i2c_scanner

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This very simple sketch scans the I2C-bus for devices. If a device is found, it is reported to the Arduino serial monitor.

This sketch is the first step to get the I2C communication working.

The sketch shows the 7-bit addresses of the found devices as hexadecimal values. That value can be used for the "Wire.begin" function which uses the 7-bit address. Some datasheets use the 8-bit address and some example sketches use decimal addresses.

Interesting links

The Arduino Wire Reference (https://www.arduino.cc/en/Reference/Wire).

I2C Bi-directional Level Shifter (https://playground.arduino.cc/Main/I2CBi-directionalLevelShifter/) about level shifting, pull-up resistors and connecting 3.3V devices.

Nick Gammon's page about I2C : http://gammon.com.au/i2c (https://gammon.com.au/i2c) (the page also has a "I2C Scanner").

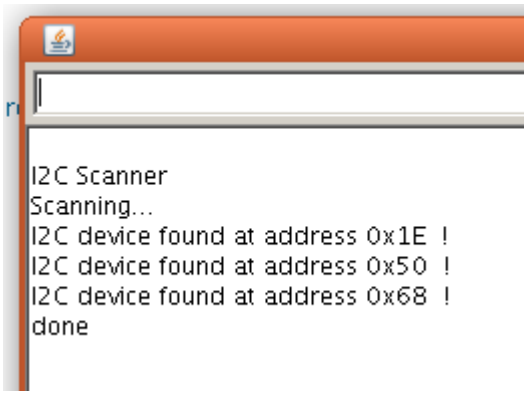
robtillaart made a "Multispeed I2C Scanner" (https://forum.arduino.cc/index.php?topic=197360) that scans with different I2C speeds. If you use longer wires or libraries that use higher I2C speeds, the Multispeed I2C Scanner is very useful. (verified with UNO, 2009, MEGA)

Sketch

Open a new sketch and copy the sketch below into it. Upload it to the Arduino and open the serial monitor. Every found device on the I2C-bus is reported.

You can change the wires, and plug-in I2C devices while the i2c_scanner is running.

The output of the serial monitor will look like this:



Please do not change the sketch. If you have improvements, add your improved sketch to this page.

```
// --------------------------------------
// i2c_scanner
//
// Version 1
//    This program (or code that looks like it)
//    can be found in many places.
//    For example on the Arduino.cc forum.
//    The original author is not know.
// Version 2, Juni 2012, Using Arduino 1.0.1
//     Adapted to be as simple as possible by Arduino.cc user Krodal
// Version 3, Feb 26  2013
//    V3 by louarnold
// Version 4, March 3, 2013, Using Arduino 1.0.3
//    by Arduino.cc user Krodal.
//    Changes by louarnold removed.
//    Scanning addresses changed from 0...127 to 1...119,
//    according to the i2c scanner by Nick Gammon
//    https://www.gammon.com.au/forum/?id=10896
// Version 5, March 28, 2013
//    As version 4, but address scans now to 127.
//    A sensor seems to use address 120.
// Version 6, November 27, 2015.
//    Added waiting for the Leonardo serial communication.
//
//
```

```
26. // This sketch tests the standard 7-bit addresses
27. // Devices with higher bit address might not be seen properly.
28. //
29.
30. #include <Wire.h>
31.
32.
33. void setup()
34. {
35.   Wire.begin();
36.
37.   Serial.begin(9600);
38.   while (!Serial);             // Leonardo: wait for serial monitor
39.   Serial.println("\nI2C Scanner");
40. }
41.
42.
43. void loop()
44. {
45.   byte error, address;
46.   int nDevices;
47.
48.   Serial.println("Scanning...");
49.
50.   nDevices = 0;
51.   for(address = 1; address < 127; address++ )
52.   {
53.     // The i2c_scanner uses the return value of
54.     // the Write.endTransmisstion to see if
55.     // a device did acknowledge to the address.
56.     Wire.beginTransmission(address);
57.     error = Wire.endTransmission();
58.
59.     if (error == 0)
60.     {
61.       Serial.print("I2C device found at address 0x");
```

```
52.      if (address<16)
53.        Serial.print("0");
54.      Serial.print(address,HEX);
55.      Serial.println("  !");
56.
57.      nDevices++;
58.    }
59.    else if (error==4)
70.    {
71.      Serial.print("Unknown error at address 0x");
72.      if (address<16)
73.        Serial.print("0");
74.      Serial.println(address,HEX);
75.    }
76.  }
77.  if (nDevices == 0)
78.    Serial.println("No I2C devices found\n");
79.  else
80.    Serial.println("done\n");
81.
82.  delay(5000);           // wait 5 seconds for next scan
83. }
```

[Get Code] (https://playground.arduino.cc/Main/sourceblock_1/index.txt?action=sourceblock&num=1)