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| **Bought Item** | **Where** | **Cost (CAD)** |
| Raspberry Pi Model B Kit (wifi dongle, RPi Model B, power, SD card) | Adafruit | $70 |
| Mini Thermal Receipt Printer Starter Pack (power supply, roll of paper, thermal printer) | Adafruit | $61.95 |
| Button | Lee’s Electronics (local shop that sells this type of stuff) | $3 |
| Variety pack of wires (with terminated ends) | Lee’s Electronics | $2 |
| Breadboard Mini | Lee’s Electronics | $3.50 |
| Pack of 10W resistors | Lee’s Electronics | $1.20 |
| Solder-less DC connector | Adafruit | $3 |
| DVI to HDMI adaptor | Lee’s Electronics | $7 |
| Case of thermal paper (12/Pack) | Staples | $20 |

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| **Other Required Items** |
| Computer monitor with DVI out |
| Basic keyboard |
| Ethernet cable |
| Wire stripper |
| Small crosshead screwdriver |

Credits

We adapted our code from the following:

1. Jesse Henning’s Arduino “Electr-O-Matic Book Fortune Teller”

- <http://thisisasentence.tumblr.com/post/57709960918/people-have-been-asking-how-to-build-the-book>

1. Carrie Anne Philbin’s Geek Gurl Diaries Little Box of Geek Project   
   - <http://geekgurldiaries.blogspot.ca/2012/12/little-box-of-geek-project.html>  
   - <http://geekgurldiaries.blogspot.ca/2012/12/part-2.html>

We liked the idea from Jesse Henning’s tumblr post. However, we primarily modified Carrie Anne Philbin’s implementation to support the following:

* Read from CSV file
* Run the printer.py using crontab to reuse the RPi for other projects with less fuss

Notes

These instructions assume that you have a terminal window available after turning on your pi. We ended up downloading a very basic command line of Raspbian instead of the full GUI in the interest of time.

Command Refresher

1. Permissions are hugely important for what we’re going to be doing. By default, the user you’re logged in as likely doesn’t have root or administrator access. This is why you might see commands that begin with sudo (superuser do).

\* sudo shutdown -h now ; superuser do halt and shutdown of terminal

\* sudo shutdown -r now ; superuser do shutdown and restart of terminal

\* su ; elevates the logged in user as a superuser

1. Navigating around

\* cd <directory filepath> ; change directory to example <> directory

\* cd .. ; goes up one level in the hierarchy

\* clear ;clears the text off the screen

\* ls ; list the files in the current directory

\* pwd ;print working directory aka tells you which directory you’re in

\* rm <filename> ; remove file

\* mkdir <newdirectoryname> ; make a new directory called <newdirectoryname>

\* rmdir <directory> ;remove file directory

1. Installing packages

\* sudo apt-get install <> ; superuser do installation of < software package >

4) Running Python programs

\* python <programname.py>

Text Editors

Option 1: Nano

Opening the file: sudo nano <filepath/filename>

On the bottom of the screen you see ^X to exit. This is Ctrl+X. It will prompt you about saving. If you see M-Y, this is Alt+Y.

Option 2: VIM Editor

Opening the file: vi <filepath/filename>. If you’re in the current directory, you can just use the filename.

Creating a new file: vi <newname>.

Vi modes:

1. command mode – press the Esc key if you’re not already in it. By default, vi begins in command mode.
2. insert mode – type i

Save options:

1. Save file and quit :wq
2. Save file :w
3. Discard changes and quit file :q!

HARDWARE

This part of the process followed the GeekGurl tutorial.

Standard Wire Color Codes: <http://www.instructables.com/id/A-Makers-Guide-to-ATX-Power-Supplies/step2/Wire-Colors-Functions-in-the-PSU/>

RPi GPIO pin map: <http://pi.gadgetoid.com/pinout>

Note: If you bought ten 1W resistors instead of one 10W resistor, connect them in series.

SOFTWARE

Setup the RPi serial port and change some settings. Some of these may already be installed as part of your Raspbian package.

1. Install the required serial port files  
   sudo apt-get install python-serial

sudo apt-get install python-imaging-tk

sudo apt-get install python-rpi.gpio

1. We followed the Little Box of Geek Project instructions and updated /boot/cmdline.txt to look like:

dwc\_otg.lpm\_enable=0 console=tty1 root=/dev/mmcblk0p3 rootfstype=ext4 rootwait

1. Restart the raspberry pi

sudo shutdown -r now

Downloading the thermal printer library

1. Install git-core onto the RPi

sudo apt-get install git-core

1. Download the printer repository hosted on github

git clone git://github.com/luopio/py-thermal-printer.git

More info here about git: <http://git-scm.com/book/en/Git-Basics-Getting-a-Git-Repository>

1. Delete the example.png that’s included in the py-thermal-printer directory.

rm example-lammas.png

<Download our code containing RADprinter1.py and copy into the py-thermal-printer directory. Need to clean-up this section. Probably should still direct folks to the original library first.>

Setup so this program runs in the background when the RPI is turned on

With elevated permissions,

crontab –e

Add the following line to the end of the file.

@reboot python /git/py-thermal-printer/RADprinter.py &

To list these files later on. You must have the elevated permissions to see it.

crontab –l

More info: <http://www.adminschoice.com/crontab-quick-reference/>

Creating the CSV from an Excel Spreadsheet

We had three different columns Title, Author, Description.

In an empty column (fourth or D column), we used Excel’s CONCATENATE function to build one cell containing the formatting that we wanted combining all the different columns with “|” as a delimiter. We chose the “|” character as our text delimiter after looking at our Description text as the character generally isn’t used in writing.

Ex. Our Excel D2 column contains =CONCATENATE(A2,"|",B2,"|",C2)

To repeat to the end, highlight the D2 column after this formula has been entered. There’s a square in the bottom right corner, drag and drop to the last row or double-click the square.

Copy the entire D column and paste into Notepad.

Save as booklist1.csv. Update the RADprinter1.py code with this file.

Transferring the CSV to the RPi

Option 1)

Stick booklist1.csv on a network share/FTP  
wget from the network share/FTP location

Copy this into the same directory as RADprinter.py

Option 2)

Save booklist1.csv to a USB

If you only have a command line, this will require you to mount the USB location. See http://raspberrywebserver.com/serveradmin/connect-your-raspberry-pi-to-a-USB-hard-disk.html

If you think you have a Python package installed but aren’t sure

Looking for 1 specific package: dpkg -s python-rpi.gpio

\*This is for Python packages not git repositories.

Other Notes:

* RPi Model B uses standard SD cards. RPi Model B+ uses microSDs.
* If you find that your RPI doesn’t seem to respect a | (pipe) or @ character.

sudo nano /etc/default/keyboard

Look for "XKBLAYOUT=GB" or whatever country code. Change to “US”. Reboot after changing keyboard layout.

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Pisces login: pi  
Password: pi

Directory Reference

/home/pi/py-thermal-printer/booklist1.csv

/home/pi/py-thermal-printer/printer.py

/home/pi/py-thermal-printer/RADprinter1.py