ARM® ARM926EJ-S

32-bit Microprocessor

NuMaker NuWicam Samples

For additional information or questions, please contact: Nuvoton Technology Corporation.

www.nuvoton.com

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1 INTRODUCTION

In this document, we will descript how to construct the NuMaker NuWicam[1] samples. These samples include LEDs controlling, get temperature value from digital or analog sensor. These samples can be executed on Arduino UNO, Nuduino or Nubed board. We will descript more details in sub-chapter as below.

- Arduino(or Nuduino) UNO board
- Nuduino M453 board

[1] NuWicam is short for NuMaker NuWicam.

2 ARDUINO (OR NUDINO) UNO BOARD

2.1 Board schematics

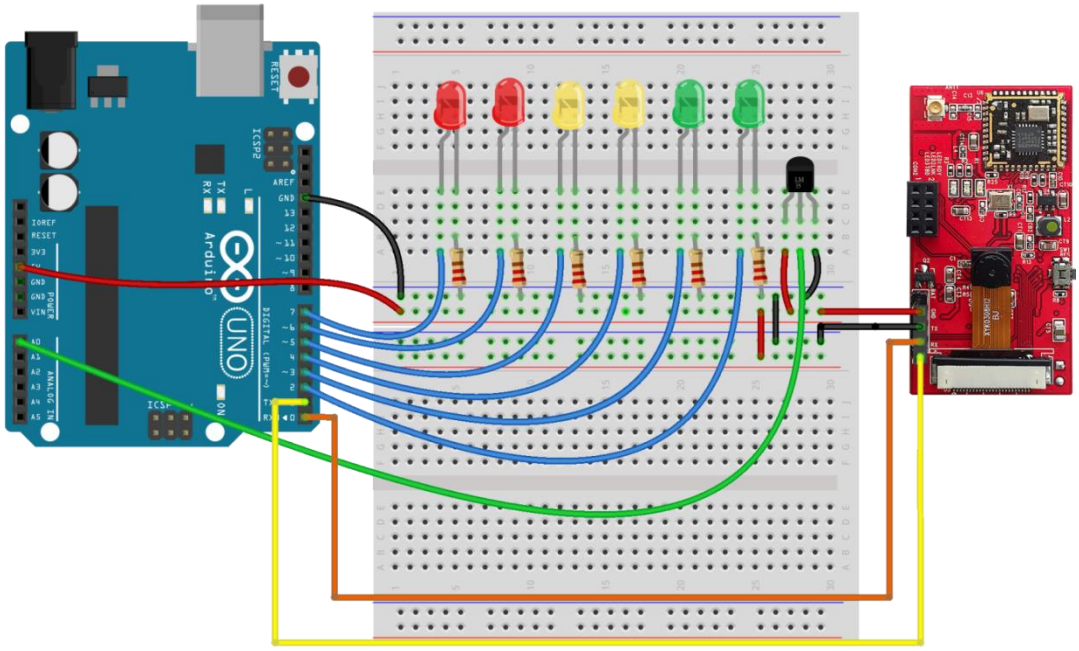


Figure 2-1 NuWicam-VGA board with Arduino UNO

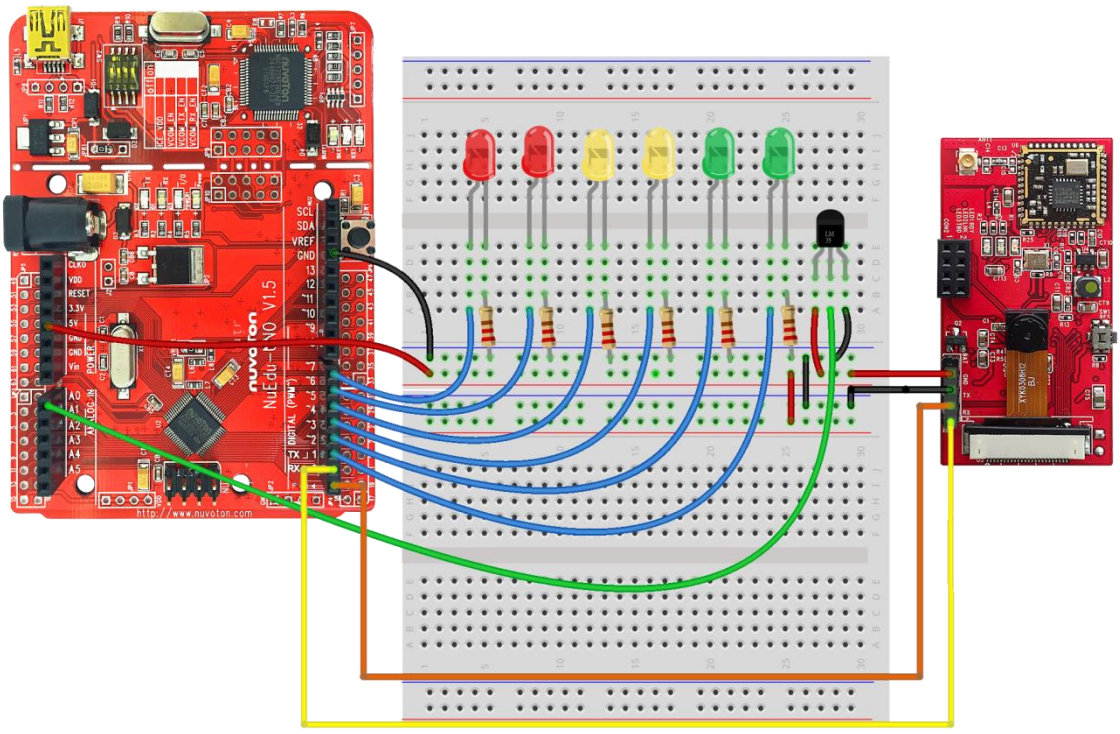


Figure 2-2 NuWicam-VGA board with Nuduino UNO

2.2 Requirement

2.2.1 Hardware

- NuWicam board with firmware x 1
- Geduino(or Nuduino) UNO board x 1 (with USB Line, DC Power adapter)
  - **If your board is Nuduino UNO, please remember to switch 2, 3 and 4 of SW2 to 'OFF' on the board.**
- Red LEDs x 2, Green LEDs x 2 and Blue LEDs x 2
- 220 ohm resistor x 6
- Some dupont lines
- LM35 analog temperature sensor

2.2.2 Software

- Arduino IDE v1.6.7 (or later)
  - You can find it on Arduino official website - https://www.arduino.cc/en/Main/Software.
- Modbus-Master-Slave-for-Arduino Modbus library
  - Please download source on github server.
  - Path: https://github.com/smarmengol/Modbus-Master-Slave-for-Arduino
- NuWicam sample code for Arduino UNO board.
  - Please download source on github server.
  - Path: https://github.com/OpenNuvoton/NuMaker_NuWicam_Samples/NuMaker_NuWiCam_Arduino_UNO

2.3 Purchasing information

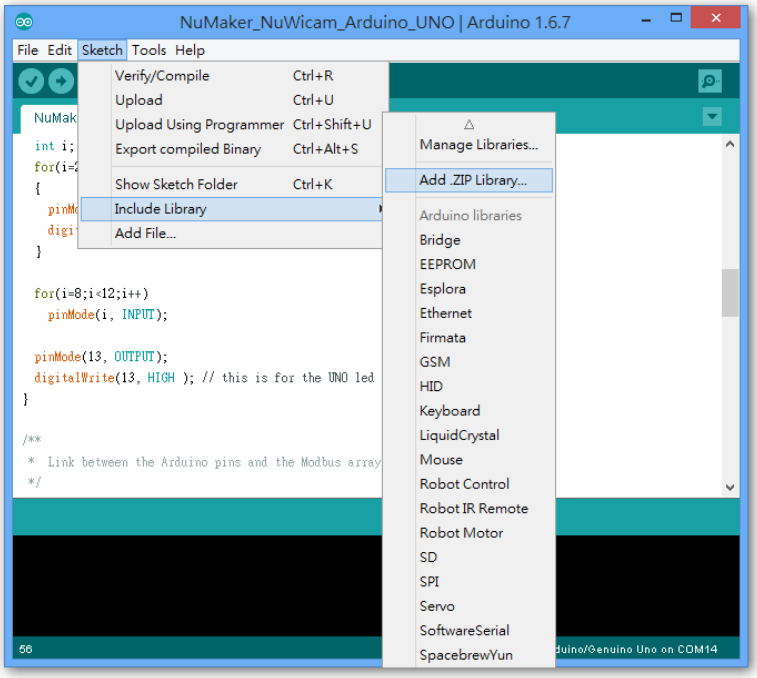
- **Nuduino UNO board**
  URL: https://world.tmall.com/item/523268526584.htm?spm=a312a.7700824.w4011-6765047385.25.2qjfiz&id=523268526584&rn=93873a1038dd4952f86ee4c2766ccae0&abbucket=10
- **LM35 analog temperature sensor module**
  URL: https://world.taobao.com

2.4 Sample code building

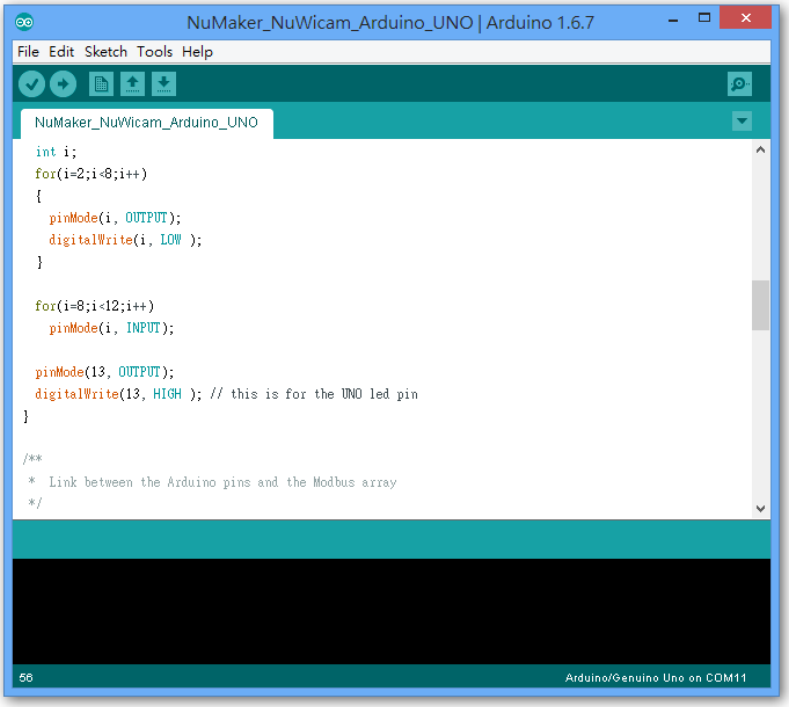
Please follow below steps to build executable binary.

Step 1: Import Modbus-Master-Slave-for-Arduino Modbus library

<Sketch> → <Include Library> → <Add .ZIP library …>→ Select the .zip file path**. → <Open>**

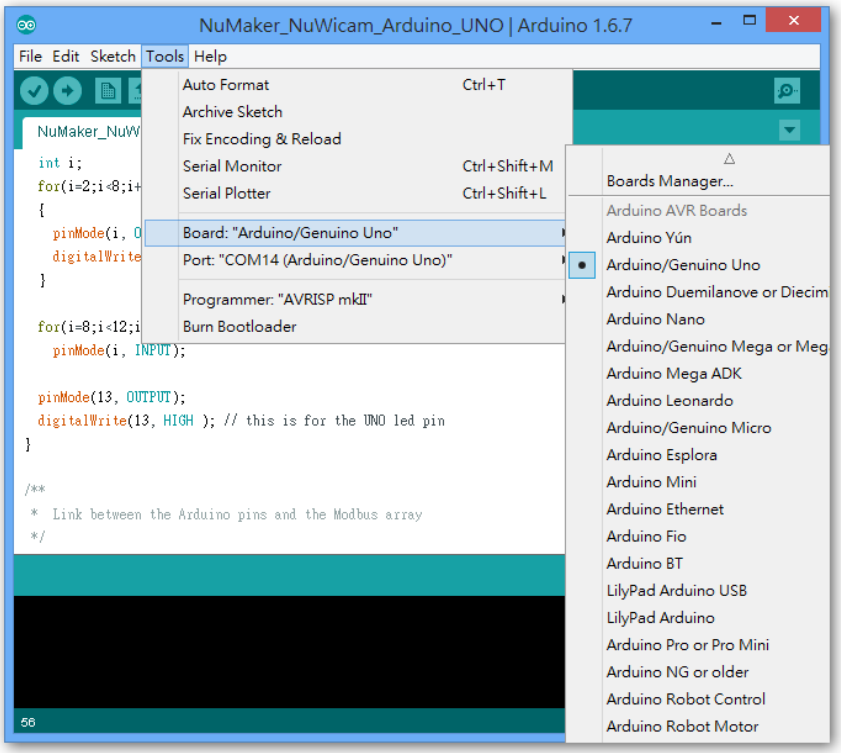


Step 2: Load NuWicam sample code for Arduino UNO board.



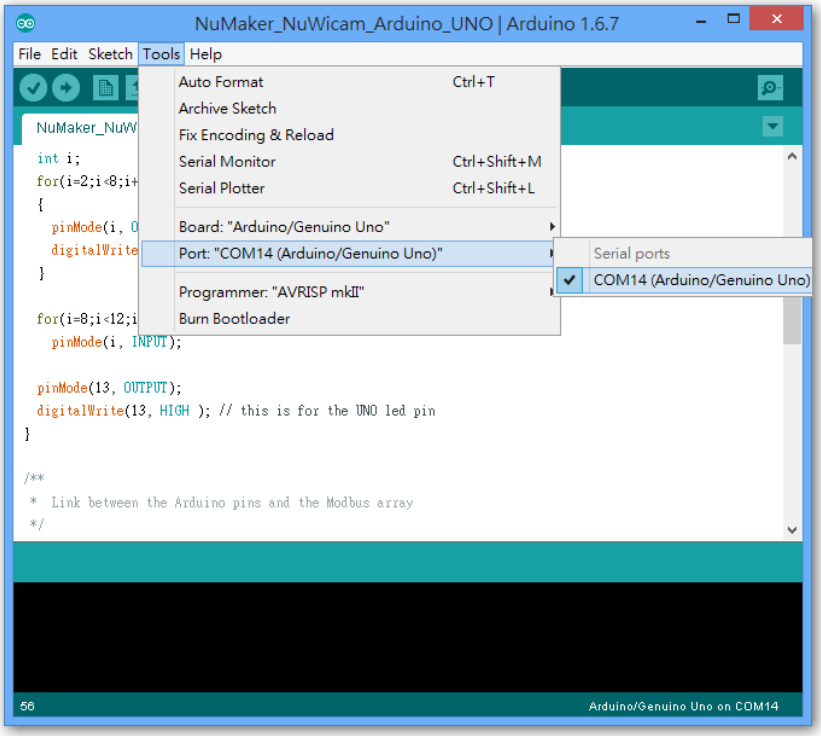
Step 3: Select configuration for Geduino UNO board.

<Tools> → <Board: "Arduino/Geduino UNO"> → Select Arduino/Geduino UNO.



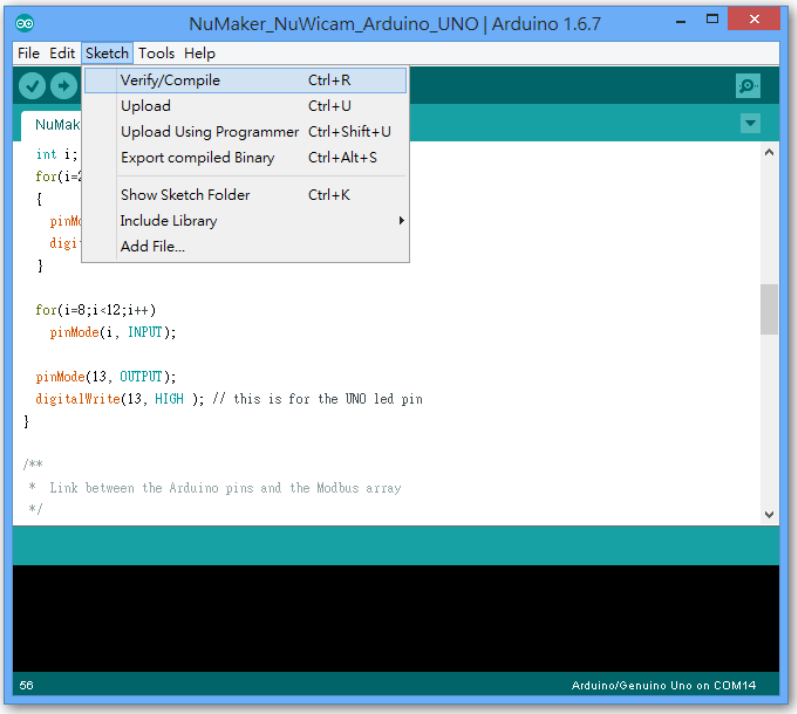
Step 4: Plug in Arduino USB line to PC and select Port.

<Tools> → <Port: COMx ("Arduino/Geduino UNO")> → Select COMx ("Arduino/Geduino UNO").



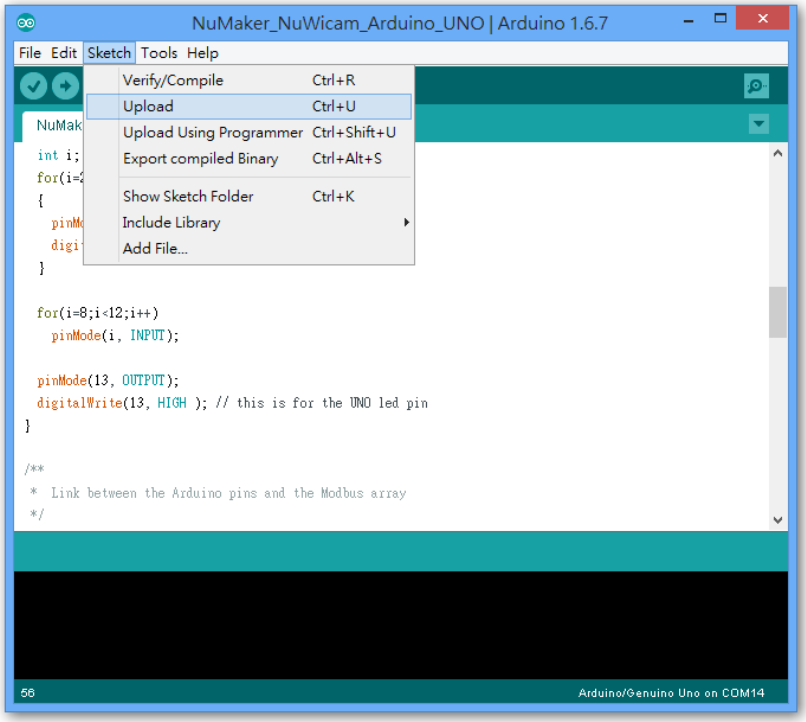
Step 5: Build sample code.

<Sketch> → <Verify/Compile>



Step 6: Upload executable binary to board.

<Sketch> → <Upload>



2.5 Function testing

Open NuMaker NuWicam Player mobile APP to test function. As below figure, it shows a

temperature value on the screen and these six circles are for every LED controllers. You can press these circles to light on/off LED.

3 NUDUINO M453 BOARD

3.1 Board schematics

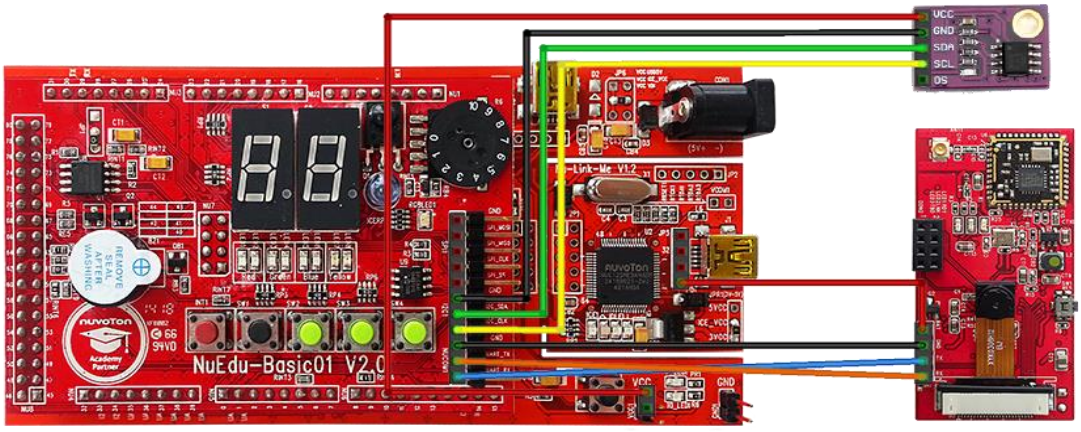


Figure 3-1 NuWicam-VGA board with Nuduino M451

3.2 Requirement

3.2.1 Hardware

- NuWicam board with firmware x 1
- Nuduino board x 1 (with USB Line, and NuEdu basic board)
- TI LM75a temperature sensor module board.
- Some dupont lines

3.2.2 Software

- Arduino IDE v1.5.8 (Must)
  - Download path: https://www.arduino.cc/en/Main/OldSoftwareReleases#previous
- NuWicam sample code and patch files for Nuduino board.
  - Path: https://github.com/OpenNuvoton/NuMaker_NuWicam_Samples/NuMaker_NuWiCam_Nuduino/numaker_nuwicam_arduino_1.5.8_patch.exe

3.3 Purchasing information

- Nuduino board x1
  If you need to Nuduino board, we provide purchasing information for you. About more information, please visit the Nuvoton on-line store on Tmall(天貓).

URL: https://world.tmall.com/item/43127043123.htm?spm=a312a.7700824.w4011-6765047385.25.Usfy8Y&id=43127043123&rn=7b5af4061de8905a6de7032ec4af54a8&abbucket=3

- TI LM75a temperature sensor module board
  URL:https://world.taobao.com/item/534877355522.htm?spm=a312a.7700714.0.0.Z5guaZ#detail

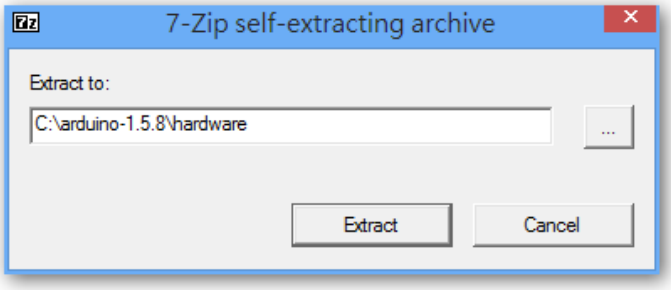
  Notice: Please remember to short A0, A1 and A2 switch to GND.

3.4 Sample code building

Please follow below steps to build executable binary.

Step 1: Install NuWicam patch files for Nuduino board

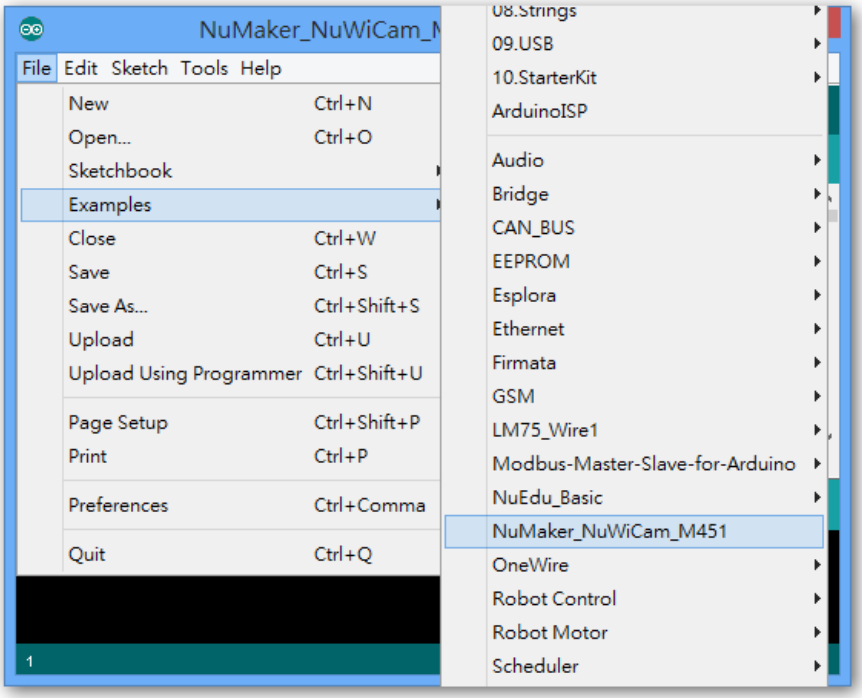
You should specify the arduino-1.5.8 IDE installation path. For example, the arduino-1.5.8 IDE installation path is 'C:\arduino-1.5.8'. You need extract files into **'C:\arduino-1.5.8\hardware'**.



Step 2: Load NuWicam sample code for Nuduino board.

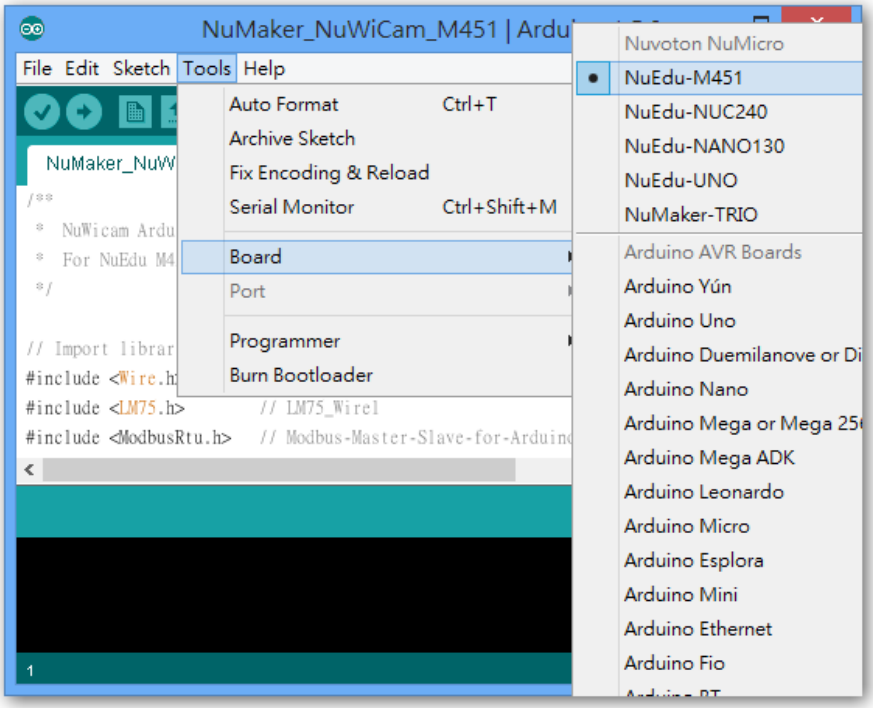
To execute C:\arduino-1.5.8\arduino.exe and Load NuWicam sample code.

<File> → <Examples> →<NuMaker_NuWicam_M451>.



Step 3: Select configuration for Nuduino board.

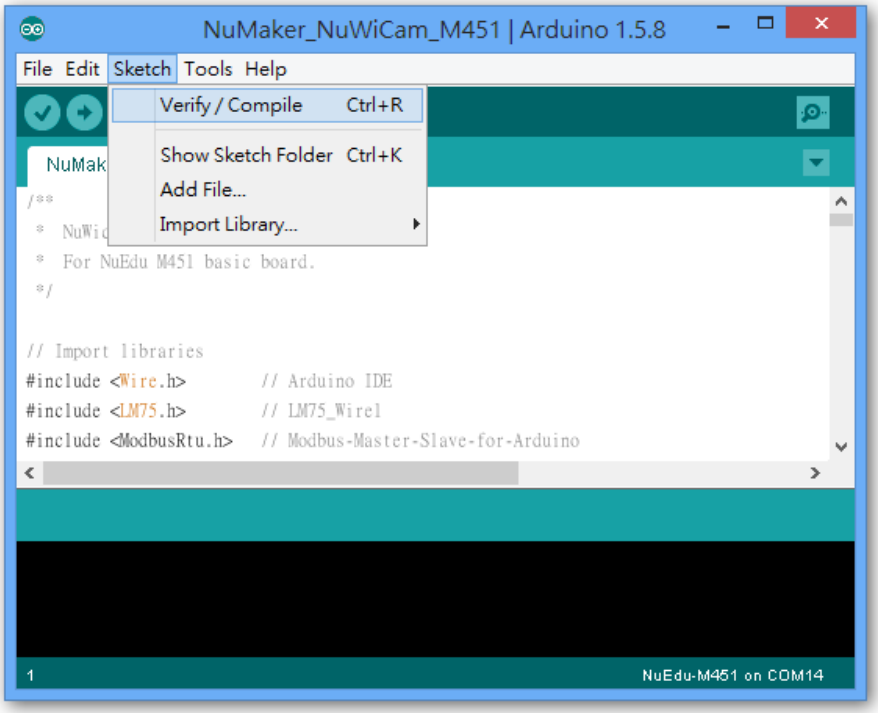
<Tools> → <Board: "NuEdu/M451"> → Select NuEdu-M451.



Step 4: Build sample code.

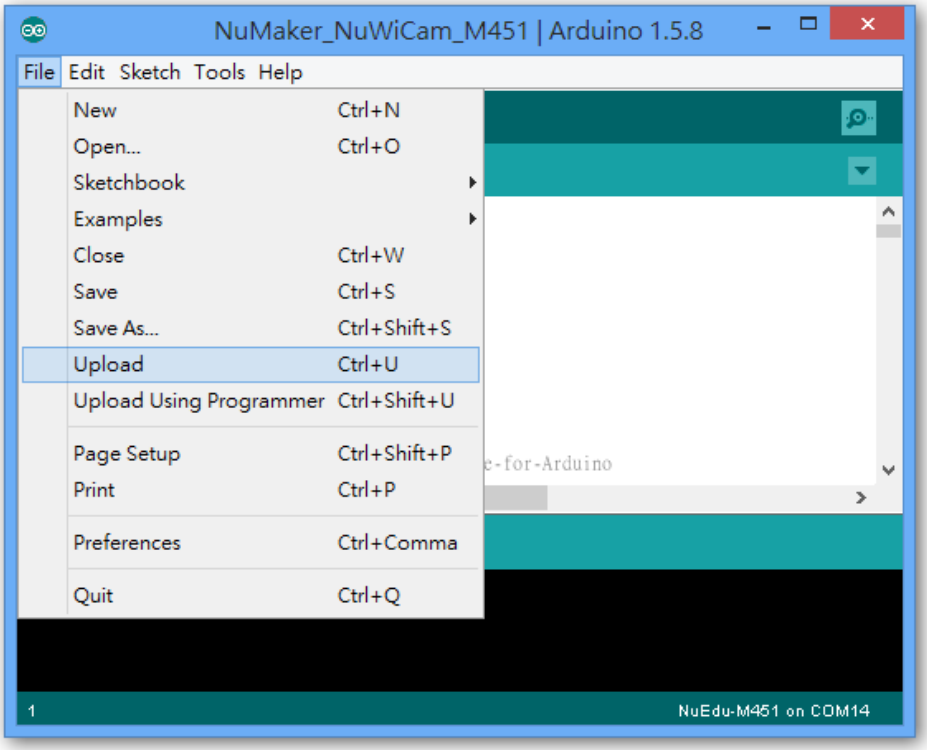
<Sketch> → <Verify/Compile>

Notice: The NuWicam patch for Nuduino already includes modified MODBUS library. You should remove Modbus-Master-Slave-for-Arduino Modbus library if necessary.



Step 5: Upload executable binary to board.

<File> → <Upload>



3.5 Function testing

Current temperature information is shown on 7-segment LEDs. After touching the LM75 temperature sensor module, you can see increased value. You can also open NuMaker NuWicam Player mobile APP to test function. As below figure, it shows a temperature value on the screen and these six circles are for every LED controllers. You can press these circles to light on/off LED.

4 REVISION HISTORY

Date	Revision	Description
2016.07.31	1.00	1. Initially issued.

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