install the above libraries: Sketch -> Include Library -> Add .ZIP Library...
5. Download all the source codes 'sensor_device.zip', 'controller.zip', and 'esp8266-dht-mqtt.zip' from Blackboard and extract them



To flash the sensor node or gateway

- a. Connect the sensor node to your computer via a USB cable
- b. Open the Arduino code for the sensor node, 'sensor_device.ino', in the IDE
- c. Make sure that the board selected is "Arduino/Genuine Uno" under 'Tools'
- d. If the device can be detected by the computer, you should be able to find a COM port under 'Tools' → 'Port'
- e. If not, download and install the driver for the Arduino board from the following link:
<https://www.silabs.com/products/development-tools/software/usb-to-uart-bridge-vcp-drivers>
- f. Press the 'Upload' button to flash the sensor node
- g. For flashing the gateway, open the Arduino code 'collector.ino' instead. The board type and port should be the same as the sensor node

CP210x USB to UART Bridge VCP Drivers

The CP210x USB to UART Bridge Virtual COM Port (VCP) drivers are required for device operation as a Virtual COM Port to facilitate host communication with CP210x products. These devices can also interface to a host using the [direct access driver](#). These drivers are static examples detailed in application note 197: The Serial Communications Guide for the CP210x, download an example below:

[AN197: The Serial Communications Guide for the CP210x](#)

Download Software

The CP210x Manufacturing DLL and Runtime DLL have been updated and must be used with v6.0 and later of the CP210x Windows VCP Driver. Application Note Software downloads affected are AN144SW.zip, AN205SW.zip and AN223SW.zip. If you are using a 5.x driver and need support you can download archived [Application Note Software](#).

[Legacy OS software and driver package download links and support information >](#)

Download for Windows 10 Universal (v10.1.3)

Platform	Software	Release Notes
 Windows 10 Universal	Download VCP (2.3 MB)	Download VCP Revision History

To flash the ESP8266 WiFi module

- The WiFi module uploads data to the ThingsBoard server through the MQTT protocol
- Connect the WiFi module to your computer via a USB cable
- Open the Arduino code for the sensor node, 'esp8266_dht_mqtt.ino', in the IDE
- Make sure that the board selected is "NodeMCU 1.0 (ESP-12E Module)" under 'Tools'
- If the device can be detected by the computer, you should be able to find a COM port under 'Tools' → 'Port'
- Press the 'Upload' button to flash the module

