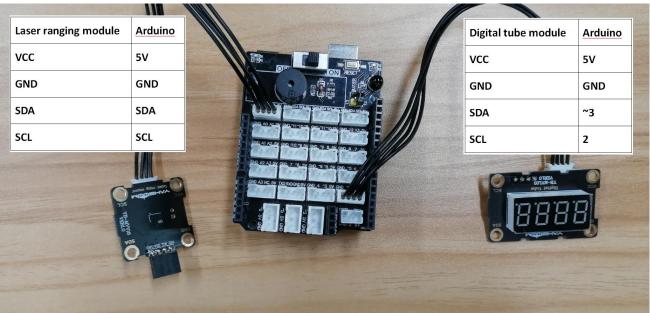


#### 1. Learning target

In this course, we will earn how to use Arduino and laser ranging module to achieve ranging, and display distance on digital tube module.

# 2. Preparation

Connect the module to Arduino board as shown below.



#### 3. Program analysis

3.1 Initialize the serial port, initialize I2C, initialize the mode.

Then start the ranging.

During initialization, three ranging modes are realized by setting the initialization mode.

```
void setup()
 VL53L0X Error Status = VL53L0X_ERROR_NONE;
  Serial.begin(115200);
 Status=VL53L0X.VL53L0X_common_init();
  if (VL53L0X ERROR NONE!=Status)
    Serial.println("start v15310x mesurement failed!");
   VL53L0X.print pal error(Status);
    while (1);
  }
  VL53L0X.VL53L0X_long_distance_ranging_init();
  if (VL53L0X ERROR NONE!=Status)
    Serial.println("start v15310x mesurement failed!");
   VL53L0X.print_pal_error(Status);
    while (1);
  delay(1000);
  LEDdisp.port(2,3);
  LEDdisp.bright(1);
```



3.2 After getting the current ranging result, print out the data through the serial port and display data on digital tube module.

```
void loop()
  VL53L0X RangingMeasurementData t RangingMeasurementData;
 VL53L0X Error Status = VL53L0X ERROR NONE;
  memset(&RangingMeasurementData, 0, sizeof(VL53L0X RangingMeasurementData t));
  Status=VL53L0X.PerformSingleRangingMeasurement(&RangingMeasurementData);
  if (VL53L0X ERROR NONE == Status)
    rangunm = RangingMeasurementData.RangeMilliMeter;
    if (rangunm>=2000)
     Serial.println("out of range!!");
    else
     Serial.print("Measured distance:");
     Serial.print(rangunm);
     Serial.println(" mm");
     LEDdisp.all(int(rangunm/10));
  }
  else
    Serial.print ("mesurement failed !! Status code =");
    Serial.println(Status);
  delay(300);
```

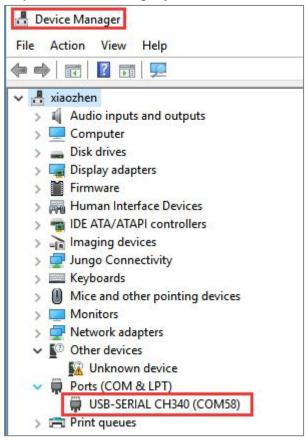
### 4. Compiling and downloading code

4.1 We need to open the **.ino** file by Arduino IDE software. Then click"\varVunder the menu bar to compile the code, and wait for the word "Done compiling" in the lower left corner, as shown in the figure below.

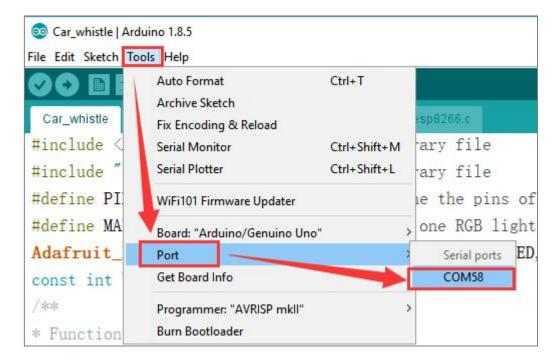


```
File Edit Sketch Tools Help
TM1650.cpp TM1650.h
 pattern_digital_display
  delay (ZUUU);
  if (d.displayRunning("1234567890abcdefg")) {
    while (d. displayRunningShift()) delay(500);
  delay (2000);
  for (int i = 0; i<20; i++) {
    d. displayOff();
    delay(200);
    d. displayOn();
    delay(200);
  }
Sketch uses 4596 bytes (14%) of program storage space. Maximum is 32256 bytes.
Global variables use 718 bytes (35%) of dynamic memory, leaving 1330 bytes for local
```

4.2 In the menu bar of Arduino IDE, we need to select 【Tools】---【Port】--- selecting the port that the serial number displayed by the device manager just now, as shown in the figure below.







4.3 After the selection is completed, you need to click "→"under the menu bar to upload the code to the UNO board. When the word "Done uploading" appears in the lower left corner, the code has been successfully uploaded to the UNO board, as shown in the figure below.

```
© Car_sing | Arduino 1.8.5

File Edit Sketch Tools Help

Car_sing

#include <Arduino. h> //Library file

const int buzzer = 10; //Define the pins of buzzer

/*Individual tones in the score*/

#define BL1 248

#define BL2 278

#define BL3 294

#define BL4 330

#define BL5 371

#dofine RI 6 416

Done uploading.
```



## 5. Phenomenon

After the program is downloaded successfully, the program will be automatically initialized and calibrated according to the current environment.

Then, the digital tube will display the currently detected distance.