

Projects for The Raspberry Pi

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The logo for '2bits' features the number '2' in a bright green color, followed by the word 'bits' in a dark grey, stylized font. The 'i' in 'bits' has a small green square above it. The entire logo is reflected below it on a light grey surface.

2bits





Agenda



- About Khalid
- Where and What to buy?
- Hardware (Raspberry Pi 2 and Raspberry Pi 3)
- Pros and Cons
- What 'distros' available and how to install?
- Projects
 - Internet Radio
 - Weather Forecast





About Khalid



- 30+ years in software development and software consulting
- First computer: Sinclair ZX Spectrum
- Experience: Mainframe, UNIX
- Open Source: Linux, Web, PHP, MySQL, Drupal
- Full time open source developer, contributor and consultant





About 2bits.com, Inc.



- Founded in 1999 as a partnership, incorporated since 2007
- Drupal since 2003
- Specializes in Drupal scalability and performance
 - Site Performance Assessment
 - Hosting selection, provisioning, tuning and management
 - Custom Drupal module development
- Extensive in depth articles and testimonials at <http://2bits.com>





2bits.com, Inc. Clients



- International clients (USA, Canada, Europe, South America, China, ...)
 - Electronic Arts (EA)
 - Johns Hopkins University
 - Harvard University
 - Cornell University
 - University of Waterloo
 - Vodafone
 - Harper Collins Publishers
 - Lonely Planet
 - The White House (sort a ...)





Need Help?



- If your site has any of these symptoms
 - Site slow?
 - Suffering outages?
 - High resource usage?
- Services
 - Site Performance Assessment
 - Hosting selection, installation, configuration, and optimization





Where To Buy?



- What to buy?
 - CanaKit Ultimate Starter Kit
 - case, power, breadboard, LEDs, wires, resistors, ...etc.
 - Once I got the RPi 2, the RPi 3 is out ...
- Where to buy?
 - From amazon.ca (CanaKit)
 - RPi 2: \$110 + tax, free shipping
 - RPi 3: \$120 + tax, free shipping
 - \$20 off if you get Amazon's VISA card





Raspberry 2



- ARM v7 Quad Core CPU
- Better performance
 - 6X original model B
- Direct support in Debian
 - (armhf = 'hard float')





Raspberry 3



- ARM v8 Quad Core CPU
- Even Better performance
 - 10X original model B
- 64 bit CPU
 - 64 bit distribution planned
 - probably based on Debian arm64)
- Integrated WiFi and Bluetooth LE
- Same form factor and board layout as Pi 2





Pros



- Runs Linux, and has native support in Debian
- Very low power consumption
 - Can be kept on 24/7
- Very small form factor
- Lots of accessories
 - Sound cards, game controllers, cases, sensors, ...
- GPIO to interface with lots of devices
- Huge community, ease and breadth of info





Cons



- Proprietary boot
- Broadcom based
 - Requires binary blobs, and not fully open
- Proprietary GPU
- Ethernet is through the USB hub
 - Theoretical limit of 480 Mbps
- Weak default security
 - Fixed password, passwordless sudo





NOOBS



- Acronym for: New Out Of Box Software
- Straight forward way to select from various distributions
- Just copy the image to a partition on the SD card, and that is it.
- Versions: Full (has images), and Lite (network install)
- Connect Ethernet before you run it, and you will see more selections





Distros



- Raspbian
- OpenELEC (Kodi oriented)
- Pidora (Fedora for Raspberry Pi)
- RaspBMC (another Kodi oriented distro)
- Arch
- RISC OS
- ...etc.





Weather Forecast



- Using bottle
 - Lightweight Python web server
 - Surprisingly capable, yet simple
 - Has templates
- With pywapi
 - Canadian cities would not work in the evening due to a bug, fixed on my blog





Internet Radio



- Using mopidy as a server
- Use various clients:
 - ncmpc from the command line
 - MPDroid on Android
- Planned to use a \$5 Infrared Remote Control via lirc





Kodi



- Has direct support for internet radio (Radio plugin)
- Requires keyboard and mouse to navigate
- IR Remote that provides the above input devices for \$5
 - Would not work if kodi starts from /etc/init.d
 - Workaround: crontab:
 - @reboot sleep 15; kodi --standalone -fs
- Not a true headless solution





Resources



- NOOBS
 - <https://goo.gl/6jW8SN>
- Mopidy
 - <https://docs.mopidy.com/en/latest/>
- Bottle
 - <http://bottlepy.org/docs/dev/index.html>
- PyWAPI Bug Fix
 - <http://goo.gl/f0CpHv>





Questions?

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Questions? Comments?

