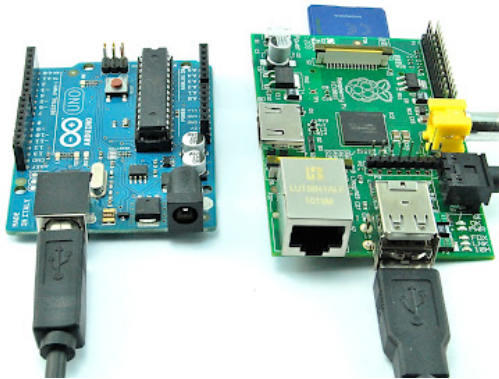




Connect Raspberry Pi and Arduino with Serial USB Cable

Posted on May 20, 2013 (<http://blog.oscarliang.net/connect-raspberry-pi-and-arduino-usb-cable/>) by Oscar (<http://blog.oscarliang.net/author/oscar/>)



Using USB Cable Between Raspberry Pi and Arduino

There are many ways of connecting the Raspberry Pi and Arduino, such as [using the GPIO and Serial pins](http://blog.oscarliang.net/raspberry-pi-and-arduino-connected-serial-gpio/) (<http://blog.oscarliang.net/raspberry-pi-and-arduino-connected-serial-gpio/>) and [using I2C](http://blog.oscarliang.net/raspberry-pi-arduino-connected-i2c/) (<http://blog.oscarliang.net/raspberry-pi-arduino-connected-i2c/>). But this could be one of the easiest way to get them talking, because hardware that required is minimal: all you will need is a micro USB cable that comes with the Arduino. To Setup your Raspberry Pi, check out [this article](http://blog.oscarliang.net/setup-raspberry-pi-for-remote-access/) (<http://blog.oscarliang.net/setup-raspberry-pi-for-remote-access/>).

To Demonstrate how this works, I will be doing two little projects, one for data going to Raspberry Pi from Arduino, the other one for the opposite. First of all, make sure you have [installed pySerial](http://www.raspberrypi.org/phpBB3/viewtopic.php?f=32&t=38360). (<http://www.raspberrypi.org/phpBB3/viewtopic.php?f=32&t=38360>) which gives you the ability to read from and write to the serial port with Python Programming language. People have used it before with Arduino, so it's been proven to be working, you can check [this](http://playground.arduino.cc/Interfacing/Python) (<http://playground.arduino.cc/Interfacing/Python>)out.

Arduino Talking to Raspberry Pi via USB cable

We will send 'Hi' from the [Arduino](http://blog.oscarliang.net/tag/arduino/) (<http://blog.oscarliang.net/tag/arduino/>)to the Raspberry Pi every 2 seconds. Here is the Arduino source code.

```
1 void setup(){
2   Serial.begin(9600);
3 }
4
5 void loop(){
6   Serial.println("Hello Pi");
7   delay(2000);
8 }
```

Run Python 2 on Raspberry Pi. You will find this from the menu under Programming, you should use Python 2 not 3.

Type the following after >>>

```
import serial
ser = serial.Serial('/dev/ttyACM0', 9600)
```

The first argument – /dev/ttyACM0 is the name for the USB interface used. To find out the port name, we need to run this command in terminal without Arduino plugged in:

```
ls /dev/tty*
```

Now plug in your Arduino and run the command again. If a new name appears, then this is the name of your port.

The second argument – 9600 is the baud rate and should match with what you set in the Arduino program.

Now lets start a loop listening for messages from the Arduino.

```
while 1 :
    ser.readline()
```

You will need two hit enter twice after you type the second line. Messages 'Hi' should now start to appear every 2 seconds. You can press Ctrl + C to stop (interrupt) the Python program.

Raspberry Pi Sending Data To Arduino

In this example, [Raspberry Pi \(http://blog.oscarliang.net/tag/raspberry-pi/\)](http://blog.oscarliang.net/tag/raspberry-pi/) will be sending back a single number, and the [Arduino \(http://blog.oscarliang.net/tag/arduino/\)](http://blog.oscarliang.net/tag/arduino/) will turn on and off the LED on Pin 12 so many times.

```
1  const int ledPin = 12;
2
3  void setup(){
4      pinMode(ledPin, OUTPUT);
5      Serial.begin(9600);
6  }
7
8  void loop(){
9      if (Serial.available()) {
10         light(Serial.read() - '0');
11     }
12     delay(500);
13 }
14
15 void light(int n){
16     for (int i = 0; i < n; i++) {
17         digitalWrite(ledPin, HIGH);
18         delay(100);
19         digitalWrite(ledPin, LOW);
20         delay(100);
21     }
22 }
```


On the Raspberry Pi Side, you need to type

```
ser.write('3')
```

Now you should see the LED on the Arduino light up 3 times.



There you go, be creative and you will find there are so many things you can do. For example we could control some motor or LCD on the Arduino from the [Raspberry Pi](http://blog.oscarliang.net/tag/raspberry-pi/) (<http://blog.oscarliang.net/tag/raspberry-pi/>).

[illegible]

← Changed web host and moving sites
(<http://blog.oscarliang.net/changed-web-host-and-moving-sites/>)

(<http://blog.oscarliang.net/raspberry-pi-and-arduino-connected-serial-gpio/>)

Raspberry Pi and Arduino Connected Over Serial GPIO - [blog.OscarLiang.net](http://blog.oscarliang.net)
(<http://blog.oscarliang.net/raspberry-pi-and-arduino-connected-serial-gpio/>) says:
May 21, 2013 at 8:20 pm (<http://blog.oscarliang.net/connect-raspberry-pi-and-arduino-usb-cable/#comment-100>)

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Raspberry Pi and Arduino Connected Using I2C - OscarLiang.net (<http://blog.oscarliang.net/raspberry-pi-arduino-connected-i2c/>) says:

May 25, 2013 at 6:49 pm (<http://blog.oscarliang.net/connect-raspberry-pi-and-arduino-usb-cable/#comment-105>)

[...] are many ways of Linking them such as using USB cable and Serial Connection. Why do we choose to use I2C? One reason could be it does not use your [...]

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Gérard says:



May 31, 2013 at 8:14 pm (<http://blog.oscarliang.net/connect-raspberry-pi-and-arduino-usb-cable/#comment-146>)

Hello Oscar, very well done. I was just looking for that. I am new to raspberrypi and python and want to connect a CellLog8s with usb to the pi to read out the data stream the CellLog sends. I used the following code in python:

```
import serial
ser = serial.Serial('/dev/ttyUSB0', 128000)
while 1 :
ser.readline()
```

After line 2 i get an error. When changing baudrate to 9600 there is no error, but i can't see anything on the screen after the last line and 2 time enter.

What is the maximum baudrate i can use in python and how can i initiate databits and stopbit?

The CellLog is sending with 128000 baud, 8 databits and 1 stopbit.

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Golan Gabay says:



July 7, 2013 at 9:26 pm (<http://blog.oscarliang.net/connect-raspberry-pi-and-arduino-usb-cable/#comment-292>)

Hi there,

I followed your tutorial and it's working great but I have another problem...

I'm trying to send data through the USB port from my Pi to my Arduino using the php serial class and I have a problem.

When I'm sending it, I see the Arduino's serial LEDs blink which means It receives something but the data is invalid since I try showing it on a display and I see nothing...

Once I run this python script as an endless loop:

```
import serial
ser = serial.Serial('/dev/ttyACM0', 9600)
While 1:
1=1
```

And I'm sending the SAME data using the php class I get valid bytes and I see them on the display.

When I stop this script the data is invalid again and I don't see anything on the screen.

I think it's something to do with baudrate or something like that (stop bits or something else) even though the php is sending in the right baudrate since this Arduino guy is showing serial data flow (the LEDs are blinking) but no output is showed...

Maybe the python serial setup overrides the default Pi's serial setup and that's how it might work...?

I tried anything I could find on the net but nothing helps...

Please help!

Thank you in advance!

Golan

[↩ Reply \(/connect-raspberry-pi-and-arduino-usb-cable/?replytocom=292#respond\)](#)

Alex says:



July 25, 2013 at 3:41 pm (<http://blog.oscarliang.net/connect-raspberry-pi-and-arduino-usb-cable/#comment-426>)

Hey

Great Tutorial, but I have on problem:

ImportError: No modul named serial

Have anyone a idea?

Thank you!

Alex

[↩ Reply \(/connect-raspberry-pi-and-arduino-usb-cable/?replytocom=426#respond\)](#)

Oscar (<http://OscarLiang.net>) says:

July 25, 2013 at 3:53 pm (<http://blog.oscarliang.net/connect-raspberry-pi-and-arduino-usb-cable/#comment-430>)



sounds like you are missing the “pyserial” library on your Pi. Install that and try again?

[↩ Reply \(/connect-raspberry-pi-and-arduino-usb-cable/?replytocom=430#respond\)](#)

Angus-pangus says:

July 26, 2013 at 11:17 pm (<http://blog.oscarliang.net/connect-raspberry-pi-and-arduino-usb-cable/#comment-446>)



Great stuff on your pages

I dunno if this is of any help to people out there but I struggled to do this with my Arduino Due over the ‘native’ micro-USB port (i.e. not the ‘programming’ micro-USB port that I connect to my laptop).

I realized that

```
Serial.println("Serial data not outputted");
```

does not active the native port on Arduino Due, only the Rx/Tx pins and the programming port, however

```
SerialUSB.println("Oscar Liang kicks ass");
```

does. This solved all of my problems. Again thanks for your good tutorials, keep up the good work.

[↩ Reply \(/connect-raspberry-pi-and-arduino-usb-cable/?replytocom=446#respond\)](#)

手把手教你树莓派与Arduino Uno的对接(USB及GPIO方式) - 树莓派 - 开发者第2238408个问答

(<http://www.w3c.com.cn/%e6%89%8b%e6%8a%8a%e6%89%8b%e6%95%99%e4%bd%a0%e6%a0%91%e8%8e%93%e6%b4%be%e4%b8%8earduino-uno%e7%9a%84%e5%af%b9%e6%8e%a5usb%e5%8f%8agpio%e6%96%b9%e5%bc%8f>) says:

August 9, 2013 at 2:13 am (<http://blog.oscarliang.net/connect-raspberry-pi-and-arduino-usb-cable/#comment-509>)

[...] (USB对接)[http://blog.oscarliang.net/conne ... -arduino-usb-cable/](http://blog.oscarliang.net/conne...-arduino-usb-cable/) (I2C对接)<http://blog.oscarliang.net/raspberry-pi-arduino-connected-i2c/> [...]

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手把手教你树莓派与Arduino Uno的对接(USB及GPIO方式) | 木子目詹 (<http://www.627pd.com/?p=149>)

says:

August 11, 2013 at 7:12 am (<http://blog.oscarliang.net/connect-raspberry-pi-and-arduino-usb-cable/#comment-513>)

[...] (USB对接)[http://blog.oscarliang.net/conne ... -arduino-usb-cable/](http://blog.oscarliang.net/conne...-arduino-usb-cable/) (I2C对接)<http://blog.oscarliang.net/raspberry-pi-arduino-connected-i2c/> [...]

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Jes says:

September 16, 2013 at 5:09 pm (<http://blog.oscarliang.net/connect-raspberry-pi-and-arduino-usb-cable/#comment-635>)



Hi!

Great tutorial! One question: to run code on both the pi and the Arduino when sending information from the Pi, do I need to have the Arduino IDE installed on my Pi? or do I just pre-load the code I want onto the Arduino using my laptop before connecting them?

Thanks!

[↩ Reply \(/connect-raspberry-pi-and-arduino-usb-cable/?replytocom=635#respond\)](#)

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