

Raspberry Kiosk

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A web-kiosk based on the Raspberry pi. Journey of a software engineer into a DIY project

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03 - Printing a receipt with the Raspberry Pi

Date: December 26, 2012 at 3:10pm

Tags: #thermal printer #raspberrypi #printer #receipt #tutorial

By reading this tutorial you will learn to use your cute raspberrypi to do this :


Raspberry Pi Receipt prints hello-world



We will learn how to **print a simple “Hello World” using the Adafruit Mini Thermal Receipt Printer.**

This is the result of a sunday night of hacking together with a friend . It represent another step forward in the realisation of the christmas project of this blog, an open source web kiosk. I want the kiosk to be able to print, don’t ask me why. Now the printer works.

Never miss a post! x



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Raspberry Kiosk

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The ingredients you need to complete this tutorial are :

- A raspberry Pi (we discussed in another post how we initially configured it) connected to a monitor
- An Adafruit Mini Thermal Receipt Printer (you can find the user manual [here](#))
- A roll of 50' long thermal receipt paper - the perfect amount for the thermal printer. BPA-free.
- 5V 2A power supply - an ideal supply for powering the thermal printer (and anything else that can use 5V power)
- 2.1mm DC jack adapter - makes it easy to attach the power supply to the printer
- Tape, red wine, a gospel playlist. (kidding, you don't really need any tape now).

I suggest you to buy the starter kit that contains everything you need (but the rpi).

This tutorial is inspired to two articles written by *Tobias Floery* (1, 2), who we should all thank for his contribution. However his tutorials are not really “noob-proof”, so that's why I'm writing this down. Lets divide and conquer the tutorial in three parts :

1. Connect the printer to the power supply
2. Connect the printer to the rpi
3. Print Hello World

Before you start, make sure you have the two cables that comes with the printer.



Part 1: Connect the printer to the power supply

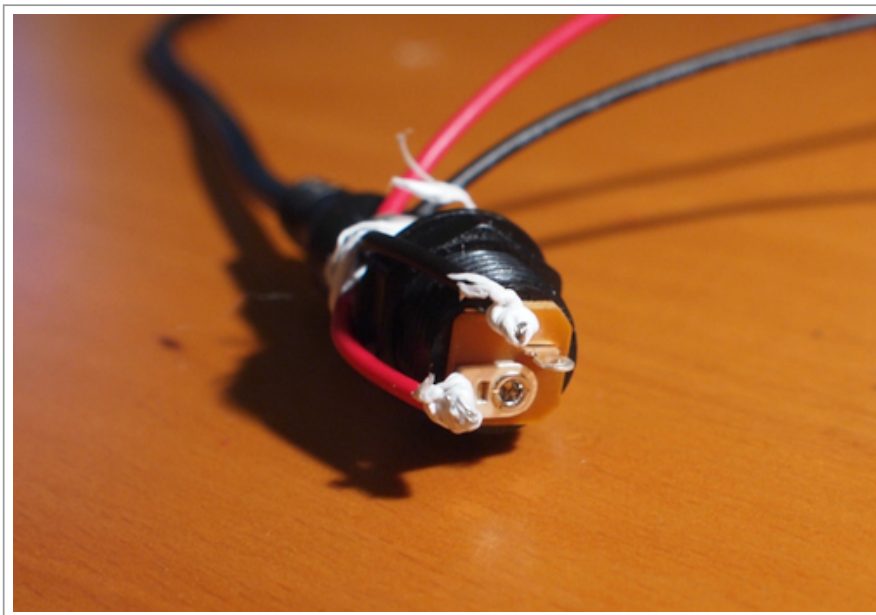
First of all don't forget to turn off the raspberry pi, please: if you are connected to it via ssh you can type

```
sudo shutdown -h now
```

and unplug the power source. Then connect the cables to the back of the printer as shown in the picture below.



In this first phase we can ignore the green/yellow/red and focus on connecting the DC IN (black/red cable) to the power. For this purpose you need to plug the 5V 2A power supply to the 2.1 mm DC jack adapter, both provided with the kit. Afterwards you can connect the jack adapter to the red/black cable as shown in figure below:



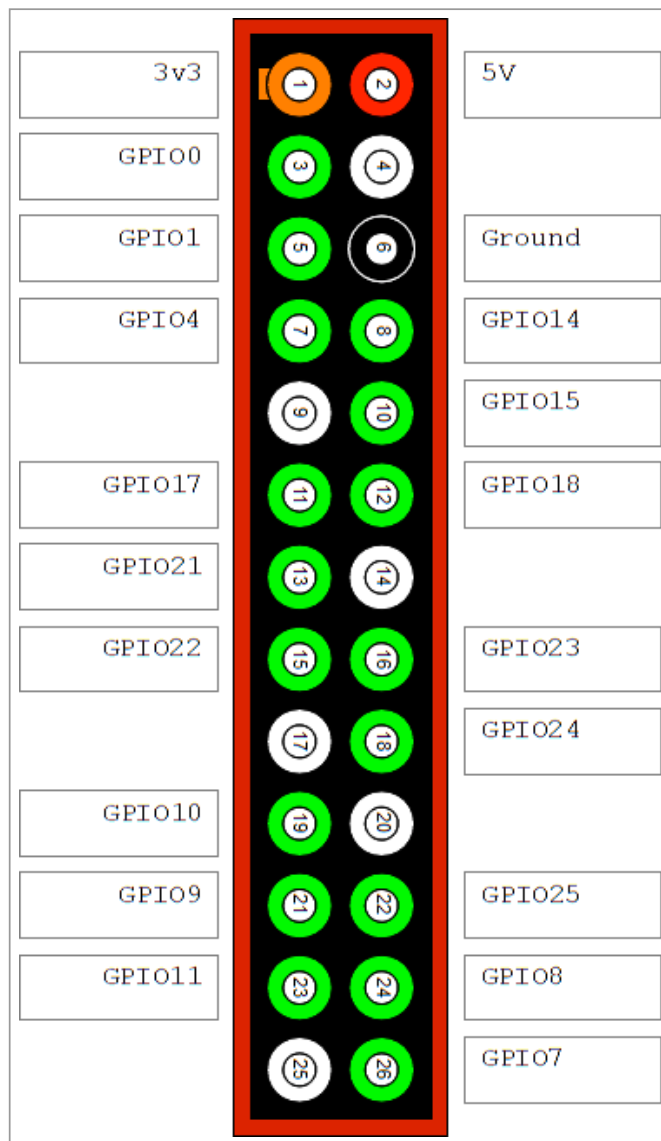
Now you can plug it to the power adapter, and if everything went fine you can see how the green led on the printer starts to blink. Now open the printer, insert the roll of paper inside the printer (image below) and close it.



Press the only button on the printer and see if the paper is rolled out. Does it work? Do it again, and again, just for the thrill of it.

Part 2: Connect the printer to Raspi

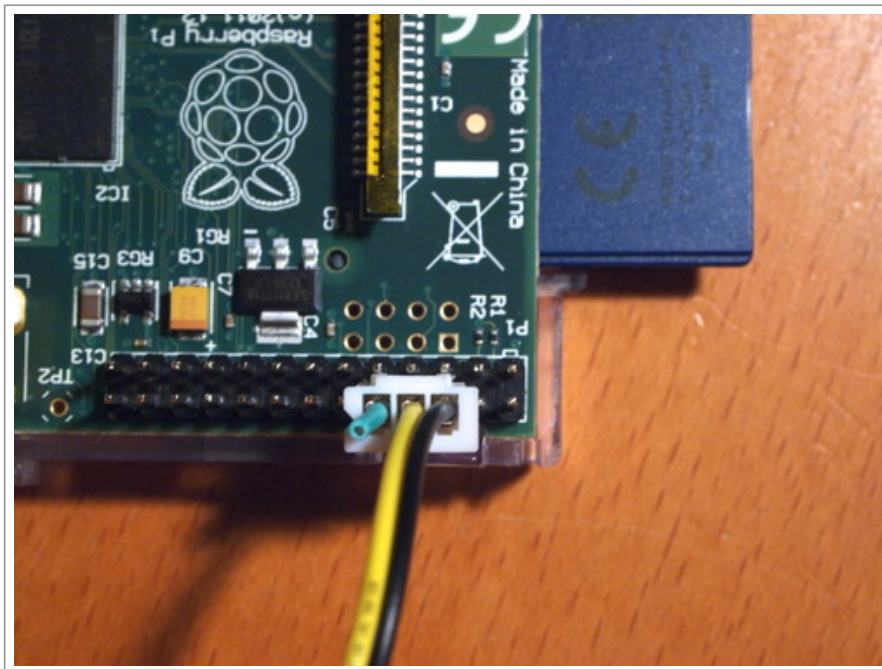
The second step is **connecting the printer to the rpi** through the GPIO pins (read : General Purpose Input/Output). It's very simple, don't panic. The GPIO port is located on the board, and it comes with 16 pins, mapped below.



To connect the printer we make use of the pin #6 (Ground) and the pin #8 (GPIO14). If you are wondering how this figure can be rotated to match with the rpi, note that the pin #2 is the one located in the corner of the board.

Now, take the green/yellow/black cable. Since we wanted to be able to use the wires that come with the starter kit without any further soldering, and it was 3AM at this point, we did something simple and radical: **we got rid of the green cable**. Cut it out, you don't need it since the printer is not transmitting any data to the rpi through the TX port ;).

Now plug the cables to the pin #3 and number #8 of the GPIO, as shown in the detail below.



If you didn't do it before, now simply connect it to the TTL socket in the back of the printer : the black cables goes into GND, and the yellow into the RX. Green dude, rest in peace.



Done, we are now ready for the software part of this tutorial. I told you that it wasn't that hard. Now lets try to make it work.

Part 3: Print Hello World

To interface the rpi with the printer we will use the driver class adapted from arduino and available on github. Its a c++ application based on the Qt framework, hence we need to install some dependencies to make it work. Let's start installing Qt4 on the rpi by getting some prerequisites (you might already installed some of them):

```
sudo apt-get install gcc xterm git-core subversion
```

And finally the application framework :

```
sudo apt-get install qt4-dev-tools qtcreator
```

· Now we need a component written for Qt that lets the framework communicate with the serial port: `qextserialport`. To install it statically in the system clone it and compile as following :

```
· git clone https://code.google.com/p/qextserialport/
· cd qextserialport
qmake ·
sudo make install
cd ../
rm -r qextserialport
```

· then download and compile the Qt project for the printer from github . (This will be your working directory from now on).

```
git clone https://github.com/thefloel/Raspi-Thermal-Printer.git ·
cd Raspi-Thermal-Printer ·
qmake
· make
```

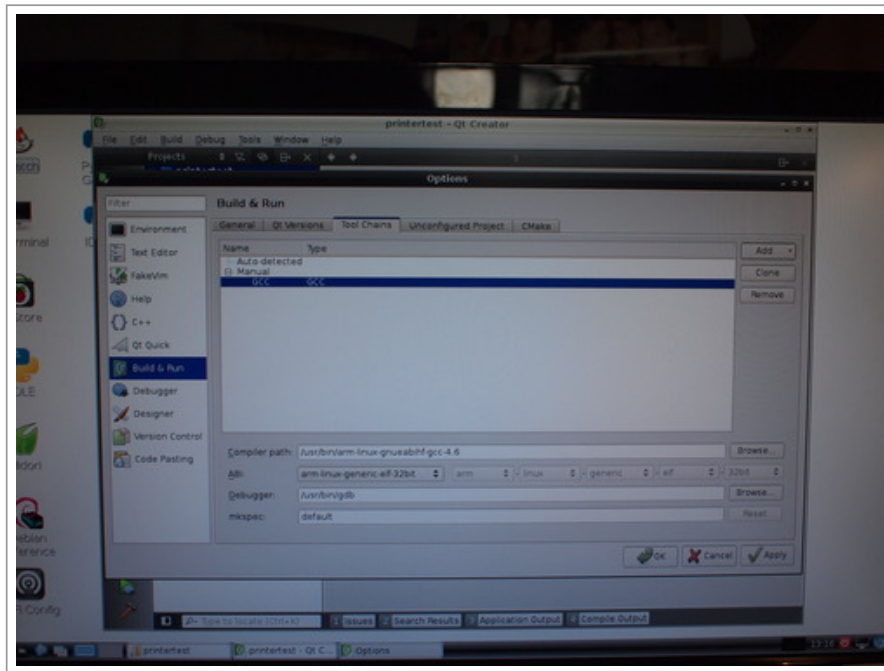
Sweet! Now we have everything we need to make it work. For the next part, we need to open the Qt framework application user interface, therefore launch X (if you dint' do it before) :

```
startx
```

Now open the *File Manager* (under the menu Accessories) and navigate to the *Raspi-Thermal-Printer* folder downloaded previously, and then to the *examples/printertest/* subfolder, which contains the working example. Right click the *printest.proTools* and select QRcreator to open the project file with the Qt environment.

Then we need to configure the environment by selecting the menu *Tools -> Options* then selecting the *Build & Run* element on the left, and finally the *Tools Chains* tab. Press the *Add* button, and chose *GCC* from the dropdown menu. Select it in the option window and make sure to insert the following parameters:

```
compiler path -> /usr/bin/arm-linux-gnueabi-hf-gcc-4.6
Debugger : /usr/bin/gdb
mkspec : default
```



Now change tab and click the *Qt versions* tab, press add and select `/usr/bin/qmake-qt4` . Apply changes by pressing the ok button.

Another configuration step is telling Qt to deploy locally and not to a remote linux machine. Select the menu item Help -> About plugins and **uncheck** Device support -> Remote linux.

Now we need to change some system settings: close Qt Creator and open the terminal. We need to free the tty port of the GPIO (pin #8). Type

```
sudo pico /boot/cmdline.txt
```

and replace the content with

```
dwc_otg.lpm_enable=0 console=tty1 root=/dev/mmcblk0p2 rootfstype=ext4 elevator=deadline
```

Close the file and save (Control + x then hit y). Last modification is to set the slot free on boot by editing `inittab` :

```
sudo pico /etc/inittab
```

and commenting (#) the line

```
#T0:23:respawn:/sbin/getty -L ttyAMA0 115200 vt100
```

Now reboot raspberry to make the changes effective.

```
sudo reboot
```

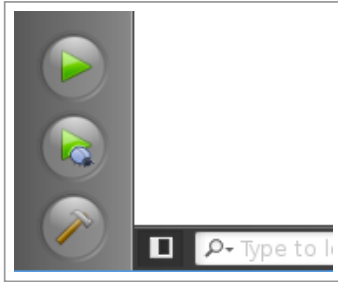
Ok, I know, it was a little bit boring so far, but now you are ready to print! Let's try something out.

Re-open the file *Raspi-Thermal-Printer/examples/printertest/printtest.pro* with Qt Creator (right click). Find the file `printertest.cpp` located under *Sources* in the left column and play with it. This is how you print using different styles. If you want you can edit the file by replacing the `p->write` part with a simple Hello

World:

```
p->write("\n Hello, (physical) world!\n");
```

Save the file. Now press build the project by pressing the big hammer icon located in the bottom left corner of Qt Creator.



This will create a new folder with the compiled application. Navigate to it (it depends on where the folder is located on your disk). In my case :

```
cd ~/Raspi-Thermal-Printer/examples/printertest-build-desktop-Qt_4_8_2__System__Releas
```

Now, call your mum and your best friends over skype, and prepare them to the big event. Open the terminal, and to **finally print**, type :

```
./printertest
```

Clap your hands, congratulate yourself, and have huge fun. In the next posts we will learn how to make more complex stuff and we will write some more code to make printing a little more intuitive.

I hope I didn't make too many mistakes. If you had any doubts or just a simple "thank you" feed back, please leave a comment full of love at the bottom of this page, so I know that someone actually is reading this stuff. It keeps me motivated to write ;)



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








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Kevin Lin • 7 months ago

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Gunawan • 10 months ago

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If using windows this is simple driver u can get

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**ArcaneShadow** • 3 years ago

And... my Pi doesn't boot anymore after the step where to edit
/boot/cmdline.txt and /etc/inittab. Thanks.

EXT4-fs (mmcblk0p2): unable to read superblock

List of all partitons:

-- bla bla --

No filesystem could mount root, tried: ext4

Kernel panic - not syncing: VFS: Unable to mount root fs on unknown-
block(179,2)

-- bla bla --

So let's start the Ubuntu VM and repair my installation.

^ | v • Reply • Share >

**Mjough Soufiane** → ArcaneShadow • 2 years ago

Same here...

^ | v • Reply • Share >

**Dimitry K** • 3 years ago

I think there's a typo in the phrase "Now plug the cables to the pin #3 and
number #8 of the GPIO, as shown in the detail below" where you probably
menat to say "#6 and number #8", not the number #3?

^ | v • Reply • Share >

**Warren** • 3 years ago

I am currently developing an EPos kiosk to do with this thermal printer but I
was wondering is there any easy way I could talk to printer constantly to
send data from as per say a JQuery request, Ajax call to Phython or even an
exec php command?

Regards

^ | v • Reply • Share >

**Nicolò Paternoster** → Warren • 3 years ago

Yes you can do it in phyton. And I'm looking forward to hear about
it. I'm not working with javafx to achieve something similar

^ | v • Reply • Share >

**Jianxiang** • 4 years ago

Thank you buddy! Can't wait to see your new update.It's great!!

^ | v • Reply • Share >

**reado** • 4 years ago

Yeah Great work!

I'm really interested to see where you're going with this..

Just curious though, you decided to use the Qt framework instead of lets say

Raspberry Kiosk - 03 - Printing a receipt with the Raspberry Pi
 a python library that could be imported into a python app
 (https://github.com/luopio/py-t....)

I guess i'll have to wait and see what kind of software you'll be
 building/implementing for the kiosk part.

Anyway, keep going! I'm looking forward to reading more!

^ | v • Reply • Share ›



adv4nced Mod ➔ reado • 4 years ago

Hi Matt, thank you for your feedback. Your observation is correct,
 I'm still experimenting around before finding out the most efficient
 way to implement the software part... These days I was reading
 about JavaFX 8 <http://jdk8.java.net/fxarmprev...> ...

The Qt framework doesn't seem to be the most intuitive solution but
 was the quickest thing to try that night ... Anyway I'll probably try
 with phyton and make a blog post!

thanks

1 ^ | v • Reply • Share ›



hector segura • 4 years ago

YES I am reading all this and learning (I am Win XP user, but ...)

Hope you will stay writing more .. so I will be reading more

and lastly thank you very much for sharing knowledge (to make a better
 world)

^ | v • Reply • Share ›



adv4nced Mod ➔ hector segura • 4 years ago

Thank you hector ;) Feedbacks like this will keep me going

^ | v • Reply • Share ›

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1 comment • 4 years ago•

Gunawan — like this HP Officejet
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John Jacey — How would you
 make the calibration settings
 permanent? (After reboot ect.)

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Gunawan — HP Officejet Pro 8620
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 Linux Notebook Acer Aspire ...

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Max — I just asked, because we are
 planning something similar and are
 thinking about some kind of hard ...

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