



# Full Circle

THE INDEPENDENT MAGAZINE FOR THE UBUNTU LINUX COMMUNITY

ISSUE #108 - April 2016



Photo: Ryan Finnie (Flickr.com)

## OLD HARD DRIVES TESTING AND TROUBLESHOOTING

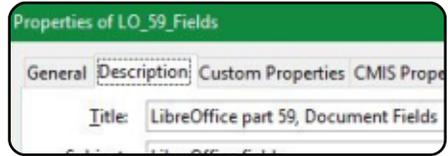
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## HowTo



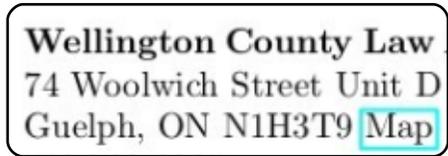
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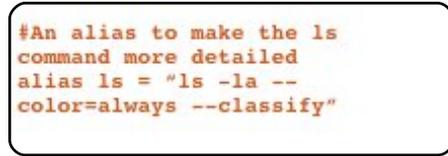
# Full Circle

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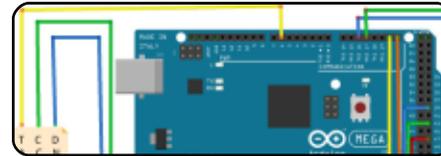
Full Circle #108 is dedicated to the memory of Brian Donovan



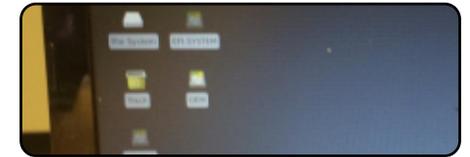
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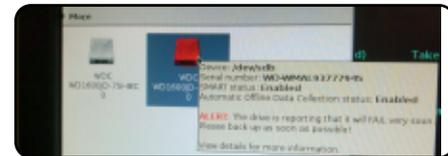
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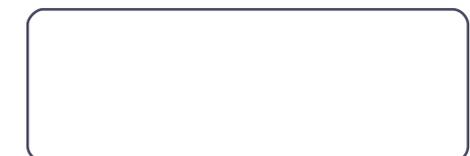
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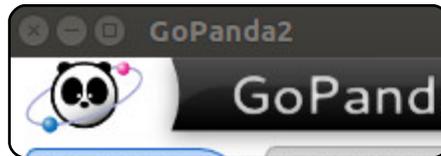
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### WELCOME TO ANOTHER ISSUE OF FULL CIRCLE.

It's another full house this month. We have Python, LibreOffice, VAX-VMS, Inkscape, Arduino, and an extra HowTo on using LaTeX. In reviews, I'm having a look at GoPanda (a Go client for IGS) and Art is reviewing Linux Lite.

Charles (Linux Labs) has written an interesting article on testing and troubleshooting old hard drives. If you want to geek out on hard drive fetch times and such-like then this is definitely the article for you. Meanwhile, I try out the Android 'app' Debian noroot. It lets you install a slimmed down Debian on your Android device. And, as the name suggests, it does not require rooting your device.

Speaking of devices; next issue, I'll have a review of the **BQ Aquaris M10 Ubuntu Edition** tablet. I'll be trying it as a tablet, and with a wireless/Bluetooth keyboard and mouse to see how it performs as a laptop/desktop machine.

And, if you haven't yet given it a listen, try the **Full Circle Weekly News**. As I write, I've just released FCWN#13. Of course, by the time you read this I'll probably be releasing FCWN#16 or thereabouts. It's purposely kept short (under 10 minutes) and usually features around seven or eight news items. No fluff, nor chit-chat, just the best Ubuntu/Linux/FOSS news items of the week.

**UPDATE:** As this issue comes to completion I'm sad to announce the passing of *Brian Donovan* who produced most of our ePUB and special editions. This issue is dedicated to him, and his family. My deepest condolences.

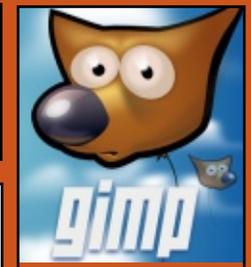
**All the best, and keep in touch!**

Ronnie

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<http://tunein.com/radio/Full-Circle-Weekly-News-p855064/>

## THE FULL CIRCLE WEEKLY NEWS



A short podcast (<10min) with just the news. No chit-chat. No time wasting. Just the latest FOSS/Linux/Ubuntu news.

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<http://fullcirclemagazine.org/feed/podcast>



## "ACCEL64 FOR LINUX" SOFTWARE SUPPORTS 64-BIT DATA ACQUISITION PROCESSORS

**M**icrostar Laboratories, a provider of Data Acquisition Processor (DAP) systems for PC-based high-performance multichannel measurement applications, has released version 1.00 of the Accel64 for Linux software. This package builds Loadable Kernel Module (LKM) software for the GNU/Linux system, for running on 32-bit or 64-bit hardware architectures, to support the control of DAP data acquisition boards on systems using kernel versions in the 4.xx series. Accel64 for Linux is offered under the BSD license as a free download.

The Accel64 for Linux software determines what kind of hardware platform is present and selects the native interface mode as the default. However, advanced users who have implemented kernel support for 32-bit software

architectures under a 64-bit hardware platform can use either the 64-bit or 32-bit interface, depending on application requirements.

Source: <http://www.electronics-eetimes.com/news/accel64-linux-software-supports-64-bit-data-acquisition-processors>

## KDE PLASMA 5.6 RELEASED

**K**DE Plasma is the desktop environment that powers Kubuntu, Chakra Linux and openSUSE (among others). This week sees the release of Plasma 5.6, which brings several tweaks and improvements.

KDE is a modern desktop environment, but unlike several desktop environments, it has avoided the trend of "dumbing down" the interface. Although there's much to be said for a simplified environment, power users value the ability to customize and configure their work

environments. KDE provides plenty of opportunities to tweak and streamline the experience.

Of course, the range of choice available in the desktop world means that users are well cared for, whatever their preferences. KDE isn't the only configurable desktop environment, and some users prefer minimal window managers or text-only interfaces.

Previous versions of Plasma have offered an attractive interface, and the latest release is no exception. This incarnation offers some new polish in the standard themes. Some of these are minor tweaks, such as improving the tooltip animations. Small as they are, they do improve the overall feel.

### Source:

<http://www.linuxjournal.com/content/kde-plasma-56-released>

## TINY WIRELESS-RICH COM RUNS LINUX ON SNAPDRAGON 820

**e**Infochips has opened pre-orders on a tiny, wireless-rich “Eragon 820” COM and development kit that run Linux or Android on a Snapdragon 820 SoC.

The eInfochips Eragon 820 is the second computer-on-module we’ve seen based on Qualcomm’s high-end quad-core 64-bit Snapdragon 820 system-on-chip after Intrinsic’s 82 x 42mm, SODIMM-style Open-Q 820 COM, which similarly comes with a development kit. The Linux- and Android 5.1.1 ready 53 x 25mm module and 110 x 85mm carrier are aimed at “next generation designs in Ultra HD/4K camera and connectivity solutions,” says the company.

Source:  
<http://linuxgizmos.com/tiny-wireless-rich-com-runs-linux-on-snapdragon-820/>

## CANONICAL ANNOUNCES THE AVAILABILITY OF UBUNTU 16.04 LTS BETA FOR IBM LINUXONE

**M**any businesses and enterprises around the world are praising IBM's System z and LinuxONE product line for their unrivaled reliability and security, and Ubuntu Linux is being recognized as one of the most popular free operating systems, the perfect OS for running scale-out workloads in the cloud.

In approximately three weeks from today, on April 21, 2016, Canonical will unveil the final release of their highly anticipated Ubuntu 16.04 LTS operating system, dubbed Xenial Xerus by the company. And it looks like Ubuntu 16.04 LTS will be the perfect choice for IBM’s LinuxONE and Systems z product lines for cloud deployments.

Source:  
<http://news.softpedia.com/news/canonical-announces-the-availability-of-ubuntu-16-04-lts-beta-for-ibm-linuxone-502298.shtml>

## UBUNTU MAKE NOW LETS YOU INSTALL SUPERPOWERS, ECLIPSE JEE, INTELIJ EAP & KOTLIN

**F**or those not in the know, Ubuntu Make is an open-source command-line tool designed from the ground up to help developers and programmers install all sorts of third-party applications that aren't available in the Ubuntu repos or don't have a PPA.

According to Mr. Roche, Ubuntu Make 16.03 is here to add support for installing the Superpowers 2D/3D game maker software, as well as the Eclipse IDE for Java EE developers, IntelliJ IDEA EAP (Early Access Program), and the Kotlin compiler.

Besides all the goodies mentioned above, Ubuntu Make 16.03 adds some extra tests for the Microsoft Visual Studio Code IDE (Integrated Development Environment), improves the Portuguese translation, and fixes bugs for Android-NDK, Unity3D, Visual Studio Code, Clang, and IntelliJ-based IDEs.

Source:  
<http://news.softpedia.com/news/ubuntu-make-now-lets-you-install-superpowers-eclipse-jee-intellij-eap-kotlin-502363.shtml>

## HEAD OF ORACLE LINUX MOVES TO MICROSOFT

**W**hile at the Linux Collaboration Summit, I discovered that Wim Coekaerts, formerly Oracle's Senior VP of Linux and Virtualization Engineering, has left Oracle for Microsoft.

Coekaerts is a very well-known Linux leader. In Oracle he was known as "Mr. Linux." In his Oracle tenure, he brought the company its first Linux products, moved Oracle's programming staff from Windows to Linux desktops and turned Oracle into a Linux distributor with the launch of its Red Hat Enterprise Linux (RHEL) clone, Oracle Linux.

Microsoft confirmed that it had enticed Coekaerts to leave Oracle for Microsoft. Mike Neil, Microsoft's Corporate Vice President of the Enterprise Cloud,

told me, "Wim Coekaerts has joined Microsoft as Corp VP of Open Source in our Enterprise Cloud Group. As we continue to deepen our commitment to open source, Wim will focus on deepening our engagement, contributions and innovation to the open-source community."

Source:

<http://www.zdnet.com/article/head-of-oracle-linux-moves-to-microsoft/>

## LINUX CONTAINER SECURITY IS ON THE EVOLUTIONARY FAST TRACK

It's been a well-known fact for many years that the standard hypervisor approach to virtualizing a server has a basic flaw in its architectural premise -- it requires each virtual machine to run a separate operating system instance. Hypervisors are designed to enable any operating system to run in a VM, allowing for a greater degree of flexibility. This also means that Windows instances can exist alongside Linux instances in the same machine.

Once we reach scale levels found in cloud providers, it becomes apparent that there is no real need to mix OSes on any given server, as there are so many instances, segregating them doesn't impact flexibility. With this realization comes the understanding that the hypervisor method wastes a great deal of memory and I/O cycles, since as many as hundreds of copies of the OS could exist on any given server.

Source:

<http://searchservvirtualization.techtarget.com/tip/Linux-container-security-is-on-the-evolutionary-fast-track>

## LATEST MANJARO LINUX 15.12 UPDATE BRINGS LINUX KERNEL 4.5 AND KDE PLASMA 5.6.1

The Manjaro Linux development team announced the general availability of the fourteenth update pack for the Manjaro Linux 15.12 (Capella) operating system.

With this update, Manjaro Linux 15.12 users will receive the latest

KDE Plasma 5.6.1 desktop environment, Calamares 2.2 graphical installer, Octopi 0.8.1 graphical package manager, Qt 5.6 GUI toolkit, Budgie Desktop 10.2.5 desktop environment, numerous Linux kernels updates, a BlueZ bug fix, and improvements to the Menda GTK3 theme.

As usual, the software repositories of Manjaro Linux 15.12 (Capella) have been synchronized with upstream, which means that it includes all the latest software updates and security patches from the Arch Linux operating system as of March 30, 20:28:59 CEST, 2016.

Source:

<http://news.softpedia.com/news/latest-manjaro-linux-15-12-update-brings-linux-kernel-4-5-and-kde-plasma-5-6-1-502502.shtml>

## LINUX FOUNDER TORVALDS ON THE INTERNET OF THINGS: SECURITY PLAYS SECOND FIDDLE

For the first time, Linus Torvalds has spoken at an embedded

Linux conference, the Linux Foundation's 2016 Embedded Linux Conference & OpenIoT Summit.

It's not that embedded Linux hasn't been important before. Your DVRs and Wi-Fi routers almost certainly run Linux. What has changed is that the Internet of Things (IoT) is transforming embedded Linux from being a topic only programmers could love to one everyone will be using soon.

This development caught Torvalds, Linux's founder, by surprise -- 15 years ago. "I never see the entire chain running Linux. Twenty five years ago I started Linux wanting a workstation. From that to a server wasn't a surprise. There was no single point where I was surprised, but 15 years ago I started seeing these odd, embedded systems. The first one that really caught my eye was a gas pump running Linux."

Source:

<http://www.zdnet.com/article/linux-founder-linus-torvalds-on-the-internet-of-things/>

## LINUX FOUNDATION ANNOUNCES CIVIL INFRASTRUCTURE PLATFORM

On the first day of the Embedded Linux Conference, the Linux Foundation announced a new software project called the Civil Infrastructure Platform (CIP).

CIP is an open source framework that will support the development of software needed to run critical services that create the backbone of any modern society, including electric power, oil and gas, water, health care, communications, and transportation.

With CIP, the foundation is not only addressing issues related to duplication of work and interoperability that come from using proprietary software, but is also putting open source at the center of this massive market. According to a 2014 PWC report, the global capital project and infrastructure market was worth \$4 trillion in 2012 and is expected to climb to nearly \$9 trillion by 2025, with 'the majority of the growth' coming from emerging economies.

Source: <http://www.cio.com/article/3051181/open-source-tools/linux-foundation-announces-civil-infrastructure-platform.html>

## FULL LINUX-ON-PS4 HITS GITHUB

Ever since fail0verflow first told Chaos Computer Club that Sony PS4 machines could be persuaded to run Linux, a fair amount of work has gone into replicating his demonstration.

The problem for other PS4 hackers: to avoid take-downs and other things from Sony, fail0verflow published only a Linux-to-PS4 port, leaving the rest of the world to discover the specific exploit used.

That unleashed a widespread effort, not only to find the best exploit, but to turn it into something stable.

According to a piece at Wololo.net, Githubber kR105 has laid hands on the holy grail.

However, this, Wololo writes, is

not a demonstration video, it's a "fully operational disclosure exploit" (referring to the Webkit exploit widely believed to lie behind fail0ver's original disclosure).

Source: [http://www.theregister.co.uk/2016/04/04/full\\_linuxonps4\\_hits\\_github](http://www.theregister.co.uk/2016/04/04/full_linuxonps4_hits_github)

## HOW ARTIFICIAL INTELLIGENCE WILL TRANSLATE FACEBOOK PHOTOS FOR THE BLIND

While it's easy to dwell on the potential threats of artificial intelligence, much more often the field promises to make humans' lives better. A.I. algorithms are meant to help us connect with our friends, find information, and even transport us through the physical world.

Starting today, Facebook is using artificial intelligence to automatically generate text captions for every photo on Facebook, to provide much-needed accessibility for the blind or visually impaired.

Because the developers wanted

the text generated by the A.I. to be extremely accurate, they trained it intensively on images of just 100 different types of object, so at present it is limited to identifying human, pizza, baseball and the like, but as research progresses, the captions will get increasingly versatile and complex.

The feature is available now on Facebook's iOS app, and will be rolling out to other platforms soon, as well as to languages other than English.

Source: <http://www.popsci.com/how-artificial-intelligence-will-translate-facebook-photos-for-blind>

## OPEN-SOURCE AMDGPU LINUX DRIVER GETS MAJOR UPDATE WITH MORE THAN 50 IMPROVEMENTS

AMDGPU (also known as xf86-video-amdgp) is an open-source and very performant graphics driver dedicated to AMD Radeon GPUs (Graphics Processing Units), integrated into the mainline Linux kernel since version 4.2. Until

now, AMDGPU received a single minor update, xf86-video-amdgpu 1.0.1, but today's release adds multiple changes.

Release highlights of AMDGPU 1.1.0 include support for the upcoming Polaris 10 and 11 family of AMD GPUs, makes the OpenGL and VDDPAU (Video Decode and Presentation API for Unix) interoperability to work with DRI3 enabled, add the "TearFree" option to prevent tearing with reflection and rotation under X.Org Server 1.16 or later.

Source:

<http://news.softpedia.com/news/open-source-amd-gpu-linux-driver-gets-major-update-with-more-than-50-improvements-502700.shtml>

## DDoS ATTACKS WITH BILLGATES LINUX MALWARE INTENSIFY

Over the past six months, security researchers from Akamai's SIRT team have observed a shift in the cyber-criminal underground to using botnets created via the BillGates malware to launch massive 100+ Gbps DDoS

attacks.

The BillGates malware is a relatively old malware family aimed at Linux machines running in server environments. Its primary purpose is to infect servers, link them together in a botnet controlled via a central C&C server, which instructs bots to launch DDoS attacks at their targets.

The malware has been around for some years, and due to its (irony-filled) name is probably one of the most well-known Linux-targeting malware families.

While not as powerful as the XOR botnet, which was capable of launching 150+ Gbps attacks, BillGates attacks can go over 100 Gbps when needed.

Source:

<http://news.softpedia.com/news/ddos-attacks-with-billgates-linux-malware-intensify-502697.shtml>

## ON-BOARD WI-FI, BLUETOOTH SUPPORT IN UBUNTU MATE 16.04 FOR RASPBERRY PI 3

With the new move, users of the Ubuntu MATE for Raspberry Pi OS platform will now receive access to the forthcoming Ubuntu MATE 16.04 LTS (Xenial Xerus) branch. The update is expected to bring users a host of new features including a new Welcome screen built specifically with Raspberry Pi-centric features in mind, as well as many updated components.

The most exciting addition to Ubuntu MATE 16.04 for Raspberry would be the new onboard Wi-Fi and Bluetooth support made possible by the BlueZ 5.37 component.

This new system is based on the Linux Kernel 4.1.19 LTS, and includes Raspberry firmware 1.20160315-1, wiringpi 2.32, nuscratch 20160115, sonic-pi 2.9.0, and omx-player 0.3.7~git20160206~cb91001.

Source:

<http://www.mobipicker.com/board-wi-fi-bluetooth-support-ubuntu-mate-16-04-raspberry-pi-3/>

## RESEARCHERS HELP SHUT

## DOWN SPAM BOTNET THAT ENSLAVED 4,000 LINUX MACHINES

A botnet that enslaved about 4,000 Linux computers and caused them to blast the Internet with spam for more than a year has finally been shut down.

Known as Mumblehard, the botnet was the product of highly skilled developers. It used a custom "packer" to conceal the Perl-based source code that made it run, a backdoor that gave attackers persistent access, and a mail daemon that was able to send large volumes of spam. Command servers that coordinated the compromised machines' operations could also send messages to Spamhaus requesting the delisting of any Mumblehard-based IP addresses that sneaked into the real-time composite blocking list, or CBL, maintained by the anti-spam service.

Source:

<http://arstechnica.com/security/2016/04/researchers-help-shut-down-spam-botnet-that-enslaved-4000-linux-machines/>

## TORVALDS PREPARED TO SPEND NEXT 25 YEARS HELPING LINUX CONQUER THE DESKTOP

The phrase "year of the Linux desktop" has been around for well over a decade, but it has become more of a meme rather than a statement of fact. Without a doubt, Linux has seen much success on mobile devices, including smartphones and tablets, as well as servers, network appliances, and the emerging "internet of things" device category. However, despite Microsoft stumbling with Windows Vista and Windows 8.x, Linux failed to capitalize on these moments of weakness. In a recent interview with CIO, Torvalds cited that the "desktop hasn't really taken over the world like Linux has in many other areas". However, he remained positive about the prospects of Linux on the desktop.

If we look through an alternate lens, Linux may end up seeing more success as we head towards a future where hybrid and converged solutions are increasingly offered. Canonical's

failed ambition to crowdsource an Ubuntu-powered smartphone offering a full desktop PC experience may have been ahead of its time but serves as an indication of things to come.

Source: <http://www.neowin.net/news/torvalds-prepared-to-spend-next-25-years-helping-linux-conquer-the-desktop>

## INTERPRETING, ENFORCING AND CHANGING THE GNU GPL, AS APPLIED TO COMBINING LINUX AND ZFS

The Free Software Foundation published a statement called "Interpreting, enforcing and changing the GNU GPL, as applied to combining Linux and ZFS," by our founder and president, Richard M. Stallman.

This statement explains why the current license of ZFS prevents it from being combined with Linux. To reach that conclusion, our statement covers all the necessary background for understanding license incompatibilities and violations in general.

In January of 2005, we added to our license list an explanation that the Common Development and Distribution License, version 1.0 (CDDL), though a free license, is incompatible with all versions of the GNU General Public License (GNU GPL). While the CDDL is not commonly used, it is the license that Sun Microsystems (and now Oracle) chose for distributing the file system ZFS. ZFS was originally written for Solaris, but recent projects aim to make it work as a module with other operating system kernels, including Linux, which is licensed under the terms of the GNU GPL version 2.

Normally, incompatibility questions like this are raised by people trying to write proprietary modules for copyleft free programs. They want to benefit from the work done by free software developers without providing others the same freedom, and they treat users unethically. That is not the case here, because ZFS is free software. The ideal solution would be for Oracle, who has become a large and tremendously influential distributor of GPL-covered code, to show their leadership by giving explicit permission allowing their

ZFS work to be used under the GPL.

Source: <https://www.fsf.org/licensing/zfs-and-linux>

## CANONICAL EASES UBUNTU APP DEVELOPMENT WITH NEW BUILD DEPENDENCY RULES

Ubuntu release manager Steve Langasek informs the community about some changes happening to build-dependency handling in Ubuntu 16.04 LTS (Xenial Xerus) and upcoming versions of the widely used operating system.

According to Mr. Langasek, the Ubuntu development team admits that the process of separating Ubuntu packages between the "main" and "universe" software repositories caused the Ubuntu development to be dragged down because the "main" repo also covered build-dependencies in addition to dependencies.

Starting with the upcoming



Ubuntu 16.04 LTS (Xenial Xerus) operating system, the Ubuntu development team will offer a more lightweight "main" repository containing only the packages that matter most to end users. Work on this has already started by moving many Ubuntu packages from "main" to "universe."

Source:  
<http://news.softpedia.com/news/canonical-eases-ubuntu-app-development-with-new-build-dependency-rules-502783.shtml>

## CANONICAL IS DELIGHTED TO COLLABORATE WITH NEXENTA ON OPTIMIZING ZFS FOR UBUNTU

Canonical announced the extension of their partnership with Nexenta to provide their customers with a joint software-defined storage solution.

The joint solution formed by Nexenta, the world's most popular OpenSDS (Open Source-driven Software-Defined Storage) developer, in collaboration with Canonical, the company behind

one of the world's most popular Linux kernel-based operating systems, is here to pair the Ubuntu OpenStack platform with the award-winning SDS solution from Nexenta.

During the OpenStack Summit 2015 event, both Canonical and Nexenta have announced an upcoming alliance that will benefit enterprise OpenStack customers from a new software-defined storage solution, by integrating NexentaEdge, the high performance object and block storage service from Nexenta, with Canonical's Juju open source service modeling tool, which Ubuntu users can use to manage, deploy, and scale apps on OpenStack clouds.

Source:  
<http://news.softpedia.com/news/canonical-is-delighted-to-collaborate-with-nexenta-on-optimizing-zfs-for-ubuntu-502806.shtml>

## UBUNTU 16.04 LTS BRINGS DOCKER 1.10 WITH FAN NETWORKING TO EVERY ARCHITECTURE

Canonical's Dustin Kirkland informed the Ubuntu community about the availability of the Docker 1.10 Linux container engine for every supported architecture in Ubuntu 16.04 LTS (Xenial Xerus).

Ubuntu 16.04 LTS launches next week, on April 21, 2016, and Canonical has started revealing many of its upcoming features. Some of those, which may interest LXDE users, are support for the Docker 1.10 Linux container engine on every Ubuntu architecture and the ability to run Docker inside LXDE.

Therefore, after upgrading their systems to Ubuntu 16.04 LTS on April 21 and after that, users will find Ubuntu Docker binaries and images for the ARMHF, ARM64 (AArch64), i686 (32-bit), amd64 (64-bit), PPC64el (PowerPC 64-bit Little Endian), and s390x (IBM System z) hardware architectures.

Dustin Kirkland, who is part of Canonical's Ubuntu Product and Strategy team led by Mark Shuttleworth, has also had the great pleasure of announcing the general availability of Ubuntu Fan

Networking, allowing users to connect all of their Docker containers that are spread across the network.

Source:  
<http://news.softpedia.com/news/ubuntu-16-04-lts-brings-docker-1-10-with-fan-networking-to-every-architecture-503061.shtml>

## UBUNTU-BASED ESCUELAS LINUX 4.4 RELEASED FOR SCHOOLS AS A WINDOWS XP REPLACEMENT

The biggest piece of news concerning the Escuelas Linux 4.4 release is that the OS has been rebased on the recently announced Bodhi Linux 3.2 distribution, which in turn is based on the Ubuntu 14.04 LTS (Trusty Tahr) operating system.

However, it looks like there are so many internal changes that the Escuelas Linux development has team declared the 4.4 release as the most important in the history of the project, and it is highly recommended as a replacement for old Windows XP PCs.

But you can also install Escuelas Linux on computers where Windows 8 or Windows 10 is running much more easily, thanks to the UEFI improvements added in the 4.4 release. Additionally, the installation manual has been completely redesigned.

Numerous of the pre-installed packages have been updated to their latest versions at the moment of the release of Escuelas Linux 4.4, and among the most important ones, we can mention LibreOffice 5.1.2, Mozilla Firefox 45.0, and Geogebra 5.0.226.

Source:  
<http://news.softpedia.com/news/ubuntu-based-escuelas-linux-4-4-released-for-schools-as-a-windows-xp-replacement-503136.shtml>

## UBUNTU SDK IDE AND DEVKIT OFFICIALLY RELEASED FOR UBUNTU 16.04, BUILT ON QT 5.6

**B**uilt on Qt 5.6.0 and based on Qt Creator 3.5.1, the new Ubuntu SDK IDE and Devkit packages come with a great set of new features. Among them, we can

mention the ability to detect ARM64 (AArch64) devices, support for migrating templates to UITK (UI Toolkit) 1.3, as well as the upgrade of the Ubuntu Desktop Kit to the APIs of the OTA-11 update for Ubuntu Touch mobile OS.

Moreover, it is now possible to enable the distribution of the Ubuntu SDK IDE and DevKit packages in the "snap" and "click" formats, and there is also the ability to adjust the HTML5 template to mirror the QML sample application. The UI Toolkit (UITK) component gallery has been improved, and it should work as expected now (available from Tools -> Ubuntu -> Showcase Gallery).

In the coming days, the Ubuntu SDK team will prepare a small point release promising to add a new welcome screen, which provides users with direct access to the UI Toolkit showcase gallery, as well as a fully functional desktop kit targeted at click packaged (ARMHF) pocket desktop IDE (Integrated Development Environment).

Source:  
<http://news.softpedia.com/news/u>

[buntu-sdk-ide-and-devkit-officially-released-for-ubuntu-16-04-built-on-qt-5-6-503188.shtml](http://news.softpedia.com/news/ubuntu-sdk-ide-and-devkit-officially-released-for-ubuntu-16-04-built-on-qt-5-6-503188.shtml)

## THE ODROID XU4 IS A PALM-SIZED PC WITH AN OCTO-CORE PROCESSOR, BUT CAN IT BE YOUR DESKTOP?

**M**ini-PCs like the Raspberry Pi are loved tinkerers and retro gamers — could they be fast enough to take on the everyday things you'd do on a desktop PC? Here's a look at one single board computer, the ODROID XU4, and how it stacks up as a desktop computer, complete with x86 emulation through Exagear Desktop, so it can run programs like Skype and even Microsoft Office.

The ODROID XU4 is a single board computer built by Hardkernel. At the heart of the XU4 is a Samsung Exynos 5422 2GHz, octo-core processor, with 2GB of RAM. The board also packs gigabit Ethernet, two USB 3.0 ports, a single USB 2.0 port, HDMI output, a CPU cooling fan, and general-purpose input/output

(GPIO) ports for your own tinkering and experimenting. The ARM-based computer can run a number of operating systems including Debian, Ubuntu, and Android.

Source:  
<https://www.yahoo.com/tech/affordable-arm-based-computers-evolved-131557017.html>



A few months ago, I was asked to create a JSON database for integration into an ubuntu phone app. Up until then, I've only ever used JSON files, but not created them from real-world data/files. I then set about using Python to list all files that should appear in the app, and creating the relevant JSON data. Since then, I've begun a data management and analysis course - where we work with similar JSON files. So for this month's C&C, I'm going to walk you through how I created a new Python script to create a JSON database of my previous C&C articles. This way, I'll be able to easily check when I wrote an article, and what the topic was.

## THE SCRIPT

I've posted my copy of the script on Pastebin:  
<http://pastebin.com/eLASuY1T>

## BUT... I DON'T HAVE YOUR ARTICLES!

This script isn't intended to be

used as-is. You can easily adjust it to generate lists/databases of files based off filenames. This is what I'll be focusing on in the article.

## WHAT WILL I NEED?

The scripts are tested in Python 3.5. Older versions of 3 should work without issues - if you're using Python2, you'll need to adjust the code according to the error messages you're given.

I've linked my version of the script with Drive - the CLI tool for managing Google Drive. If you're not interested in using it, you can safely ignore/delete the lines 3-6, 26-40, and 107. Otherwise you'll need: Drive (see Further Reading), and to have imported subprocess.call, and contextlib.contextmanager.

Otherwise the rest of the imports are necessary, and standard libraries.

## WHAT DO I NEED TO CHANGE?

These changes are mandatory - and need to be adjusted for your system. Optional changes can be found in the next section.

You'll want to edit line 9 - this is the target file (txtFile) for the intermediary list of all articles.

You'll also need to edit line 13 - and adjust the list to contain the paths you want to include in your database. It is expected to be a list, so even if you're looking at a single path, make sure it's wrapped in square brackets.

If you don't separate out the filename information with " - ", then you'll need to change line 70.

## WHAT CAN I CHANGE?

Line 10 indicates the file path to the JSON file. By default it's fcm-database.json in the current folder.

Line 16 contains a dictionary that stores the date of issue 100 (August, 2015). This is important for the calculations in dateFind.

The reason it's not integrated into the function, is so it can be more easily changed.

Line 17 contains the empty dictionary which is used per entry. It could be integrated into a method, but I left it in to illustrate how it works (and to ensure that there's a -1 element to delete).

## HOW DOES IT WORK?

The first 25 lines are mainly variables that need to be set up for later functions. Most should be self-explanatory, and so I will skip them. Lines 26-40 are explained in the section "Drive Functions".

## FUNCTION: DATEFIND

This function was created to calculate the month and year that corresponds to the article. This is important for me, as some topics can be outdated - so if a topic was covered in 2012, it may be time for a refresh. It does so by knowing one date (#100 was for August, 2015), and the difference between

the currently processed issue, and issue 100. So issue 98 would be a difference of 2, and 107 would be -7. The difference (times 365/12 - roughly one month) is then subtracted from the date of the startPoint (2015-08), and results in a new year and month. The days shift, but since FCM is a monthly release, it's unimportant (and even deleted entirely with the strftime function).

One could also just multiply 32 by the difference - though having that many extra days for some months may cause more problems. It's by no means perfect - as it's cumulative, there may be problems with February issues (for example).

## FUNCTION: CREATEARTICLELIST

This function uses `os.listdir`, and some `regex`/searches to ensure that only my articles are accounted for. Since my files are in the format FCM100 - C&C - Title, I simply make sure the filename starts with `FCM[0-9]+` (one or more numbers after the FCM). I also make sure it doesn't contain `.desktop` (this is important for `drive` - as every file has a `.desktop` companion). Once

the lists have been added into output, the list isn't flat (has multiple sublists). That's what line 54 fixes.

Line 55 removes any `.odt` extension listed (as Google Drive files have no extension, and `.odt` was what I originally used). Lastly, I use the same sort of `replace` function to shorten any `Command & Conquer` into `C&C` - not strictly necessary, but ensures things are uniform.

Line 57 ensures there are no duplicates - as a Python set can contain only unique values. This essentially drops any duplicate filenames.

The list is then printed into a temporary file (which is practical for debugging, or if you just want to see quickly how many files there are). The file is then closed, and the function returns `True`.

## FUNCTION: UPDATE\_DATABASE

This is the crux of the file. It essentially opens the `article-list.txt` file, and reads each line of it. For each non-empty line, it then does

the following steps:

- Split the line on the " - " separator (so you get a list like this: `['FCM100', 'C&C', 'Title']`)
- Removes the FCM part - to get just the issue number.
- Creates an empty key/value pair in the entry dict.
- Fills the information into the entry dict (if the title is empty - as some of my files were poorly named in the past, it just inserts a string "Unknown"). It also removes any newline characters.
- `dateFind` is used to calculate the estimated date for that issue.
- `Database.update` is used to insert (or update) the information for the current issue.

Once the for loop is completed, the file is then closed, the -1 entry of the database (original `entryTemplate`) is deleted, and the database is returned.

## FUNCTION: WRITE\_DATABASE

This is a quick function that uses `json.dumps` to simply write the dict to a JSON file. It also indents it nicely.

## FUNCTION: WRITE\_CSV\_DATABASE

This function uses `csv.writer` to create a valid CSV file. Line 95 dumps the keys of an entry (specifically, entry 100) into a list. The list is then used to create the CSV header, and also to make sure the order of the values are the same as the headers - so it matches up.

## FUNCTION: MAIN

This is just a function where I call the rest of the helper functions (and debugged issues). You can just as easily paste this into the `if __name__ == "__main__"` area, but the recommendation is to use a main function, to allow easier importing.

## DRIVE FUNCTIONS

### FUNCTION: CD

This just recreates the `cd` function from Bash, but also reverts to the original directory - so that the `drive pull` command can be executed in the correct directory, without messing up later writes to JSON or CSV files. Originally found on StackOverflow (see Further Reading).

## FUNCTION: UPDATE\_DRIVE

This calls the `cd` command inside a `with` (to ensure the directory reverts), and calls `drive.pull`.

## WHY DO SOME FUNCTIONS RETURN TRUE?

This is mainly to indicate that the function completed correctly. It's also a useful step if you want to support error handling.

## WHAT DO I DO WITH THE DATABASE?

There are a few things you can do. Using something like OpenRefine, you can clean up your database (such as find out which files are lacking titles). Or else you can export it to a CSV and import it into Google Sheets or similar.

Lastly, you can open it in something like Python's Pandas and analyse it however you'd like.

## CAN I SEARCH?

You can either open the JSON

file and search by hand, open it in some form of data analysis tool, or write a new function to search the nested dictionary structure in Python itself.

I hope this article proves interesting to at least a few readers. Or, barring that, gives you some inspiration for new projects of your own. If you have any comments, suggestions or extensions, feel free to email me at [lswest34+fc@gmail.com](mailto:lswest34+fc@gmail.com).

## FURTHER READING

<https://github.com/odekem/drive>

Drive CLI tool.

<http://stackoverflow.com/questions/431684/how-do-i-cd-in-python/24176022#24176022>

Stack Overflow `cd` command in Linux.



**Lucas** has learned all he knows from repeatedly breaking his system, then having no other option but to discover how to fix it. You can email Lucas at: [lswest34@gmail.com](mailto:lswest34@gmail.com).



## EXTRA! EXTRA! READ ALL ABOUT IT!

Our glorious news reporter (Arnfried) is posting regular news updates to the main Full Circle site.

Click the NEWS link, in the site menu at the top of the page, and you'll see the news headlines.

Alternatively, look on the right side of any page on the site, and you'll see the five latest news posts.

Feel free to discuss the news items. It's maybe something that can spill back from the site into the magazine. **Enjoy!**



Welcome back. This month will be a hodgepodge of information. The main reason is that there are some important advances in tech and you will need time to get some parts for the next few articles.

In the near future, we will be adding the Arduino into our toolbox. I suggest starting off with the UNO or a UNO clone which can be purchased for less than \$30 US (£22). We will also need some sensors to really get going. While these are optional and you can just read the article, building these projects are more than half the fun. So, with that said, here is a list of parts...

- One Wire Digital Temperature Sensor - DS18B20
- DHT11 Basic Temperature/Humidity Sensor
- 16x2 LCD Display
- 4.7K and 10K ¼ Watt resistors (3 or 4 of each)
- Large Breadboard (60+ x 10 with power rails)
- 10K Potentiometer (2 or 3)
- Male to Female jumpers (Pi to Breadboard) about 8"

- Male to Male jumpers (Arduino to Breadboard) about 8"
- Male to Male jumpers (Breadboard to Breadboard) small to medium
- Toy/Hobby motor 6 VDC
- L293D or SN754410 Motor Control Chip
- 4 AA Battery Holder and Batteries.

This will pretty much get you going for the next few months. Of course, you could get more and explore on your own. Most everything on the list is less than \$10 US. If you shop the internet diligently, you can get very good prices on everything really inexpensively. We'll leave this for now, but for next time, you will need the DS18B20 temperature sensor and a 4.7K resistor as well as a breadboard and jumpers if you don't already have one.

Recently, there has been a great stir on the Internet about the Amazon Echo / Alexa device software being ported to run on the Raspberry Pi. The biggest reason for the excitement is that

currently the Echo / Alexa is available only in the US and many people in the UK and other countries have been waiting, not so patiently, for it. This gives them a chance to enjoy the technology.

There are at least two projects currently working on getting Echo on the Pi. The first uses Java. You can find the code and instructions at <https://github.com/amzn/alexavs-raspberry-pi>. I have done this project on both a Pi Version 1B and the new Pi 3B. It worked well on both. Many people have problems getting this to work, but I did it in about 4 hours (with small breaks and interruptions), and it worked the first time. The best advice I can give you is take your time, plan on a long weekend, and follow the instructions to the letter. The only problem that I had was that npm and nvm needed to be installed, and, at that time, these installation instructions were not included. I believe this issue has been corrected.

The second project uses Python and is located at

<https://github.com/lennysh/AlexaPi>. To be honest, I tried this, but could not get it to run. I will tell you that I did not spend nearly as much time on this project as I did on the Java version, due to many doctor visits this past week. I intend to spend more time on it to try to get it working.

If you decide to try either projects, PLEASE use a blank SD card and not one that has something you want to keep. Load the Raspbian or NOOBS OS from scratch. That way, if something goes wrong, you can just reload the OS and start fresh.

There are some things you need to know before you attempt to do this project. All of the information below pertains to the java version, but some can be considered to apply to both projects...

- You need to have a USB microphone. Headphone based microphones have issues. I'm using a Logitech webcam with built in microphone and it works well.
- You will also need a set of speakers or headphones attached



to the audio out jack. Many people have had lots of issues with bluetooth audio devices.

- You must push a button to get the Echo / Alexa to listen for your command. It doesn't currently listen for the "wake" word. (more below).
- Some of the features that the actual Echo / Alexa have don't currently work.
- Things like location, weather, traffic, work correctly only in the USA. In any other country, you will get information for Seattle, Washington, USA
- The only supported language currently is English. According to what I was able to find out from my research is that, once the device is being sold in a given country, they will add support for that country's "official" language. I understand that in the UK, the official language is English, and that in the USA, there is no "official" language and that Spanish is a largely spoken language, but is not supported on the device as yet. There are many flame threads on the web – if you wish to voice your ire at the fact that your language of choice is not supported or that the Echo / Alexa is not available there. All I can suggest is that you should be

patient. The device was a sleeper for a while and just recently took off well. Amazon, I'm sure, is working on support for other countries right now.

- When you start the app, you have to run two processes. The second one will create a GUI box which has a long URL string that you must copy and paste into a web browser. Once that gets to Amazon properly, then you must click the [OK] button on the screen. You will be presented with a screen that has a [Start Listening] button and some multimedia buttons. To "wake" Alexa up, you click the 'start listening' button and, after you hear the "ding", speak your question or command. When finished, you can click that button again to have it stop listening and process your command, or you can let it timeout (about 5 seconds) then it will start processing. Many people are working on headless operation (no monitor) and a physical button connected to a GPIO pin, and some are actually working on the "wake" word option. You can find more information in the issues section.
- You should (read MUST) use a decent quality SD card. My suggestion is to get nothing less than a Class 10 card that is no

smaller than 16 Gig.

- As soon as you boot into the new operating system for the first time, run a 'sudo raspi-config'. Be sure to enlarge the file system to take in the entire card. Be sure to turn SSH on. You will need to reboot here. Next you should then do a 'sudo apt-get update' and then a 'sudo apt-get dist-upgrade' so you are at the latest software revisions.
- There are some steps that require you to enter certain data. Make notes of what you entered, either by a screen shot, into your smartphone, or (HORRORS!!!!!!) on paper. It will make things easier.
- If you have any problems, check the issues section. More than likely someone has already had the same problem and there might be a fix.
- Print the web page with the instructions and work off the print. This way, you can check off those steps you have already completed. Especially helpful if you get interrupted.
- You can find more information, and change certain settings, at alexa.amazon.com. I understand that some people who are not in the USA have problems with this site.

I think that's enough for this

month, but next month, we will turn our RPi into a thermometer. The neat thing about using the DS18B20 sensor is that you have more of them on a single line. This way, you could use one in the living room, one outside, etc. We'll use these sensors later on with the Arduino and be able to use the arduino as a remote device so we don't have to try to run a long cable and change the resistance to a point that it won't work.

Until next month, enjoy checking out the Alexa project, and, if you try it / them, hope you have success.



**Greg Walters** is owner of RainyDay Solutions, LLC, a consulting company in Aurora, Colorado, and has been programming since 1972. He enjoys cooking, hiking, music, and spending time with his family. His website is [www.thedesignedgeek.net](http://www.thedesignedgeek.net).





Often, when creating a document, you find the need to insert information about the document into the document. You can use LibreOffice fields to get information like page number, total pages, title, author, word count, etc. With minimal setup, you can insert the information into your document, and the fields will update as their values change.

## COMMON FIELDS

A group of fields are available directly through the menus, and I call them the common fields, since some developer decided they were the most used. They are located under Insert > Fields. The fields are Page Number, Page Count, Date, Time, Title, Author, and Subject. You will see later where the Title, Author, and Subject fields are set.

The Page Number is related to the current page on the current document, while the Page Count is the total number of pages in the document. These fields are handy because they can change from the time you enter them. You might

insert a page before the current page. Without the fields, you would have to go through every page after the insert and renumber the pages. Using the fields, the page numbers will adjust automatically. The same is true of the page count. As you edit, you might increase or decrease the total number of pages.

The Date and Time fields allow you to insert the current date and time. We saw a good example of using the date and time fields in the last issue (Full Circle 107) in my article on Auto Text, but they are also useful in templates and master documents.

To insert the common fields, just select them from the menu Insert > Fields.

## METADATA

Before we dive further into document fields, we will look at the places where much of the information used by the fields is stored. The two main sources for the information are 'user data' and

the document properties. Each provides reusable information.

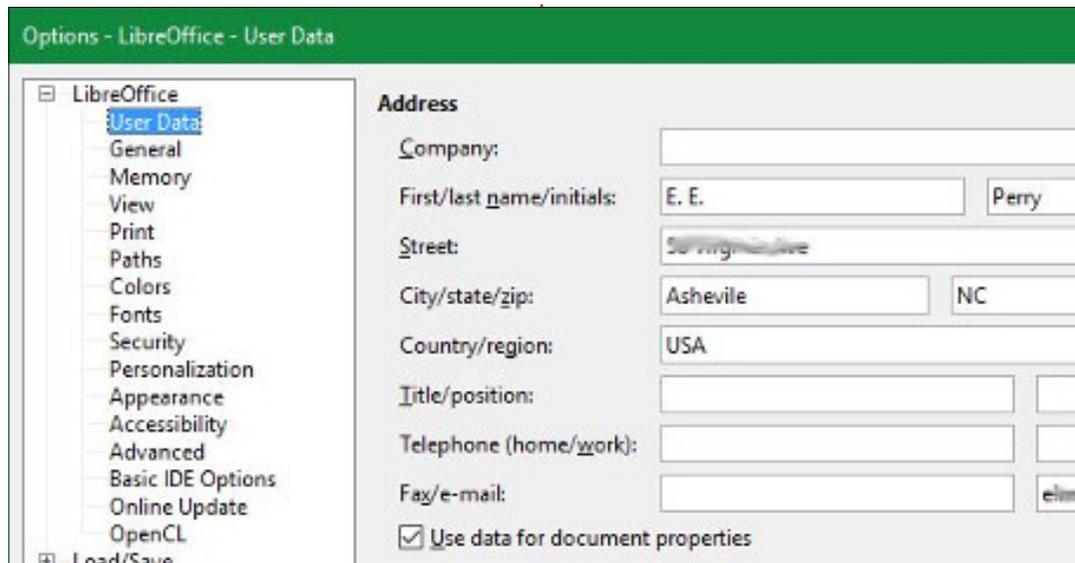
## USER DATA

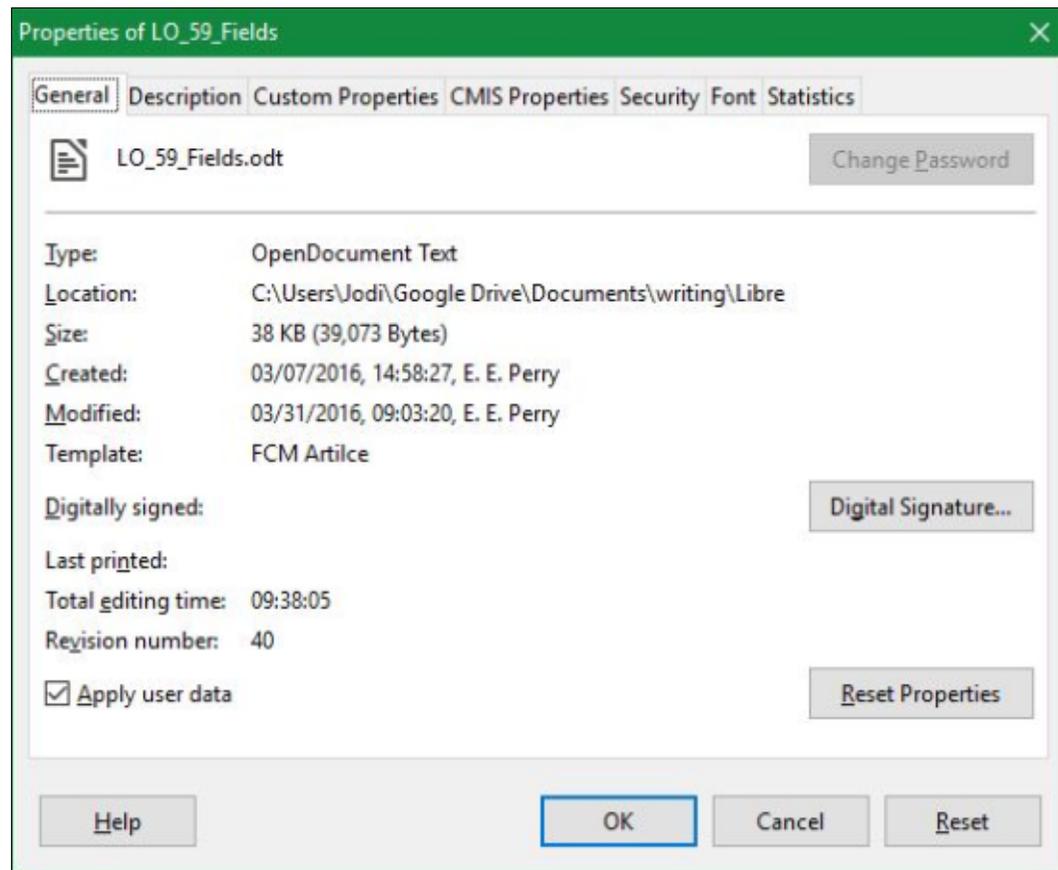
User Data is information about the author (or user) of the document. You can access the User Data at Tools > Options > LibreOffice > User Data. If you have never filled out this information, it is blank. Text boxes are provided for first, last name and initials, as well as full address, title, phones, fax, and email. If you are in a company environment, there is also a box for the company name. Check the box "Use data for

document properties" to have LibreOffice to automatically apply information like the name as author to the document properties of new documents. Any changes you make to the User Data takes effect only after you restart LibreOffice.

## DOCUMENT DATA

There's a wealth of fields related to the document itself. Some of them are listed in the common fields under Insert > Fields. Some of the information, like word count, page numbers, page count, changes as the

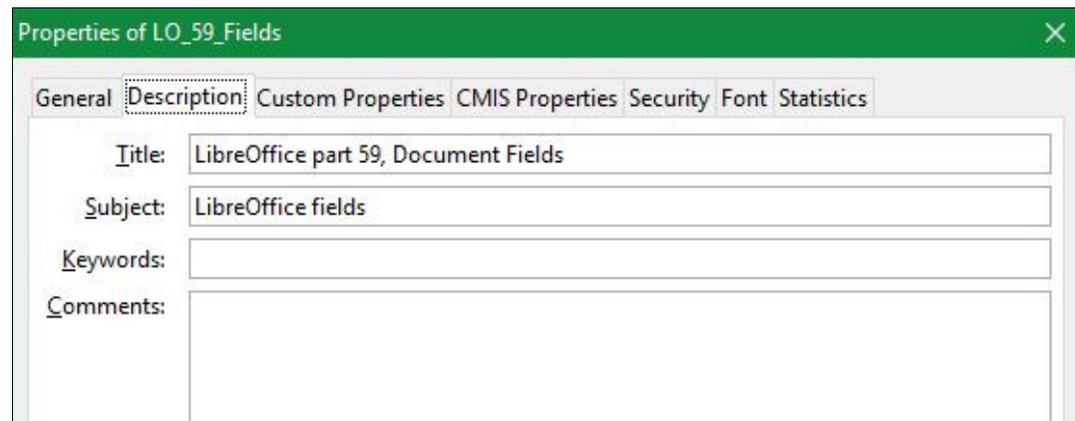




document is edited and revised. Other options like the title and subject are added by the writer or editor of the document. The document fields are located in the properties of the document, File > Properties.

The General tab shows us a wealth of information that we can't change from this dialog. You can see the file name and its location, as well as its size,

creation, and last modified dates. At the bottom of the tab, you find a check box labeled "Apply user data." When checked, it saves the user's full name with the file. The name used is the one in the User Data mentioned above. The revision number is nothing more than a count of the number of times the document has been saved. If, like me, you save often, this number ticks up quickly. The Reset Properties button will reset

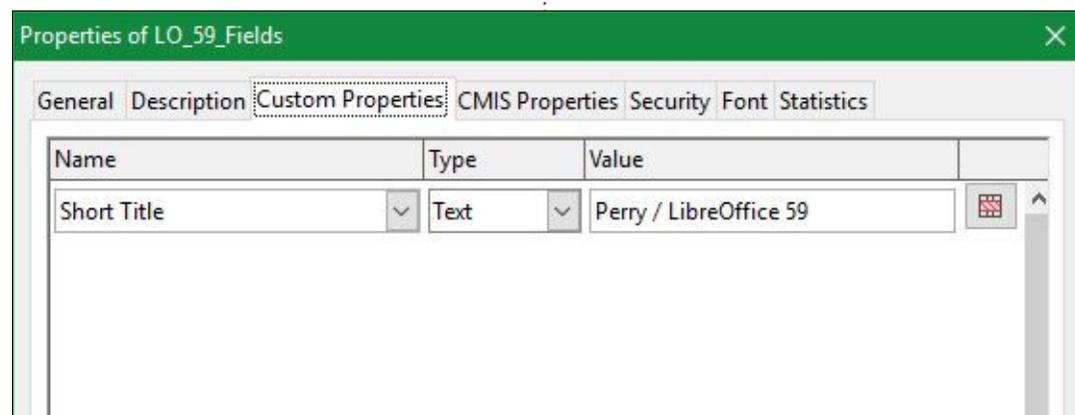


all the dates, modifications, author, and revisions to the current state. The current user becomes the author, the created and last modified fields change to the current date and time, and revisions is set to 1.

The Description tab is where you provide the basic information about the document. If you are not in the habit of using this, I recommend giving it a try. You can use this data to maintain

consistency in your document. You have text boxes for the title, subject, keywords, and comments. These inputs are where the fields look for this information, so this tab is key to using fields like title and subject.

The Custom Properties tab allows you to create your own properties for the document. For example, when creating a document, you need to create a header entry on each page with



your last name and a shortened title. To create this custom field, click on the Add button. You get entry boxes for Name, Type, and Value. You can click on the arrow for the Name and see some predefined suggestions for field names or fill in your own. You won't find any that meet our needs, so you type in "Short Title" for the name. There are six different types, Text, DateTime, Date, Duration, Number, and Yes or No. In this case, you are just adding

a text property, so you select Text. In the Value text box, enter your last name and short title. For example, "Perry/LibreOffice 59." Click OK when you are finished adding custom properties.

## DOCUMENT FIELDS

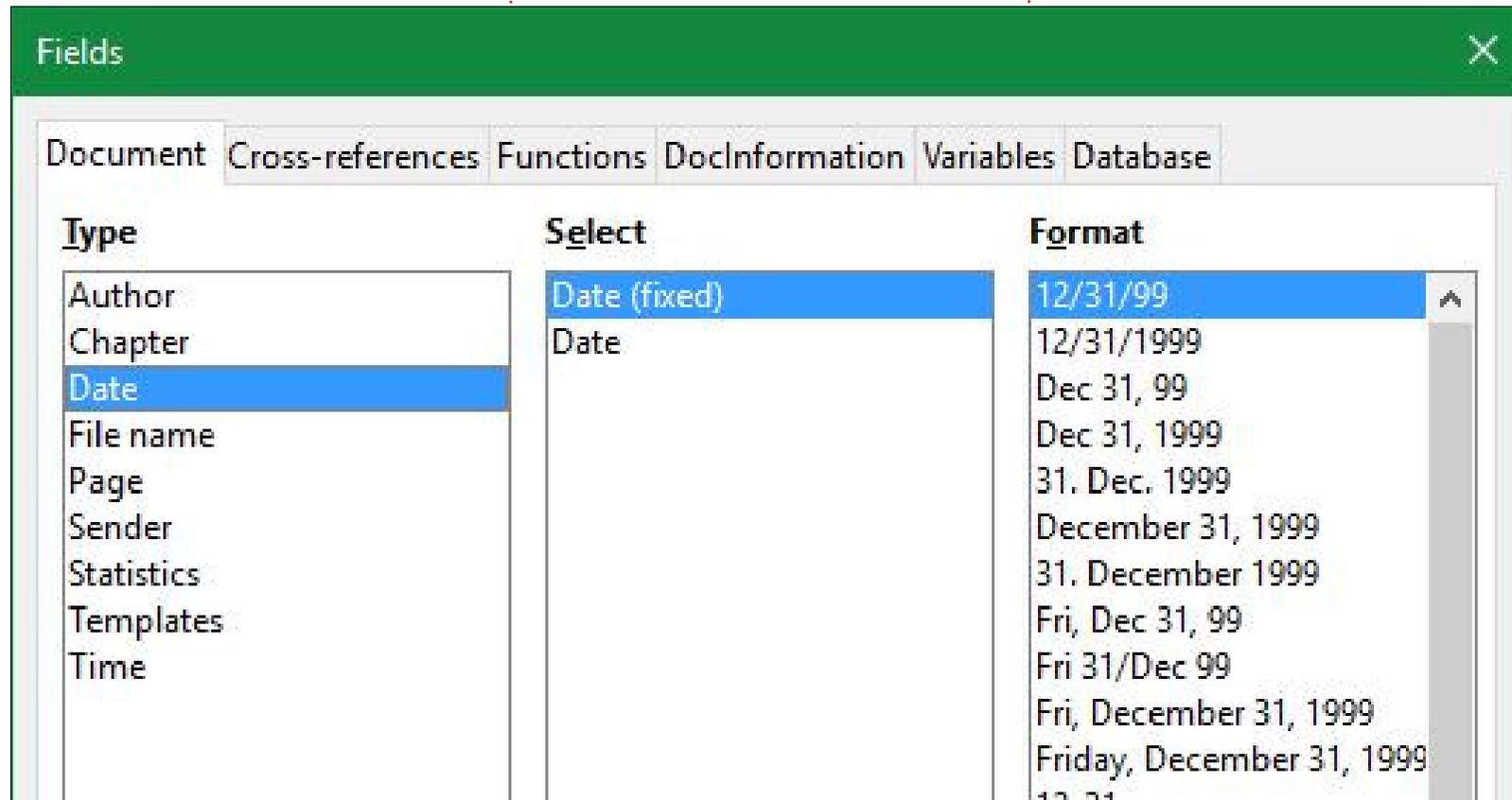
While LibreOffice gives you quick access through the menu to Title, Author, and Subject, dozens of other document fields are available. They are located in the

fields dialog. You access them under Insert > Fields > More Fields.

On the Document tab, you have general information. While some of the common fields are here like Title, Date, and Time, you can do more with them here than you can by just selecting them from the menu. When you select the Author, you discover you can insert the name or just the writer's initials. Selecting Date or Time gives you a wealth of formatting options. You

have options for Chapter, File name, and Page. Sender gives you a list of all the data from the User Data in the LibreOffice options. Statistics allows you to insert tallies on different elements of the document: pages, paragraphs, words, characters, tables, images, and objects. Templates lets you insert information about the template used to create the document.

The DocInformation tab contains even more fields about the current document. You can insert the Comments, as well as the Keywords, from the document's properties. There are fields for when the document was created, last modified, and last printed – with options to insert the author, time, and date of the creation, modification, or printing. Subject and Title show up here as well. The Revision number, as I already mentioned, is just the number of times the document has been saved. The "Total editing time" is just that, the total amount of time you have spent with this document open. You can select several formats for this field depending on how you want it to display. Might come in handy if you need to report how long you spent



creating and editing a document. You will also find your custom created properties here under Custom.

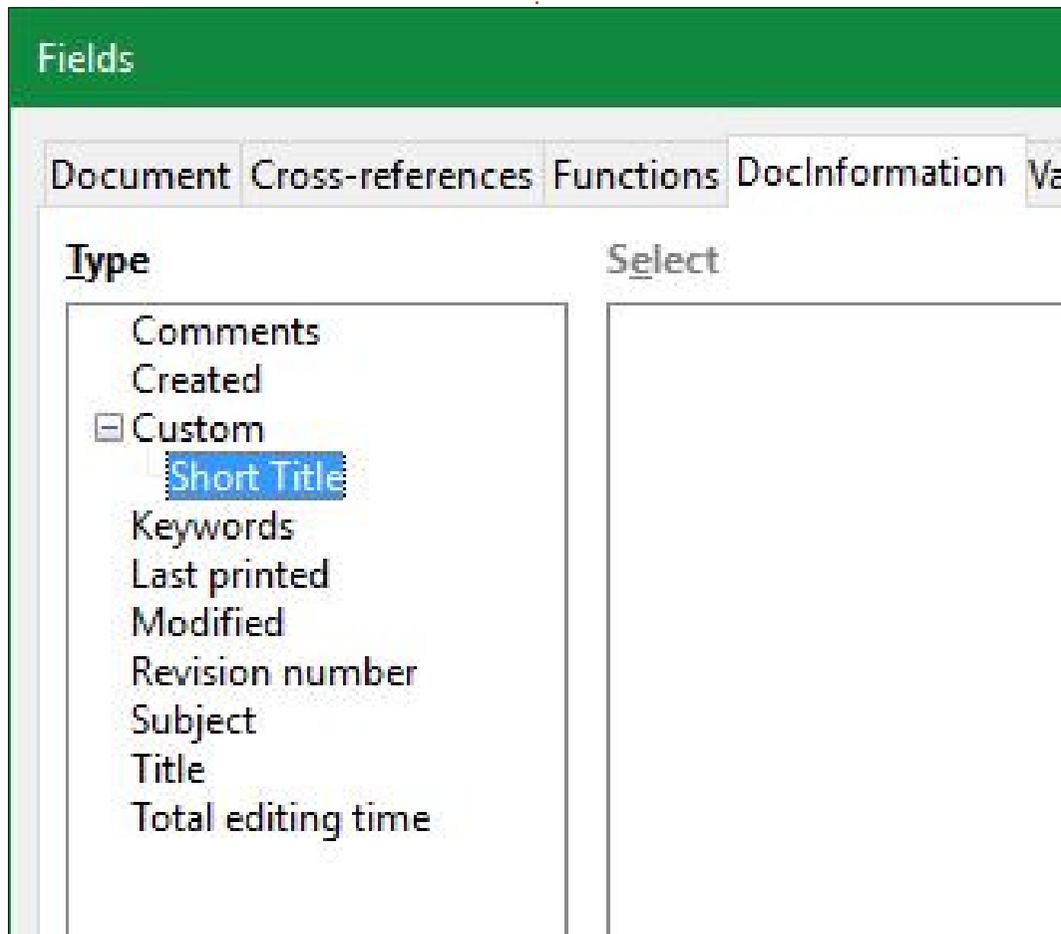
Once you select any of these fields and the related options, you can click on the Insert button to insert them into your document. If any changes occur, the fields will automatically update. If you need to use one of the fields from the

dialog often, you can create an Auto Text – the way you did in part 68 for the Journal Entries (Full Circle 107). Also, the keyboard shortcut for the fields dialog is CTRL-F2.

Finally, I'm sure you have noticed that fields get highlighted in gray. The highlighting does not show when you print the document. You can control

whether or not the shading shows at Tools > Options > LibreOffice > Appearance. You can change the color of the Field Shadings option, or uncheck it to prevent it from showing. To quickly turn the shading on and off, select View > Field Shadings from the menu, or press CTRL-F8.

Using LibreOffice fields, you can insert information about your document directly into the document, and have those fields update as they change. Besides the common fields, you will find statistical fields, fields about the author, fields about the document, and you can even create your own fields. To create quicker access to a field formatted a certain way, you can create an Auto Text entry with a shortcut to access the entry.



**Elmer Perry's** history of working, and programming, computers involves an Apple ][E, adding some Amiga, a generous helping of DOS and Windows, a dash of Unix, and blend well with Linux and Ubuntu. He blogs at <http://eeperry.wordpress.com>





In the early days of computers, a company called Digital Equipment Corporation (DEC) created its 32-bit VAX computer using openVMS as its operating system. Because a VAX/VMS computer is so reliable, there are today - after more than 25 years - still a large number of them in use. But, in the end, even these reliable computers will have to be replaced. As described in part 1, you could migrate from VAX/VMS to Linux, as the way Linux works is largely compatible with VAX/VMS. If you use Pascal as your programming language, you will find that Lazarus/Free Pascal is a good replacement. But there are technical functions used in VMS with no apparent replacement in Linux. In this article, I will, among others, describe how to replace mailboxes, and deal with file version numbers and packed arrays of char (strings).

## MAILBOXES

For IPC (interprocess communication), VMS offers

mailboxes. In Linux, there is a perfect replacement, only the way you create and use them is very different:

- To create a mailbox in VMS, you call \$CREMBX (handle, logical\_name, permanent). The identifier of the opened link to the (new) device named MBAXxxx (xxxx is a number between 0 and 9999) is assigned to "handle". By using the boolean argument "permanent", VMS is told to create a mailbox that will still exist after all processes linked to that mailbox are gone (otherwise, it will be deleted and the content is lost). The given logical name (for an explanation of logicals, see part 3) is used to see if the mailbox already exists. VMS will look for it in the table LNM\$PERMANENT\_MAILBOXES or LNM\$TEMPORARY\_MAILBOXES, depending on the value of 'permanent'. If found, the logical is 'translated', and the mailbox it points to is referenced; if not, a new mailbox is created and the logical - pointing to the newly created mailbox - is created in the

above mentioned table.

In Linux you have to get a key first. In the examples from the documentation, they use the function ftok (file-to-key) for that. You pass the file specification of an existing file, plus a small number between 0 and 255, to this function, and it converts this to a large number, the key. If you hand over the same file and number, you will get the same key. This might suggest that this file will contain the content of the mailbox, but that's not true. The file is only used to get a unique key. The meaning of this file can be compared to the logical used by VMS.

Now you can create or link to a mailbox using this key as the identifier to get a handle. So you can use two methods: Either create a dummy file for every mailbox you want to use and always use 0 as the small number, or use, e.g., the folder at the base of the current version of your project (see part 3) to get separate mailboxes for every version and assign a constant (smaller than 256) to every mailbox

to get the unique key. Whichever method you use, the created mailbox will be permanent. In Linux there are no temporary mailboxes. So be aware of that when starting a new session; you might get old messages left in the mailboxes from a previous run.

- Now you are ready to send and receive messages. To send data in VMS, you would fill a buffer with data and make a call to \$QIO(W) (see part 2) using the handle of the mailbox you want to put the message into, a pointer to the buffer, and the size of the buffer (plus an eventflag, see part 2). To receive data, you would make the same call to \$QIO(W), only the function specifier would be "read" instead of "write". On return, the buffer will be filled with the received message, and the size parameter will be filled with the size of the received message.

To send data in Linux, you would fill a buffer just like in VMS, but there must be an extra integer at the beginning of the buffer. This integer value must be filled with a

number not being zero! Then you would call `sndmsg()` with the handle, a pointer to the buffer, and the size of the buffer – not counting the extra integer! To receive a message, you would call `rcvmsg()` with the same parameters plus a message identifier. This message identifier is used to filter the messages sent to you, so you get only the messages with the matching number in the extra integer value. If the message identifier is zero, there will be no filtering. For example: suppose there are five messages sent to you: message A with that extra integer set to 1, B with 2, C with 1 again, D with 3, and E with 2 again. If you start `rcvmsg (..., 2)`, you will get message B first and then message E. Then `rcvmsg (..., 3)` will retrieve message D, and, eventually, `rcvmsg (..., 0)` will get the rest: A and C. If `rcvmsg (..., 4)` is issued, no messages will be returned. The message size, again not counting the extra integer, is returned as the result of the function.

Another difference is that, in VMS, you must specify the total size of the mailbox when you create it. In Linux the size is fixed. This might be a problem when

using large, or a huge number of, messages.

## THE IMPLEMENTATION

In the beginning, I simply replaced every reference to mailboxes with the corresponding Linux calls. I used the specified logical as the name of a dummy file in a dedicated folder to get the unique key. For a small project, this would be acceptable, but this is not the intention of this migration tool. So I created the functions `_CREMBX` and `_QIO(W)` to behave the same as in VMS. (A "\$" sign is not allowed in names when using Free Pascal, so my conversion program substitutes the "\$" by an underscore. The same problem arose when using the terminal, I will discuss this in part 5 about DCL).

- `_CREMBX` uses a dedicated logical to point to a file containing info about assigned numbers. This file is also used for creating the unique key. `_CREMBX` assigns a free number in the range 0-255 if the mailbox does not already exist. The given logical in table `LNLM_PERMANENT_MAILBOXES` is used or created just like VMS would. Then the mailbox is linked

to or created using the key, and the handle is returned.

- The `_QIO(W)` will send or receive depending on the function specifier. It uses a new thread and the specified eventflag to create the asynchronous behavior as in VMS (see part 2).

This way, the only thing you would have to do for the migration is define the above mentioned dedicated logical and add the extra integer in front of the declaration of the buffer. Removing the logical used for a mailbox would cause the creation of a new mailbox upon opening, while the still connected processes would use the old one, exactly like in VMS.

## FILE VERSION NUMBERS

This part is about file systems: In the beginning, there was DOS (and CP/M) which used FAT as its file system. File names were 8 characters long with a file type of 3 characters. Later, NTFS (New Technology File System) offered long names and types, and more attributes for better security. They were both using assigned drive letters to identify the device (disk). In Linux, most of the time "Ext" is used as its default file system,

currently Ext4. As mentioned in part 3, Linux does not use assigned drive letters, but mounting points. From a functional perspective, that's the only difference to FAT/NTFS.

When DEC created ODS-2 (On Disk Structure version 2), it took a different approach. They named all devices (not just disks) with two characters to specify the type, one character starting with A, then B and so on to identify the adapter, plus a serial number. The base folder (directory) on a disk is named [000000] and names and types of files are long like in NTFS and EXT. And they decided that there should be more versions of the same file in the same directory (folder). An example:

Suppose I create a text file with an editor and save the file. Besides the name and type that I specify, it will also get a version number, starting with "1". If I would use the editor to change this file and save it again, the existing file will not be overwritten like in Linux and Windows. The editor creates a new file, with the same name and type, but with a higher version number, "2" in this case. The same happens with log files, executables

(programs), and so on. The advantage is that you can see the history of a file and even restore a previous version. For example, if a new version of a program does not work as it should, you can just kill the process and start the previous version, it is still there (unless you deleted it). But of course there is also a down-side: For a thousand versions of a file, you need a thousand times the disk-space and the version is limited to 32767. If you go beyond that, the creating program will crash!

If your project is depending on this behavior (the file version, not the crashing), you will have to change your programs. Either by adding a “version number” to the name or type, or by changing your project in such a way it will no longer depend on the file versions. Whichever solution is best depends on the project and there's no single solution that fits all possibilities.

## PACKED ARRAY OF CHARS

In Free Pascal, two worlds collide. On the one hand are the C-type strings, and on the other the Pascal-type strings. C-type strings

are either a pointer to a data-structure which can dynamically change in size, or a data-structure of fixed size, starting with a byte containing the length of the string. Both contain a zero terminated number of characters. Pascal-type strings are essentially just another fixed size array, without the terminating zero. In VAX-Pascal, there is a variant that uses a length word in front of the array (VARYING OF CHAR), but Free Pascal does not recognize the keyword VARYING. You will have to use fixed size C-type strings to replace a VARYING, but the behavior is not exactly the same. For this type of strings, the migration will need some work.

Big problems arise when you compare two strings with at least one of them being a packed array of chars. In VAX-Pascal, the remainder of a packed array of chars will be filled with spaces, in Free Pascal the remainder is unknown! As a result, comparing even fails if the strings you use are equal. Suppose you have a packed array of chars with size 10 ([1..10]) named STR. Now fill it with a text of size 4 like “STR := 'test';” and compare it with the same text: “IF STR = 'test' THEN .... ELSE .....”.

Both should be equal, but it will execute the ELSE part! This is a problem for a constant type of string, but it will also fail if you use a C-type string to fill a packed array of chars.

This is clearly a bug, but I didn't have the time to fill out a bug-report.

As a workaround, you could add a string of spaces with the same length as the size of the packed array of char, because Free Pascal will not complain about the string being too long. It just truncates it. So “STR := 'test' + ' ' ;” would fill the remainder with spaces as in VAX-Pascal, but this must be done with every assignment concerning a packed array of chars! You also have to do something similar when comparing. Lots of work to get around this behavior, so it might be easier - if possible - to switch to another type of string. But then there will be problems with code depending on the size of the packed array of chars, being not the size of its contents.

There will be also problems when assigning a C-type string from a packed array of chars. If the remainder of the packed array of

chars are zero's (usually the case) the contents of the string will list as “test” in the above example in the debugger, but the length of the string will be 10, so a comparison to “test” will fail. In the debugger, it looks like they are the same, but still the “if” statement will execute the “else” part. It took me days to figure that out. It shows an inconsistency in the way Free Pascal handles strings, as the terminating zero is ignored. Worth a bug report!

**Next month:** In the next article, I will go more in-depth about DCL (Digital Command Language) – the interface used by Digital when interacting with the terminal, and AST's (Asynchronous System Trap), also named ‘call back routines’, and, related to that, catching the signals as a result of pressing ^C, ^Y, ^T or ^Z.



After keeping VAX/VMS systems running for 30 years, **Theo** needed a new challenge and started from scratch with Linux to re-do every mistake he made all over again. You can email Theo at: [info@theovanoosten.nl](mailto:info@theovanoosten.nl)



# HOW-TO

Written by John Eddie Kerr

# LaTeX: Thinking Outside The Cell

Last year, I created a member directory for the Ontario Courthouse Library Association, of which I am a member. Since all of the information is in a spreadsheet, I thought that it would not take too long to make a nifty little membership directory in LaTeX that was formatted to look good on a computer screen, tablet, or a smartphone; in short – convergence ready.

You may have data that is in a database or spreadsheet that you would like to extract and display in a different format. LaTeX can display fantastic looking tables if you want to do that. The more I worked on this and made Google searches on LaTeX and CSV, I found out just how versatile LaTeX can be with a CSV file. But for now, I want to create a directory from data in a spreadsheet.

Since my data was in a LibreOffice Calc file, I clicked on File > Save as > All Formats BOX > Text CSV (.csv). With the aid of search and replace in my text editor, I was able to eliminate all of

```
\textbf{Wellington County Law Association}\\
74 Woolwich Street Unit D\\
Guelph, ON N1H3T9\\
\href{https://www.openstreetmap.org/#map=17/43.54695/-80.24834}{Map} \\
519-763-6365\\
1-866-893-5220\\
519-763-6847 (fax)
\textit{{\tiny Call before you send a fax}}\\
\textbf{John Eddie Kerr}\\ Mon-Thu. 9:30-1:30\\
\href{mailto:lawlibwell@gmail.com}{lawlibwell@gmail.com} .\\
\index{Wellington LA}
\index{John Eddie Kerr}

\newpage
```

	A	B	C	D	E	F
1		Wellington Law Association		74 Woolwich St.		Guelph, ON N1H 3T9
2						

the commas by replacing them with a space. Then, after creating a preamble in my LaTeX editor, I copied and pasted my data into a LaTeX file and proceeded to insert the LaTeX code, line by line, until my data looked like that shown above.

I did not think that it would take a long time to do this, but, as it turned out, this ended up being a lot of typing, heck, it had way too many line returns. Even though the

finished product was a success there had to be a faster way to do this. I was working to make the code easier to read for humans, which is good, but what if LaTeX and my computer did not need it to look that way?

Let's go back to the spreadsheet, and, for the purpose of this article, we will just look at the first three columns, and insert an empty column to the left of every column so it looks like the image above.

Before we go any further, do a search and replace on the entire file replacing any commas with a bar “|” and a space before and after it. This is to give a new separation character between city and province so that “Guelph, ON” becomes “Guelph | ON”.

Into the cells, type in the code needed for each line of text (shown below).

	A	B	C	D	E	F	G
1	\textbf{	Wellington Law Association	\\	74 Woolwich St.	\\	Guelph   ON N1H 3T9	\\
2							

# HOWTO - LATEX

Cell A has the code to begin the boldface format command “\textbf{”, cell C has the bracket to close the format code command started in cell A “}” with the line break code added as “\\”. Cells E and G have only line break code “\\”, but they could have more – for now I want to keep it simple.

Save this as a .CSV file and open with a text editor and it should look like this:

```
\textbf{,Wellington Law  
Association,}\\,74 Woolwich  
St.,\\,Guelph | ON N1H 3T9,\\
```

Do the following search and replace steps:

- replace each comma with a space
- replace the “{” with “{” so that the “{ Wellington looks like “{Wellington
- replace the “|” with a comma. (It works in gEdit, but it did not in Geany for some reason.)

We end up with this:

```
\textbf{Wellington Law  
Association }\\ 74 Woolwich  
St. \\ Guelph, ON N1H 3T9 \\
```

The advantage of entering LaTeX code this way is that you can copy and paste or paint the

needed code for your file very quickly, for each column, instead of line by line like I did the first time around. You can start off by experimenting with a file made up of one row of data until you are happy with it, and then copy the code into the full data file.

After the data is manipulated to look pretty, press Ctrl A to select all, Ctrl C to copy, and then paste it into a file that holds your preamble and then save the file as a .tex file. Then process it through your favourite LaTeX editor. To see what we can end up with, here is a page from the directory I made:



Wellington County Law Association  
74 Woolwich Street Unit D  
Guelph, ON N1H3T9 [Map](#)  
519-763-6365  
1-866-893-5220  
519-763-6847 (fax) *Call before you send a fax*  
**John Eddie Kerr**  
Mon-Thur. 9:30-1:30  
[lawlibwell@gmail.com](mailto:lawlibwell@gmail.com)

47

```
\documentclass[10pt,letterpaper]{report}  
\usepackage[paperwidth=3.5in, paperheight=4.5in]{geometry}  
\usepackage[latin1]{inputenc}  
\usepackage{graphicx}  
\setlength{\parindent}{0pt}  
\usepackage{hyperref}  
\usepackage{makeidx}  
\makeindex  
  
\begin{document}  
\begin{titlepage}  
\textbf{OCLA Directory}\\  
as of \today  
\end{titlepage}  
  
\newpage  
  
DATA GOES HERE (as above)  
  
\end{document}
```

There are many different methods to take tabular data and process it in a table format. I want to emphasise that this process is a method to take spreadsheet data and display it in a non-tabular way.

If the data that you have is in another program such as an e-mail client's directory, you can probably export the data as a CSV file and then import it into a spreadsheet.

Let's highlight some of the code I used to make this directory.

Here are some comments on the nifty code in the preamble:

`\usepackage[paperwidth=3.5in, paperheight=4.5in]{geometry}` sets a page size that is ideal for hand-held devices

`\setlength{\parindent}{0pt}` stops automatic paragraph indents

`\usepackage{hyperref}` allows the use of hyperlinks for e-mail and web pages

`\usepackage{makeidx}`

`\makeindex` This lets us index data on an index page with the `\index{}` command

And in the data itself:

```
\newpage
```

I added this to the end of every row, resulting in one record per page.

This process turns LaTeX into a very fast and powerful tool for displaying spreadsheet data in a non-tabular way. It was one of those "A HA!!" moments when I realised that we do not always need to create a LaTeX source document that caters to the human eye, even though we create a beautiful looking document with code that looks like a dog's breakfast.

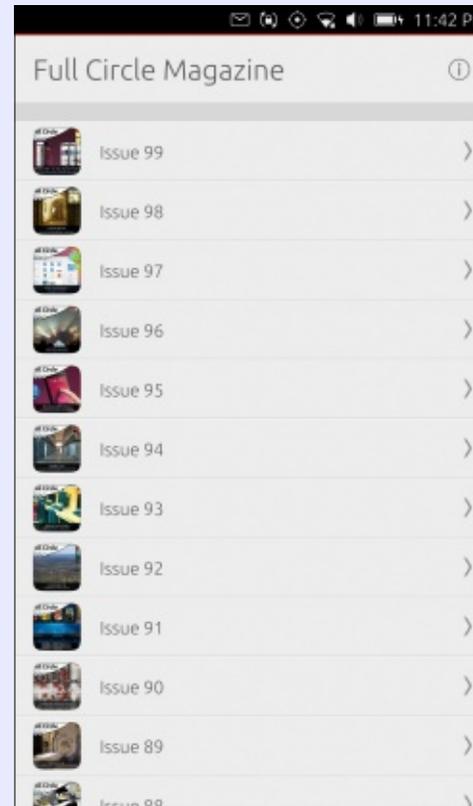
However, after we produce a document this way, it may be advisable to keep the spreadsheet file that contains the LaTeX code as this will make it easier to edit the information at a later date. The code that we create this way does not look pretty in the LaTeX editor, but the end results look great.

As for writing tables in LaTeX from spreadsheet data, LaTeX has all kinds of tricks in the lion's den and I will look into that next time.

Until next time, enjoy exploring LaTeX.

I've also created a YouTube video explaining this procedure: <https://www.youtube.com/watch?v=IBb5wdwACKg>

## THE OFFICIAL FULL CIRCLE APP FOR UBUNTU TOUCH

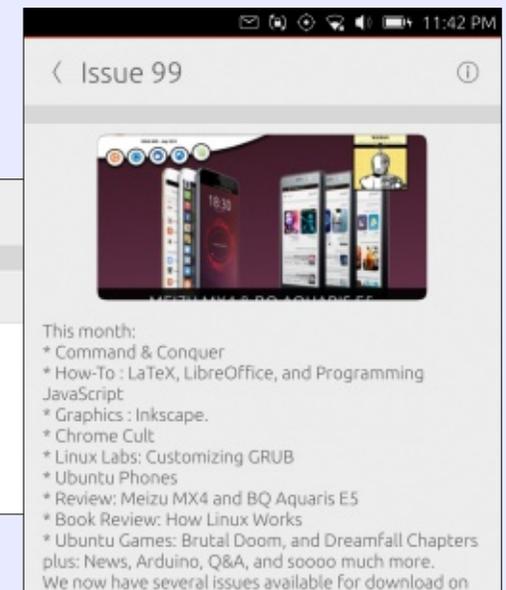
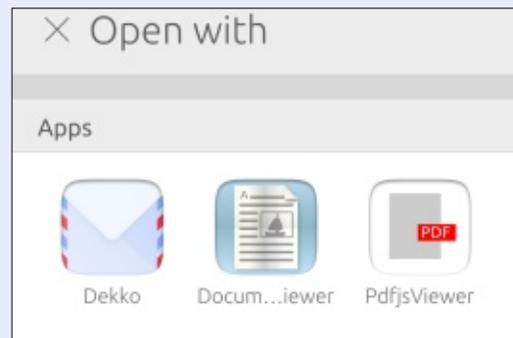


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<https://uappexplorer.com/app/fullcircle.bhdouglass>



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# HOW-TO

Written by Mark Crutch

# Inkscape - Part 48

If there's one word that can stir up controversy amongst experienced Inkscape users, it's "filters". Attitudes range from "they're bitmaps, and therefore bad", through "it's easier to add filters to your image in GIMP", right up to "filters are great". I'll go on record as putting myself in the last group, but I would definitely extend the statement to add "(if a little slow and clunky)" to the end of it. So what are filters, in Inkscape terms? And why are they so divisive?

In short, filters are part of the core SVG specification that offer a way to perform bitmap operations on your vector objects. Filters consist of a number of "filter primitives" that can be linked together to create a "filter chain" that produces the desired effect. They apply at the point that your elements are being rendered to a bitmap for display, export or printing, and operate at the same resolution as the output device. So, although they are pixel-based, they can be just as crisp and scalable as the unfiltered vectors

in your drawing. It does mean, however, that they are purely a display feature and have no effect on the underlying geometry of your image – so they're of no use to anyone trying to produce drawings for use on a vector output device such as a vinyl cutter or laser engraver.

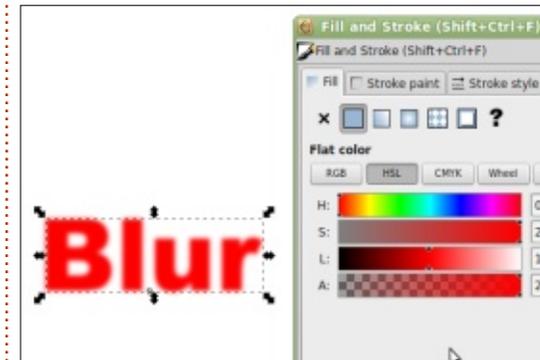
Filters are also "live". You can tweak and modify the parameters used in your filter throughout the life cycle of your drawing, whereas filters in a bitmap editor like The GIMP are usually fixed and permanent once they've been applied. This is both a blessing and a curse: SVG filters are incredibly flexible because you can change them as you go along; conversely they eat up a lot of processing power as they need to be recalculated not only when you change their parameters, but potentially each time you pan or zoom. The performance penalty can be severe, especially when zooming far into your drawing, leading some users to avoid filters entirely, although the worst problems can usually be avoided

by using a few simple techniques that I'll describe in a future article.

Finally, filters are rather unintuitive – and Inkscape's UI for editing them only makes this problem worse. The developers have included a great set of predefined filters, which was improved further in 0.91, but it's still useful to understand how to use the editor in order to tweak and extend them. So let's start by taking a look at the editor courtesy of the most common filter primitive: Gaussian Blur.

Gaussian Blur (or just "Blur" from now on) is the most commonly used primitive – principally because it's exposed directly in the Fill and Stroke dialog. Many people happily use the Blur slider in that dialog without ever going anywhere near the full Filter Editor, but it also provides a convenient mechanism for creating a "stub" filter chain that you can develop further. Of course you'll need an object (or group) to apply your filter to, so begin by creating a text object,

give it a nice bright fill color, then add a little blur using the slider in the Fill and Stroke dialog.



Now open the Filter Editor using the Filters > Filter Editor menu entry. If it opens in a pane within the main Inkscape window, I suggest dragging it out as a separate floating dialog. This will let you resize it to give you more space to work with – filter chains can quickly become long and some of the primitives have a lot of parameters to tweak.



The left of the editor is given over to a list of the filters in your document. Assuming you started with a blank drawing, you should see only a single entry here, given an automatically generated name along the lines of “filter1234”. That entry will have a mark in the checkbox, indicating that it’s the filter that’s in effect on the currently selected object. If you want to apply the same filter to another shape, just select that object in the canvas window, then check this box in the editor; you can use a single filter chain on multiple elements – which is useful when you want multiple text objects to share a single drop shadow, for example. Finally, in this section you can create a new filter from scratch using the “New” button at the bottom, or right-click on a filter entry to duplicate or remove it completely. You can also rename it from that context menu, but it’s usually easier to just double-click on the filter’s name and enter a new one. Giving slightly descriptive names to your filters makes it easier to keep track of the important ones as your drawing develops. For now, why not rename “filter1234” to “Blur”?

With your filter selected, you

should see a single entry in the list on the right of the dialog: Gaussian Blur. This is your filter primitive, and it’s this list that’s used to stack and combine primitives into chains. For now, click on the Gaussian Blur entry to select it, and then look to the bottom of the dialog where you’ll find its parameters. Gaussian Blur takes two parameters, but by default Inkscape locks them to the same value via the “Link” button to the right. By toggling that to un-link the parameters, you can provide different values for horizontal and vertical blur, providing the opportunity for “motion blur” effects that make it look like your object has moved in one direction. Note that the scales are labelled in units of “Standard Deviation”, whereas the slider in the Fill and Stroke dialog shows a percentage value. The former is used in the SVG spec, whereas the latter is probably more understandable for users who just want to add a little blur without going near the filter editor. Suffice to say that the two fields are just different representations of the same underlying value, so the fact that they usually hold slightly different numbers isn’t really a problem.

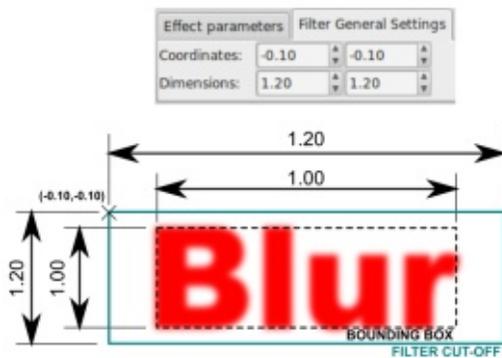
If you’re still on 0.48, and drag the sliders to the right, you may notice that the blur on the text starts to get cut off at around the 20% mark, and by the time you reach 50% it’s become a ghostly rectangle. You’ve just encountered one of the most common problems reported by users who take their first steps into filters, but don’t worry, it’s an easy one to fix. In principle, some filters – including Gaussian Blur – could continue off into infinity: mathematically speaking, a blur represents an infinite series of calculations, although the results quickly drop off to the point that the calculated values have no visible effect on the drawing. Obviously performing an infinite series of calculations isn’t possible for even a high-end machine, so the SVG spec allows for a window or cutoff to be defined, beyond which the rendering engine shouldn’t bother performing any more calculations. By default this cutoff is set to allow a 10% margin all around your filtered object, which is fine for a small blur, but clearly not enough as the blur value increases.

The cutoff is adjusted via the “Filter General Settings” tab, and, as the name suggests, it affects

the whole filter, not just the currently selected primitive. Within this tab you’ll find two sets of parameters, labelled “Coordinates” and “Dimensions”. The former sets the position of the top left of the filter window, relative to the width of the object. The default values of -0.10 mean that the cut-off rectangle starts 10% up and to the left of the object’s bounding box. The latter pair of values sets the width and height of the filter window, so the default value of 1.20 results in a cut-off that’s 20% larger than the bounding box. Because the Coordinates fields have offset the window by 10% to the top left, the result is a cut-off that symmetrically surrounds the original object with a 10% margin. To use a large Gaussian Blur value, you might want to increase this window to give you a 50% margin all round: that would entail setting the Coordinates to -0.50 and the Dimensions to 2.0. Most of the time you don’t need to adjust these values, but when you start to see your filtered objects being unexpectedly cut off at the edges, the Filter General Settings are almost always the cause.

In the copy of 0.91 on my machine, this problem seems to

have been addressed by automatically modifying the settings to sufficiently encompass the blur. However I can find no mention of this change in the 0.91 release notes, so it's not clear if this only applies to blurs or simple filter chains, or if the algorithm being used is robust enough to handle complex chains as well. Therefore I recommend familiarising yourself with this tab, even on 0.91 – though with luck you'll never have to use it.



Before moving on, it's worth having a quick recap to make sure you're clear about the dialog so far. On the left is the list of filter chains, each with a checkbox to apply it to the currently selected object. From here you can create new chains (though just adding some blur to your object has a similar effect), and manage existing ones. On the right is the

list of filter primitives that constitute your filter chain – though so far we've only dealt with a rather short chain consisting of a single primitive. At the bottom of the dialog is a tab for the currently selected primitive's parameters, and another for setting the filter cut-off window position and size.

Now, let's move back to the list of primitives that we so quickly glossed over previously. Looking more closely at the Gaussian Blur entry you'll notice that the "Connections" section contains a barely visible triangle, from which is emanating a line that connects to a column on the right with a "Source Graphic" label running vertically down it. The triangle represents an input into the filter primitive, and the column is one of several possible sources for that input. Unfortunately, of the six inputs shown in the UI, two of them require special treatment (and will be covered in a future article), and another two don't work at all! Of the two that do work, the "Source Graphic" column is exactly what it sounds like – it's used to 'inject' a bitmap representation of the selected object into the filter chain. The "Source Alpha" column is used to

inject a bitmap representation of the object's alpha channel with solid black pixels representing opaque parts of the object, transparent black pixels for the transparent parts, and translucent black pixels for those parts that are somewhere in-between. In other words, it injects a blackened silhouette of the object.

As well as having the triangular input nodes, each primitive also has a single output. There's no obvious output node, instead it's the bottom edge of the primitive that acts as the output in the Inkscape UI. It's possible to connect the bottom of one primitive to the input triangles of other primitives, thus building a chain, but the output from the last primitive is always used as the output from the chain as a whole.

Let's build on our Gaussian Blur to create a simple drop shadow filter. During this process, you'll learn how to link primitives together to form a chain, and hopefully begin to understand a little more of the power of filters. Start by renaming your existing filter to "Drop Shadow", re-link the parameters if you need to, and set the blur to a fairly small number – enough that you can clearly see it

applied to your object, but not so much that the it just turns into a fuzzy cloud. A value of 2-3 should do the trick.

Our shadow is going to be dark, made of translucent black pixels, so the first thing to do is to generate a silhouetted version of our object to pass as an input to the Gaussian Blur primitive. But, of course, we already know of a source of silhouettes – the Source Alpha column. In a slightly back-to-front operation, we can link this source to the Blur's input by clicking and holding on the triangle, then dragging the mouse to the Source Alpha column before releasing (yes, you drag from input to source, rather than the other way around). If all went smoothly, the line that previously ran to the Source Graphic column has been replaced by one to the Source Alpha instead. Take a look at your text object and you should find it's turned into a blurry black version of the original.

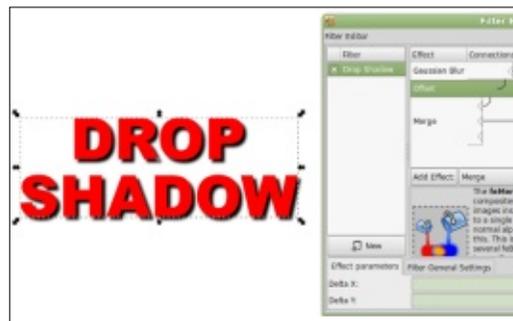


If we were to display the original over the top of the blurred alpha version, you would just see a halo of darkness around your text. To make it work as a drop shadow we need to offset our blurred image from its original position using the imaginatively titled "Offset" primitive. Select it from the pop-up list just below the filter chain, then click the adjacent "Add Effect" button to add it to your chain. It should automatically be connected to the output of the Blur, as indicated by a small line running from the triangular input of the Offset to the bottom of the Gaussian Blur. Adjust the new primitive's Delta X and Delta Y parameters to shift your shadow down and to the right – a value of 6.0 in each is a good start.

The final step in creating our filter is to add the original graphic back on top of the blur using the Merge primitive. Once again you should select it from the pop-up list and add it using the Add Effect button, but this time it won't be automatically connected to the rest of the chain. The Merge filter combines multiple input images by stacking them on top of each

other, honouring any transparency they may have in the process. The first input goes at the bottom of the stack, the last input at the top, so we need to add the offset blur first and the original source graphic second.

Begin by clicking in the Merge filter's sole input triangle and then, holding the mouse button down, drag to the triangle in the row above (the Offset filter). Release the button and you should see a connection made, running from the base of the Offset to the input of the Merge. You'll also notice that the Merge filter has gained a second input triangle. Click and drag from this second triangle to the Source Graphic column. Check the canvas, and you should now have a glorious drop shadow. See, filters aren't so tricky... right?



Now tweak the Gaussian Blur and Offset parameters to change the softness of your shadow or its

relative position. Then edit the text itself. Each change you make takes place live, and you can re-open the filter editor at any time to make further changes. Try creating a "hard" drop shadow by merging an offset Source Alpha with the Source Graphic, but without using the Gaussian Blur. Or try a bit of motion blur by unlinking the horizontal and vertical sliders; adding some horizontal blur and a horizontal offset; then merging with the Source Graphic again.



Make sure you understand what we've covered in this instalment, because, next time, we'll build on this simple drop shadow to introduce some more filter primitives that will expand your repertoire further, giving you the capability to achieve effects that just aren't possible without a little

smattering of bitmap magic on your vector objects.



**Mark** uses Inkscape to create three webcomics, 'The Greys', 'Monsters, Inked' and 'Elvie', which can all be found at <http://www.peppertop.com/>





## HAVE YOU EVER THOUGHT WHAT WOULD HAPPEN IF YOU MAKE ALL YOUR DEVELOPMENT PROCESSES RUN 10 OR 20 TIMES FASTER?

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**Richard Trotter**  
Geoteric



*Are you still waiting for your build to finish?*

Stop waiting. Start running. Get IncrediBuild for Linux. **Download it at [www.incredibuild.com](http://www.incredibuild.com)**



# ARDUINO

Written by Ronnie Tucker

# The Brewduino Pt.2

Not much left to do on the Brewduino now.

I've added some LEDs just to indicate what's going on. The green LED is to show that the device is on and OK. The red LED shows that the switch is on and, thus, the heat mat is on and heating up the fermenting vessel.

Finally, the blue LED shows that the switch, and heat mat, are off, and that the vessel is cooling down to room temperature.

The best way, I found, to test the whole device is to have the DHT22 under the lamp because, when the lamp comes on, the heat from the bulb will bring the

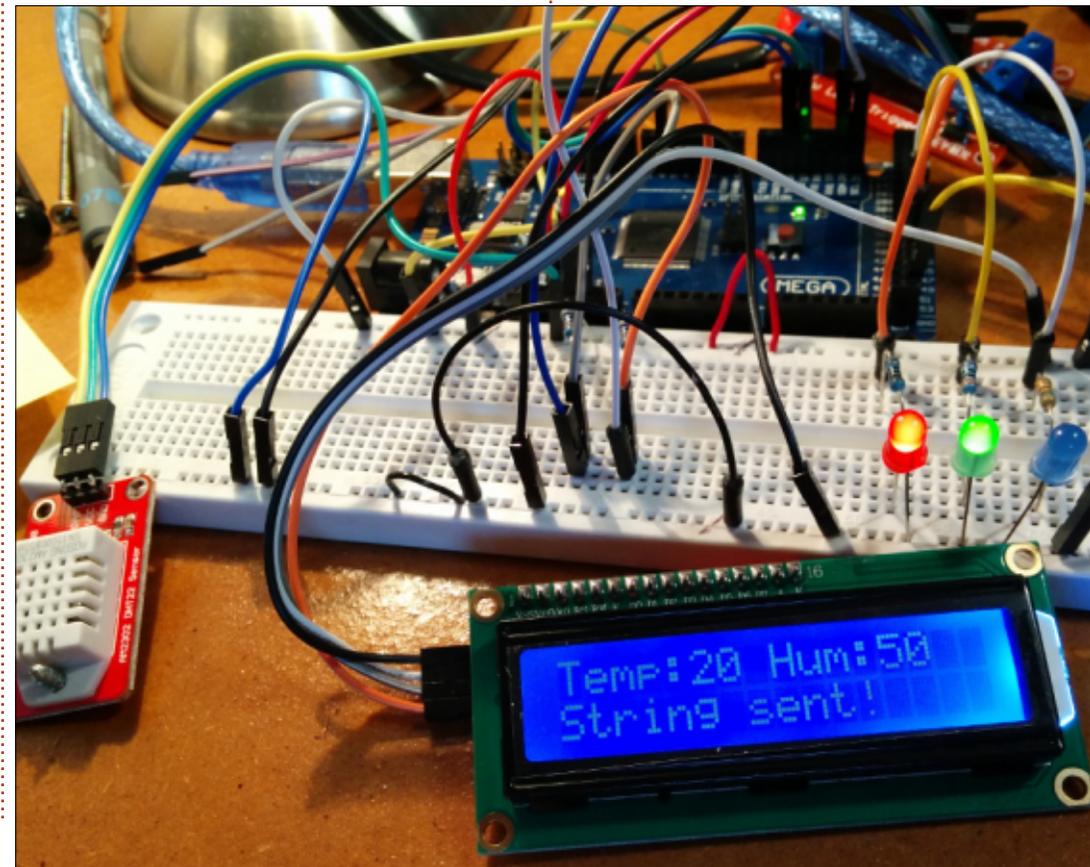
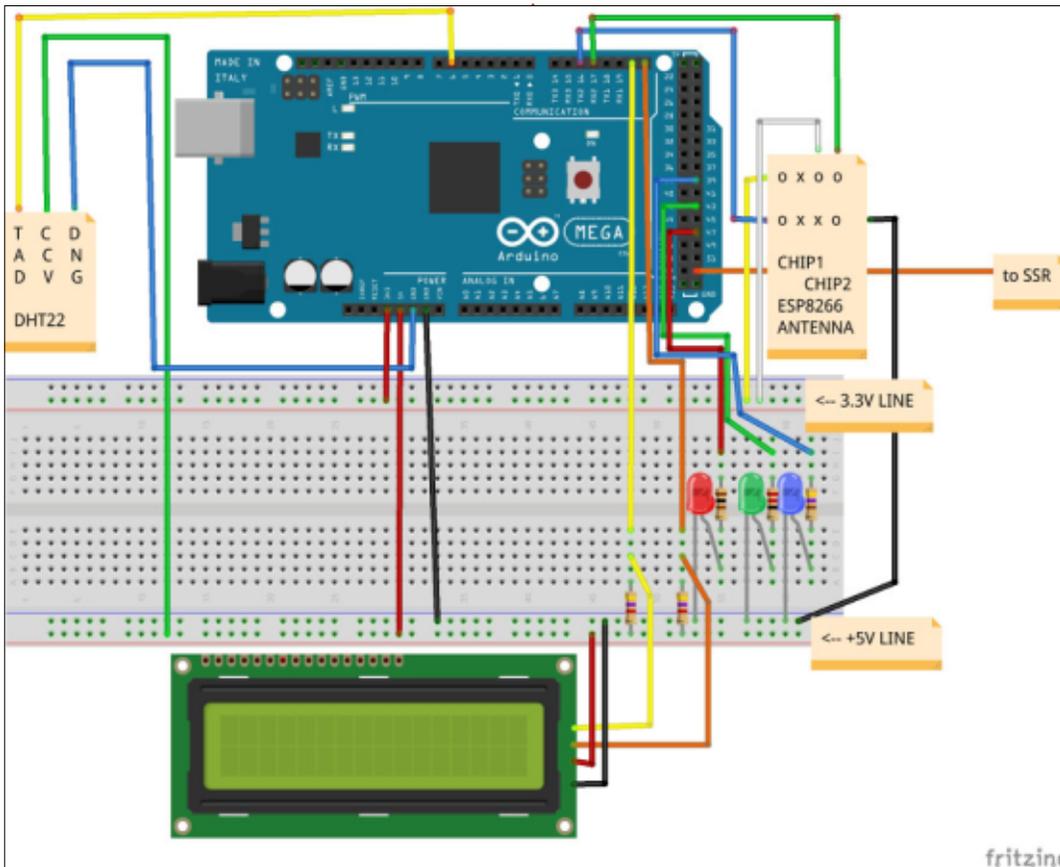
temperature up and the whole system goes into an on/off cycle. The lamp heats the DHT, and when it goes off, the DHT cools down, the threshold is reached, and the lamp comes back on again. And so on.

The only adjustments to the code are to define the LED pins:

```
int power = 43;
int red = 47;
int blue = 39;
```

Then, set the modes to output, and put the (power) green LED on (code is shown on the next page, top right).

The temperature check statement now includes the states



# ARDUINO - THE BREWDUINO

for the red and blue LEDs (code is shown bottom right).

You'll note that I've also fixed the SSR state so that the light is LOW (on) when the temperature is below 24, and HIGH (off) when above 24. This is the correct procedure for the heat mat.

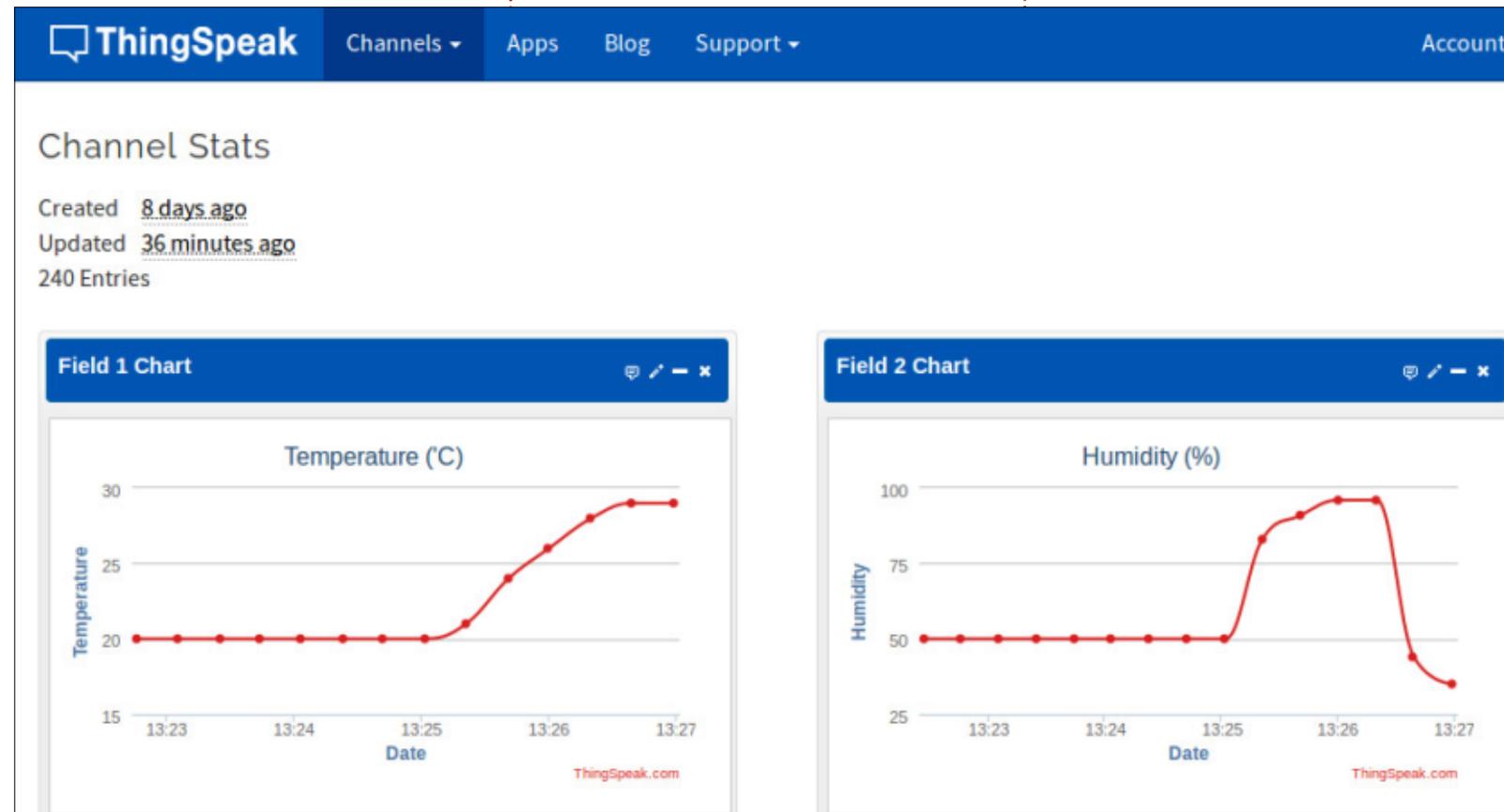
Well, we've pretty much come to the end of the Brewduino. Apart from swapping out the lamp for the heat mat, everything is in place

and working. Obviously, everything will need to go in a nice box, and the Arduino will need a power supply (as I need my laptop!), but everything is working, and that's the main thing.

No doubt I'll be tinkering with the code between writing this up, and you reading it, but the code referred to here is at: <https://gist.github.com/ronnietucker/7fc62df161107116cf93>, and marked as revision 6.

```
pinMode(power, OUTPUT); // LED
pinMode(red, OUTPUT); // LED
pinMode(blue, OUTPUT); // LED
digitalWrite(power, HIGH); // power on LED
```

```
if (DHT.temperature > 24 ) {
  state=HIGH; // switch heat mat on
  digitalWrite(red, LOW); // heating on LED
  digitalWrite(blue, HIGH); // heating off LED
}
if (DHT.temperature < 24) {
  state=LOW; // switch heat mat off
  digitalWrite(red, HIGH); // heating on LED
  digitalWrite(blue, LOW); // heating off LED
}
```



If you can think of anything to add/change in the Brewduino, please feel free to email me your suggestions: [ronnie@fullcirclemagazine.org](mailto:ronnie@fullcirclemagazine.org)



**Ronnie** is the founder and (still!) editor of Full Circle. He's a part-time arts and crafts sort of guy, and now an Arduino tinkerer.



In the past, I have reviewed cloud-based distros. The Chromebook is very difficult to wipe from the SSD. There are various means to incorporate Ubuntu into the framework. The first attempt was Chrubuntu, Crouton, and the Gallium OS. I purchased an Acer C720 to experiment with Crouton and Gallium. This hardware is known for compatibility with Crouton and Gallium. When I logged into the Acer, the screen top was a perfect duplicate of my Toshiba. Even my Chromebook settings live in the cloud, which is slightly unnerving.

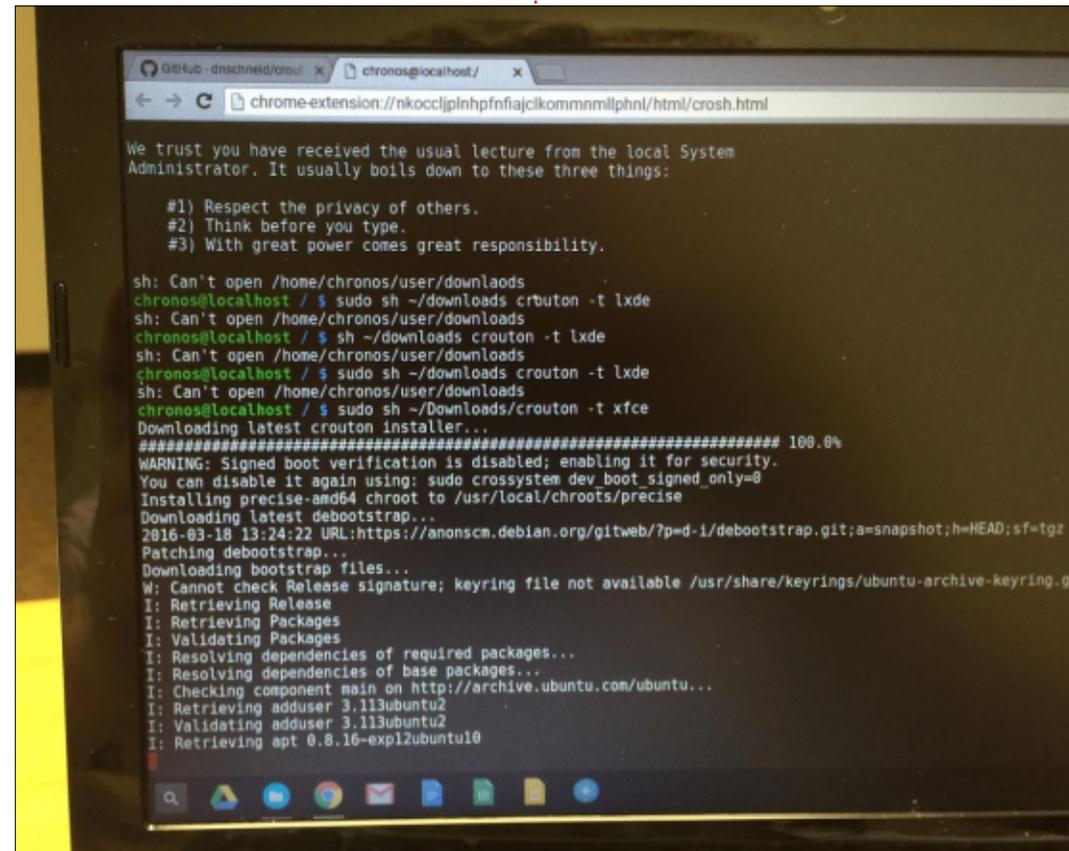
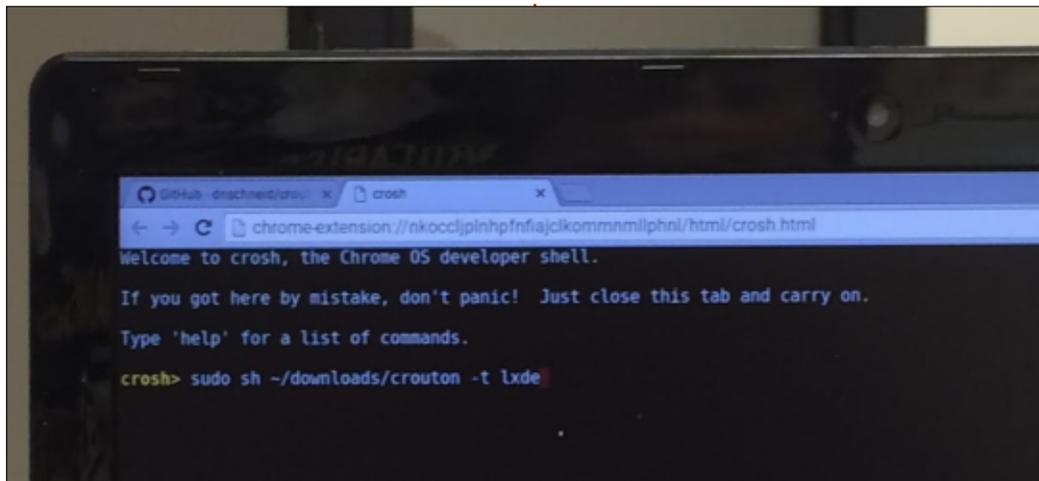
Chrubuntu runs off a dedicated USB or SD card. It acts like a

regular full operating OS. The developer installed all of the hardware drivers and items for Chrubuntu. It is supposedly easier to install. It appears to be an abandoned project. You can find instructions on how to install it on the web. The Chrubuntu community is thriving. Previously, I installed Chrubuntu on an Acer C710, and I was not impressed. The trackpad was inactive and the system seemed slow since it was running from an SD card. Perhaps at that time Chrubuntu was in beta testing or my hardware was not complementary. Chrubuntu works as a true dual boot for the Chromebook.

Crouton uses a root environment. This allows Ubuntu to run parallel with the Chrome OS. There would be no need to reboot to move between the two operating systems. It was easier to get Crouton installed. There are only three available DEs: Unity, XFCE, and KDE. I attempted LXDE and failed. My version had Ubuntu 12.04, there are ways to install

14.04 for the root environment. I followed the directions at [www.linux.com](http://www.linux.com) by Swapnil Bhartiya on installing Crouton. David Bennett at [www.davebennett.tech](http://www.davebennett.tech) offers simple steps for the 14.04 installation. He also gives instructions on how to install Kodi to your Chromebook.

The Gallium OS just left beta



# CHROME CULT

testing. It is based on Xubuntu. Gallium does not use a root environment, but allows for dual booting. The installation is well documented. I was not able to boot Gallium onto the Acer Chromebook. It was a simple fix – by modifying part of the Grub code per the Gallium website (modify a memory code line). However it appears to be the most popular method of putting Linux onto a Chromebook. The Gallium developers appear to be driven in making this a successful OS.

A final option on a Chromebook is to change the BIOS to SeaBios. Only certain Chromebook models can utilize SeaBios. This modified BIOS enables a person to wipe the Chrome OS off the Chromebook and boot a Live USB to install another OS. In some cases some people are installing a Windows OS despite the lack of mouse and keyboard drivers. You can discover this method from a single internet query.

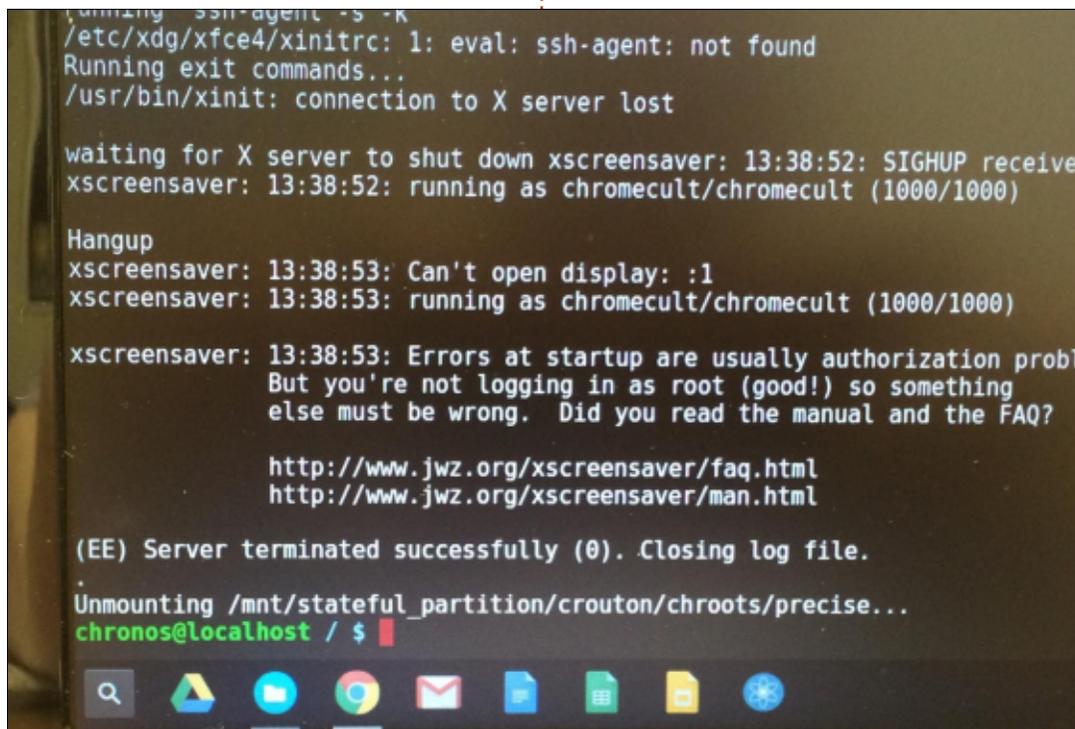
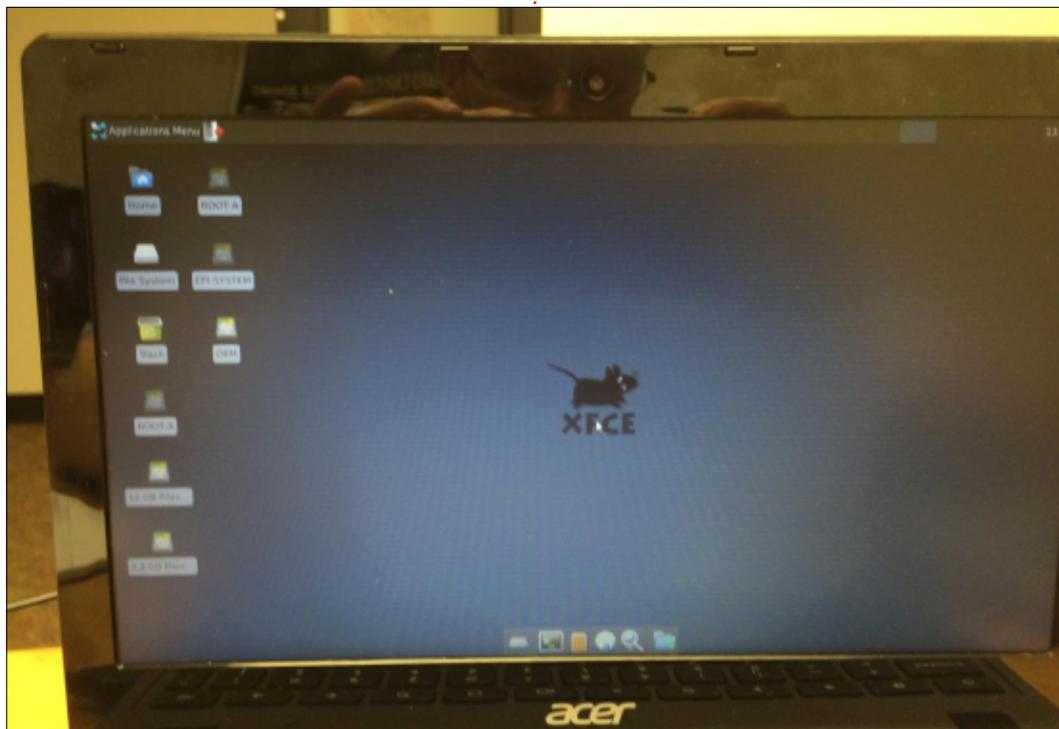
The past couple months I reviewed the various cloud-based

distros and Linux environments for the Chromebooks. In my humble opinion, there is an open source solution to the closed Chrome OS developed by Google. The solution is not the easiest to implement though. If a person wants to avoid the Chrome OS, he or she should purchase a cheap laptop, then install Peppermint OS or Apricity OS. However a person can learn numerous items when installing an open source solution. Every cloud-based distro offers perks and problems during the course of OS discovery.

At the end of the day, I use a Chromebook for the Chrome OS. Ultimately, I want a simple, reliable, and secure device. Linus is a fan of Chromebooks and how it brings Linux to the masses.



**SJ Webb** is a Linux Hobbyist and Research Coordinator. He enjoys fishing, hot rodding, and spending time with his kids and wife. He thanks Mike Ferarri for his mentorship.





## GUIDELINES

The single rule for an article is that **it must somehow be linked to Ubuntu or one of the many derivatives of Ubuntu (Kubuntu, Xubuntu, Lubuntu, etc).**

## RULES

• There is no word limit for articles, but be advised that long articles may be split across several issues.

• For advice, please refer to the **Official Full Circle Style Guide:** <http://url.fullcirclemagazine.org/75d471>

• Write your article in whichever software you choose, I would recommend LibreOffice, but most importantly - **PLEASE SPELL AND GRAMMAR CHECK IT!**

• In your article, please indicate where you would like a particular image to be placed by indicating the image name in a new paragraph or by embedding the image in the ODT (Open Office)

document.

• Images should be JPG, no wider than 800 pixels, and use low compression.

• Do not use tables or any type of **bold** or *italic* formatting.

If you are writing a review, please follow these guidelines :

When you are ready to submit your article please email it to: [articles@fullcirclemagazine.org](mailto:articles@fullcirclemagazine.org)

## TRANSLATIONS

If you would like to translate Full Circle into your native language please send an email to [ronnie@fullcirclemagazine.org](mailto:ronnie@fullcirclemagazine.org) and we will either put you in touch with an existing team, or give you access to the raw text to translate from. With a completed PDF, you will be able to upload your file to the main Full Circle site.

## REVIEWS

### GAMES/APPLICATIONS

When reviewing games/applications please state clearly:

- title of the game
- who makes the game
- is it free, or a paid download?
- where to get it from (give download/homepage URL)
- is it Linux native, or did you use Wine?
- your marks out of five
- a summary with positive and negative points

### HARDWARE

When reviewing hardware please state clearly:

- make and model of the hardware
- what category would you put this hardware into?
- any glitches that you may have had while using the hardware?
- easy to get the hardware working in Linux?
- did you have to use Windows drivers?
- marks out of five
- a summary with positive and negative points

**You don't need to be an expert to write an article - write about the games, applications and hardware that you use every day.**





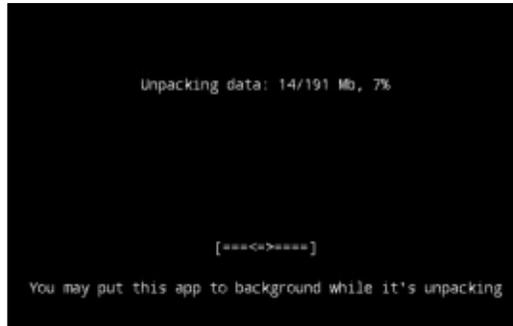
Not everyone can get their hands on an Ubuntu phone, but now, if you have an Android device, you can have Debian on your phone/tablet!

Head over to the Google Play store and search for 'debian noroot' and it'll come up. Alternatively, click this link: <https://play.google.com/store/apps/details?id=com.cuntubuntu>

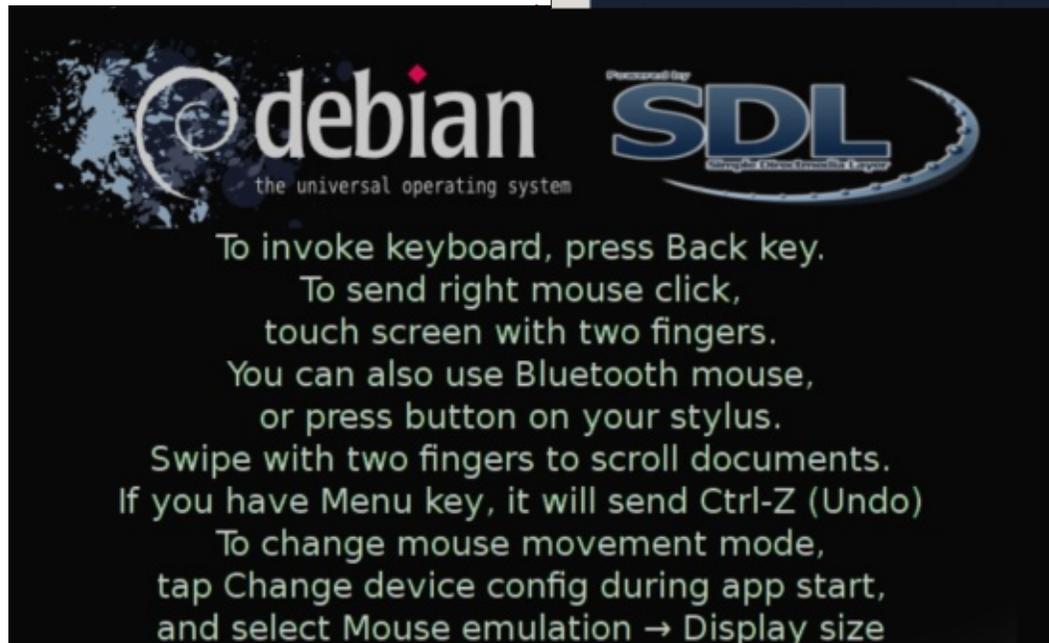


Click the INSTALL button and wait. It's a touch over 200MB, so it may take a little while.

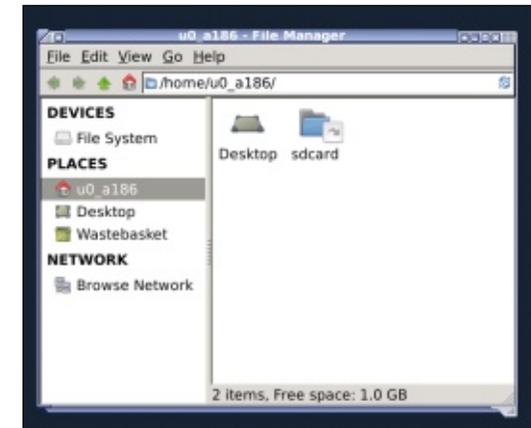
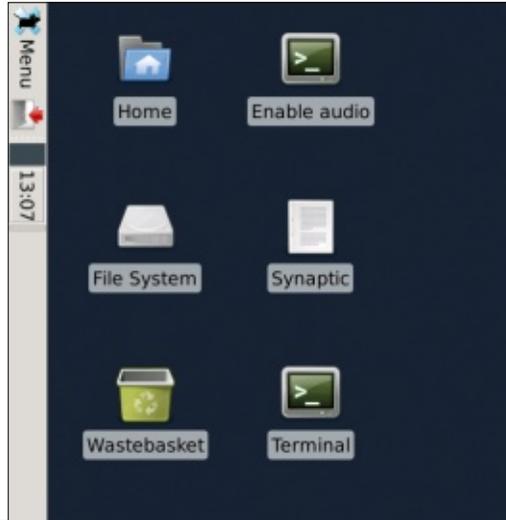
When the install is done, you'll see a Debian logo on your desktop. Give it a prod to start the next install. This will take a few minutes – depending on your device.



Once that's done, you'll see a startup screen (with some information). It's a bit quick at vanishing, but it's reproduced below to let you see the basic commands.



Now you'll have a fully working Debian desktop on your Android device!



By default, there's no software, to speak of, installed. So, click the 'Terminal' icon. To get the keyboard up, you have to press your device's 'back' button. The first thing to do is update your package list (by default, it's empty): Type:

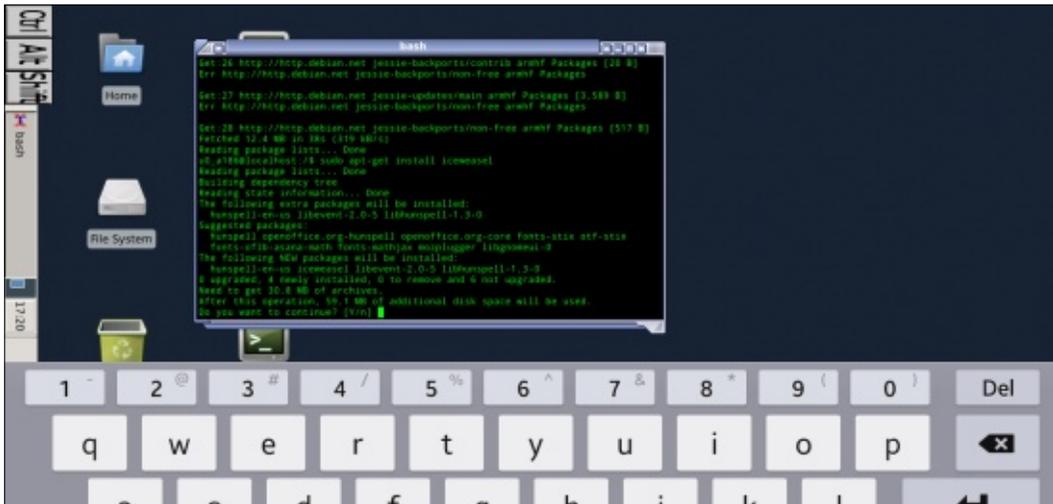
```
sudo apt-get update
```

Then, to install a web browser, enter:

```
sudo apt-get install inccounter
```

Now we're ready to rock!

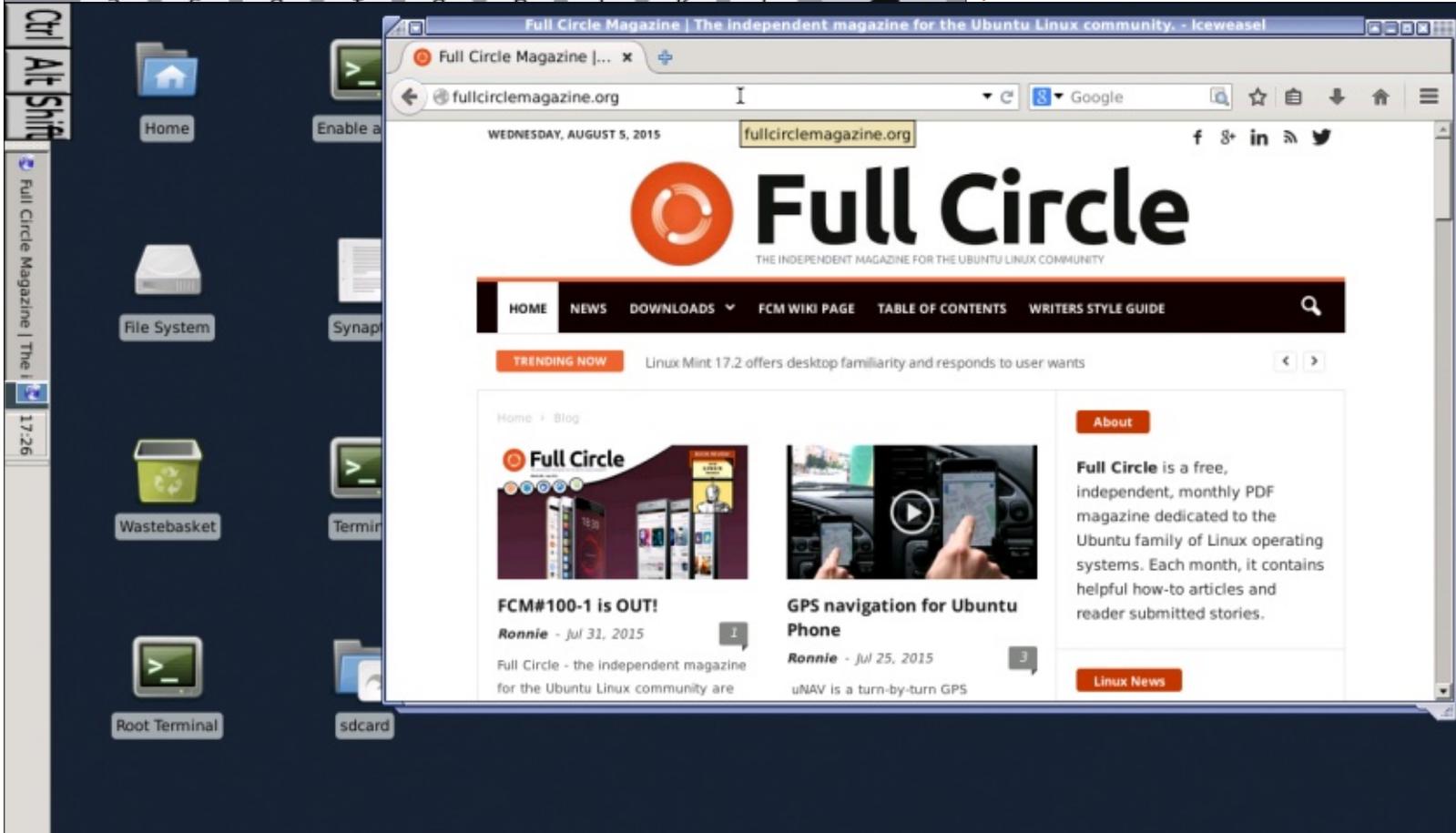
I've only scratched the surface of what's possible with Debian



Noroot. Other folks have SSH, GIMP, and all sorts of other stuff installed on their Android devices.



**Ronnie** is the founder and (still!) editor of Full Circle. He's a part-time arts and crafts sort of guy, and now an Arduino tinkerer.



## THE FULL CIRCLE WEEKLY NEWS



## Full Circle Weekly News

A short podcast (<10min) with just the news. No chit-chat. No time wasting. Just the latest FOSS/Linux/Ubuntu news.

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Several years ago, I bought a number of new components from an online retailer only to discover some of the equipment was bad. I figured since the hardware was new and in the sealed packing when I bought it, I wouldn't have any problems. Whether you're building a new system or refurbishing an old one, it's always a good idea to test your hardware. Since hard drives are most people's permanent storage, having a healthy hard drive is almost as important as good steady power to the computer.

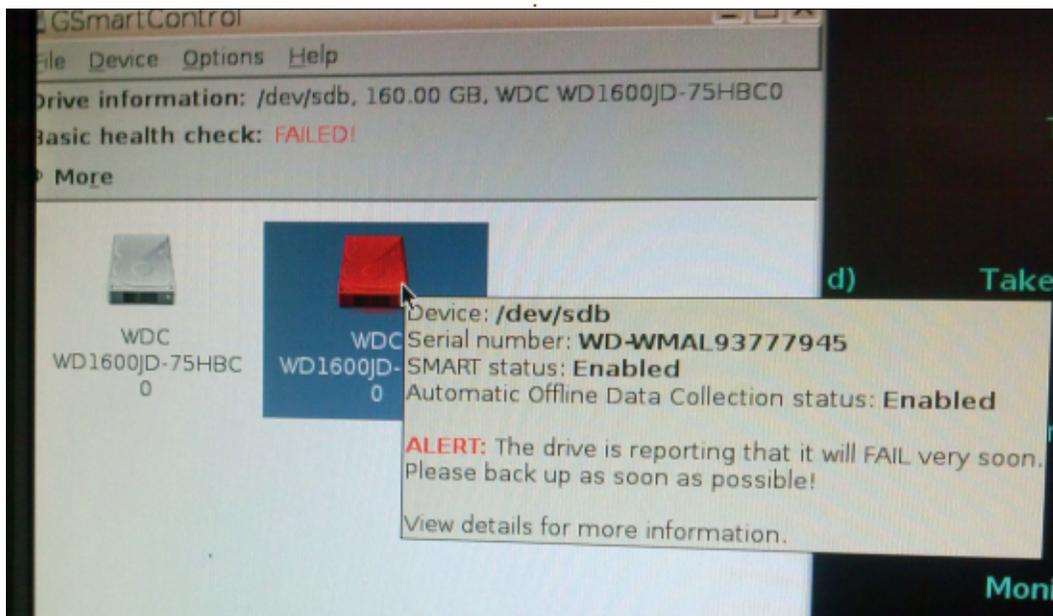
In the past, our refurbishing project has used a few methods to detect bad drives: The first method was just listening to the drive. If the drive sounded whiny (or had the notorious click of death), we either wiped the drive with DBAN (Darik's Boot and Nuke - <http://www.dban.org/>), or took apart the drive and sent it to our end-of-life processor. The second way we knew a drive was bad was if it failed DBAN. This method wasn't foolproof because drives with bad sectors could fully DBAN. Sometimes our volunteers would

forget to hook up the data or power cable, so the drive wouldn't be detected and would also fail DBAN. The last method was to examine the hard drive using Gsmartcontrol. Gsmartcontrol is great because it can instantly detect certain kinds of SMART (Self-Monitoring, Analysis and Reporting Technology) errors. Unfortunately, SMART isn't perfect. Wikipedia has an excellent article covering SMART that mentions that in one study more than 50% of drives that failed did so without triggering one of the main SMART failure indicators.

it can run a disk read surface scan fairly rapidly. Smartmontools and Gsmartcontrol can be used to run a short (approximately 2 minute) electrical and mechanical test, but the short test covers only a small part of the drive. Both tools can also be used to run a Long/Extended test which scans the entire surface of the drive, but the Long test is as the name describes, long. Even small (80GB) hard drives can take several hours to scan.

This is where WHDD comes in handy. WHDD can run a complete surface READ scan on an 80GB hard drive in under 22 minutes (17 minutes on one of our Seagate drives). Our larger 3TB drive (which was completely full of data) finished in 245 minutes. Below is a small sampling of the time/size

To augment our SMART testing, we're starting to use WHDD, a tool ported to Ubuntu by Eugene San. WHDD bills itself as a hard disk drive diagnostic and recovery tool. What we like about WHDD is that



Manufacturer & Model	Size (GB)	ETA (minutes)	Speed
Western Digital WD800JD-08MSA1	80	22	49489 kb/s
Hitachi HDP725016GLA380	160	35	69759 kb/s
Western Digital WD5000AAKS-65V0	500	90	89091 kb/s
Western Digital WD7500AAKS-00RBA0	750	130	77212 kb/s
Seagate ST3000DM001-1ER166	3000	245	157041 kb/s

ratio we found for different drives we measured.

The ETA is an approximate Estimated Time of Arrival (finish) WHDD displays at the beginning of the test. For the most part, the ETA, unlike many time indicators, is fairly accurate – to within a few minutes. But, like other time indicators, it does suffer time creep when the test comes across several slowly read sectors. We tested several drives and found the average time for an 80GB hard drive to be about 22 minutes.

The Speed of the drive is a fluctuating number. In general, we found the larger the drive the

higher the speed. This makes a lot of sense since newer drives should have faster technology to read the surface of larger sized drives. We tested 15 drives of different sizes and makes, and found (with the odd exception) the trend of faster speed seems to correlate with size. Drive content didn't seem to affect the numbers as much as the number of slowly read sectors.

During the read test, WHDD charts the number of blocks read at each of the following speeds: <3 ms, <10 ms, <50 ms, <150 ms, <500 ms, > 500 ms. If you see a lot of blocks in the <500 ms range and > 500 ms range it's a really good idea to back up your data and switch to

a drive with better read times. Below is a small sample of read times for the same drives.

In the example, the Western Digital WD5000AAKS-65V0 500GB hard drive has 3 blocks in the above 500 millisecond and 22 blocks in the between 150 to 500 millisecond range. If you're concerned about your drive being fast, or worried about bad blocks, this might be a good indication that it's time to back up and replace the drive.

But what about data? Does the amount of data affect the time data is read by WHDD? In these charts, all the drives were blank

with the exception of the 3TB Seagate ST3000DM001-1ER166 which was almost full of very large files (20GB+ files). Although it took the longest to read, it's also 6 times the size of the 500GB drive. If we take the 90 minutes of the 500GB drive, and multiply it by 6, we get 540 minutes, almost double the time the 3TB actually took to read. From this we can conclude that WHDD doesn't seem to be affected much by the amount of data on a computer (it also helps that newer drives are simply faster).

WHDD is a command line tool and needs sudo permission to run:

```
sudo whdd
```

WHDD can show SMART attributes, run a read test, run a copy test, run a write test, or set up a host protected area (HPA), a hidden area of the drive an OS can't normally read. WHDD doesn't do the kind of SMART short test that Smartmontools or Gsmartcontrol does, but one of the neat things that WHDD might tell you (when looking at the SMART attributes) is if the hard drive has a firmware update available.

Manufacturer & Model	<3ms	<10ms	<50ms	<150ms	<500ms	>500ms
Western Digital WD800JD-08MSA1	443241	167315	38	2	0	0
Hitachi HDP725016GLA380	1079122	141862	29	9	0	0
Western Digital WD5000AAKS-65V0	3775956	34202	5256	82	22	3
Western Digital WD7500AAKS-00RBA0	5647510	75602	111	16	0	0
Seagate ST3000DM001-1ER166	22812027	75822	2764	2095	0	0

```
SATA Version is: SATA 2.6, 3.0 Gb/s
Local Time is: Sun Apr 10 15:11:52 2016 EDT

==> WARNING: A firmware update for this drive may be available,
see the following Seagate web pages:
http://knowledge.seagate.com/articles/en_US/FAQ/207931en
http://knowledge.seagate.com/articles/en_US/FAQ/213891en

SMART support is: Available - device has SMART capability.
SMART support is: Enabled

--- START OF ENABLE/DISABLE COMMANDS SECTION ---
SMART Enabled.
```

Read, Copy and Write tests are all visual. As each block is read/copied/written, it's displayed much as you'd expect a block read/copy/write test to display, as a block. Quickly read blocks are mostly black with a tiny bit of grey, blocks up to 50ms access time are still grey. Blocks under 150ms access time are green. Blocks over 150ms are displayed in red and blocks over 500ms are displayed in bright Salmon color. Errors are indicated by what looks to be a

small bug.

At any time during a test, you can stop the test by pressing CTRL+C. To get back to the WHDD menu, press m (after aborting the test with CTRL+C).

WHDD is a great tool when SMART doesn't tell the whole story. SMART can tell you a lot about a hard drive: it can tell you the number of hours in use, whether a sector has been reallocated, even if the system has

been suddenly shut down, but it doesn't always help when a drive is simply slower than you might expect. This is where WHDD can be a great tool.

Of course there is no substitute for a good backup. More than any other tool, a good backup can save you the most grief. Whether you're a system administrator or just storing terabytes of music and video on your home media server, you want some kind of backup to ensure your data (and effort) doesn't disappear if a drive fails.

Alan Ward wrote an excellent article on backup using rsync in **FCM#83**: <http://fullcirclemagazine.org/issue-83>

In summary: if you're just checking out blank drives, listen first – if a drive sounds bad, but tests good with a SMART tool like Gsmartcontrol or Smartmontools, give it another quick read test with WHDD. If you're worried about data on a drive, back it up first with rsync (or dd if you have an identical or larger drive to copy to), then check with one of the SMART tools and WHDD to get a better overview of what's going on with your drive(s).

GSmartcontrol: <http://gsmartcontrol.sourceforge.net/home/>

Smartmontools: <https://www.smartmontools.org/>

WHDD: <http://whdd.org/>

```
Terminal - charm@tank: -
LBA: 7,797,760 / 488,397,168 ETA 29:38
SPEED 135194 kb/s
<3ms 30386
<10ms 70
<50ms 2
<150ms 0
<500ms 0
>500ms 0
ERR 0
TIME 0
UNC 0
IDNF 0
ABRT 0
AMNF 0
Read test /dev/sda
Block = 131872 bytes
Ctrl+C to abort
```

**Charles** is the author of Instant XBMC, and the project manager of a not-for-profit computer reuse project. When not building PCs, removing malware, and encouraging people to use GNU/Linux, Charles works on reinventing his blog at <http://www.charlesmccolm.com/>.



# UBUNTU DEVICES

Written by Ronnie Tucker

## OTA-10

We have a summary list of updates made for OTA-10 below.

The following apps are now pre-installed by default:

- Email app (Dekko)
- Calendar app
- uNav

General enhancements:

- New theme and color palette
- Updated OOB (Out Of Box Experience – provides a better initial setup experience for new users)
- Updated Edge tutorial
- VPN support added to Settings
- New system indicator with desktop mode toggle for convergence
- Updates can now be downloaded over 3G
- Control added for external mic volume

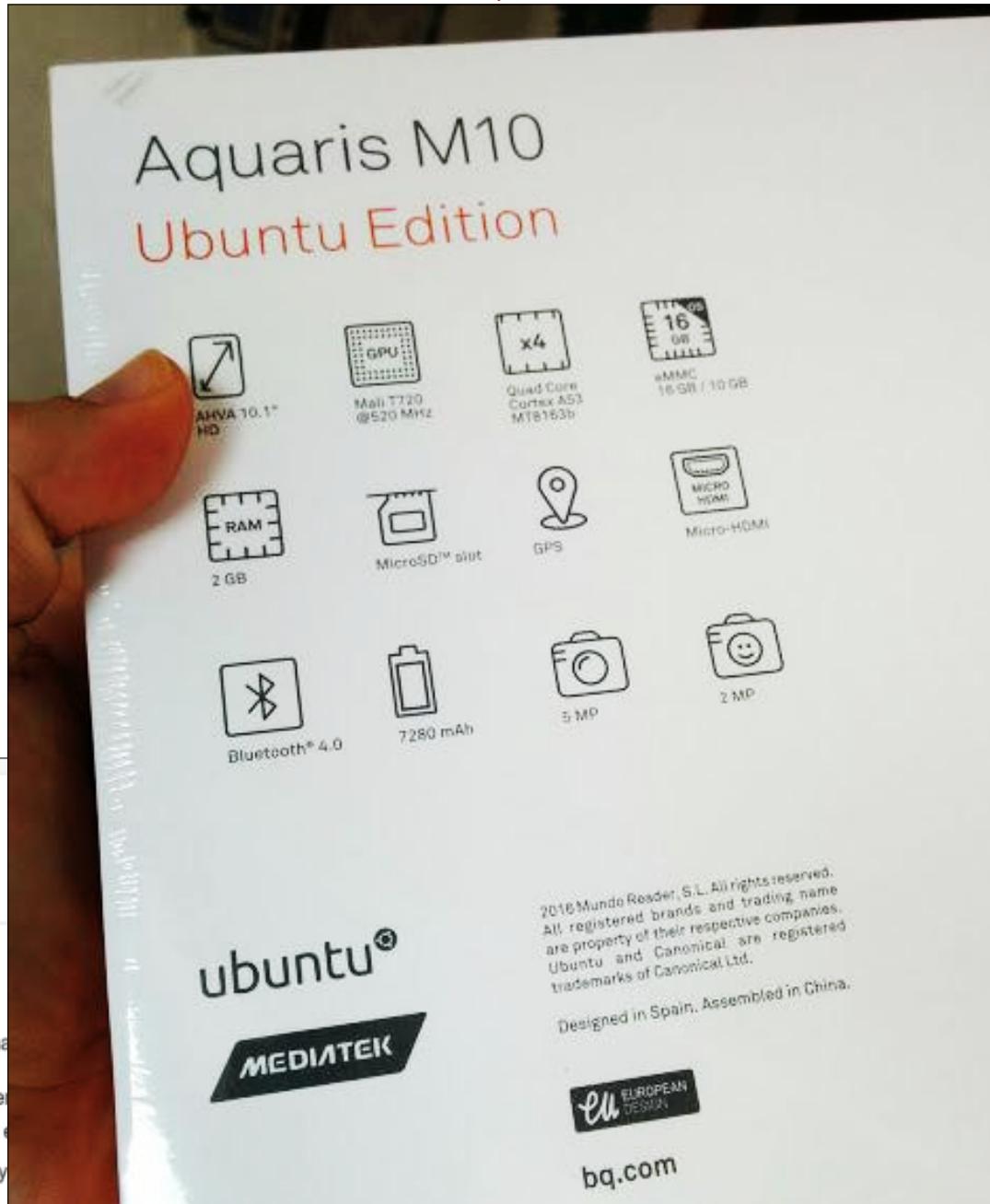
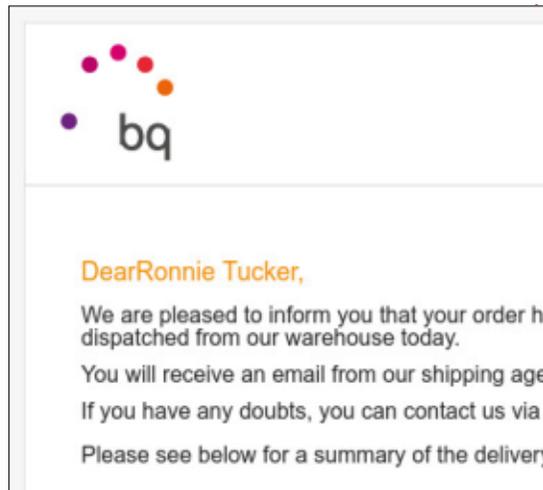
A complete list of changes can be found at:

<https://wiki.ubuntu.com/Touch/ReleaseNotes/OTA-10>

**NOTE:** There has since been a quick update to this with the release of OTA-10.1 to fix a small security issue which was discovered after the release of OTA-10.

## BQ M10 TABLETS NOW SHIPPING

BQ have been sending out emails letting buyers know that the M10 tablet has begun shipping. Some people have already received their tablets, and a couple of reviews have sprung up online.





# REVIEW

Written by Art Schreckengost

# Linux Lite

Looking for a light Ubuntu-based distro that won't break your hard drive?

How many times have you heard that pitch and then discovered that light usually means stripped or sorely lacking in necessary components and codecs?

Enter Linux Lite 2.8 from New Zealand. Based on Ubuntu 14.04 LTS (Trusty Tahr), it carries a feather logo that may seem somewhat familiar to Linux oldsters like myself -- it's the same one carried by the now deceased U.K. based Feather Linux (R.I.P. 2006).

And that's where the similarity ends. Feather was Knoppix/Debian based, carried a Fluxbox desktop, and was a super lightweight at shy of 125MB. In comparison, Linux Lite packs a much heftier 800MB package.

The website (<https://www.linuxliteos.com>) claims its OS is "Simple Fast Free",

so let's put it to the test (yes, I know the punctuation is lacking, but it is on the website, too).

As for the simple aspect, LL (what I'll call Linux Lite from here on) is not only small in size but will be quite happy with minimal-spec systems. With a base requirement of just 700MHz and 512MB RAM, this should work on just about any PC made after 2000 (truthfully, they do recommend at least twice

that much horsepower and RAM for smooth operation).

Guess my decade-old Dell Core Duo pushing 3GB RAM should fit the bill.

Of course, it's obviously free, but is it fast?

Well, that depends. If you plan on using the Live version off a DVD or USB/flash drive, it won't be any

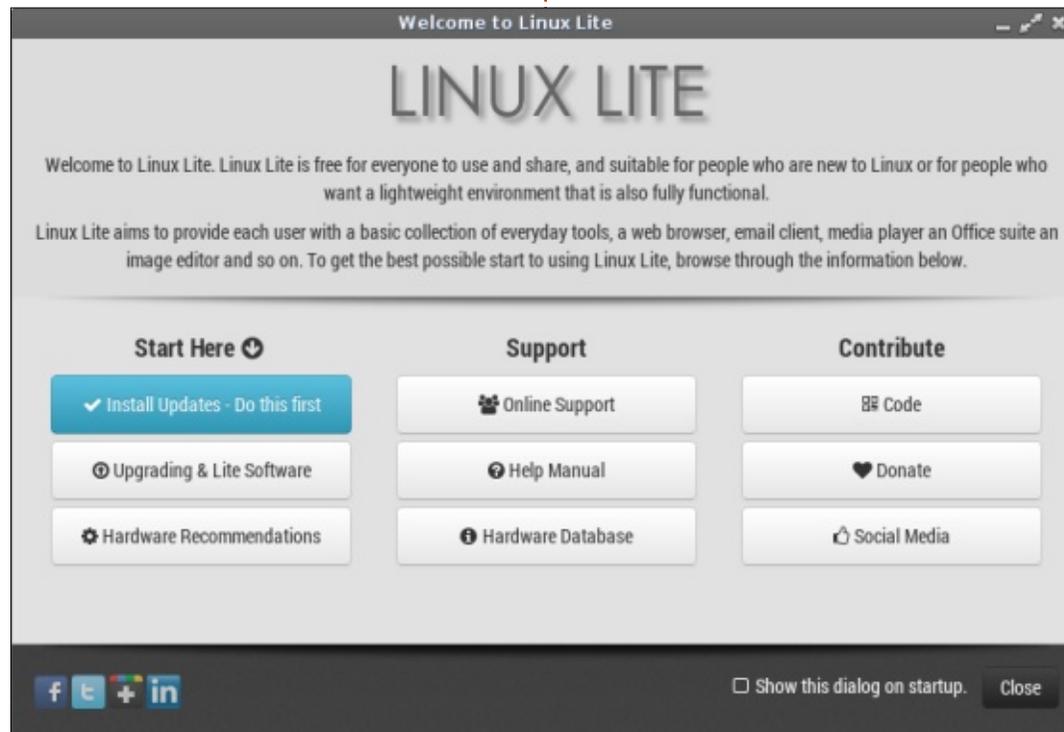
quicker than any other similar offering but that has always been a drawback to Live systems.

Those opting for a full or VM install will be happy to see the usual Ubiquity installer. A few clicks and keystrokes, and you'll be ready for setup which takes roughly 20 minutes (faster if you use a USB/flash drive instead of a DVD).

Cold boots are nothing spectacular at around 20 seconds on my decade-old Dell, but I did find it odd, that's with a GRUB boot delay of 0. Hmm, that may take some work.

In keeping with the minimalistic theme, the desktop consists of a bottom taskbar with the usual system parameter icons, and a menu button along with the feather logo on a grayish background. Nicely presented while still being functional.

Ah, but here is where things get interesting. After every boot, at least until you tell it otherwise,



## REVIEW - LINUX LITE

you'll get the "Welcome to Linux Lite" pop-up screen, a rather ingenious way of handling basic system needs.

Unlike Mint's welcome screen, this one actually contains information I found useful after the first few boots (sorry, Mint, but it did become repetitive until I pulled the plug).

Inside this box you'll find headings for updating and upgrading both the system and software, plus there's another section for the installation of "Lite" software to include Chrome, Chromium, Tor, Dropbox, Kodi, Skype, Teamviewer and Virtualbox.

This makes updating and upgrading a simple one-click affair instead of waiting for the system to dump a 500MB surprise in your lap at some future date.

As for the Lite software programs, this must be partially built in to the system because installation was a whole lot easier than downloading them individually via Synaptic. I'd be exaggerating if it took any more than 5 minutes to download and install all of those programs

mentioned above.

As for software installation, you also find another neat program minimally titled "Lite Software".

Although the box itself seems simplistic and somewhat crude by design, it's effective for its intended purpose -- installing roughly 15 to 20 of the most often used or requested programs.

For other programs, there's the Synaptic Package Manager which, in this case, is renamed "Install/Remove Software" (but when it comes up, the header clearly states Synaptic).

The desktop is utilitarian Xfce all the way. If you're looking for visual pizzazz and gizmos galore, you might prefer another distro. It's functional while not looking

ugly in the process.

For such a lightweight package, LL does come with quite a few standard programs such as:

- Firefox (with options to install Chrome and Chromium).
- LibreOffice 5 (I mention the number since other distros I've tried have older versions) with Evince as the PDF add-on.
- Thunderbird for email.
- GIMP and Image Viewer.
- xfburn for CD/DVD production, Clementine and VLC for media playback.
- The standard pot of accessories such as calculators and screenshot packages.
- Lite Tweaks, a program that cleans the garbage out of your system without having to rely on somewhat questionable outside programs that may do more damage than good. If you're

wondering, no, it's not related to Ubuntu Tweak.

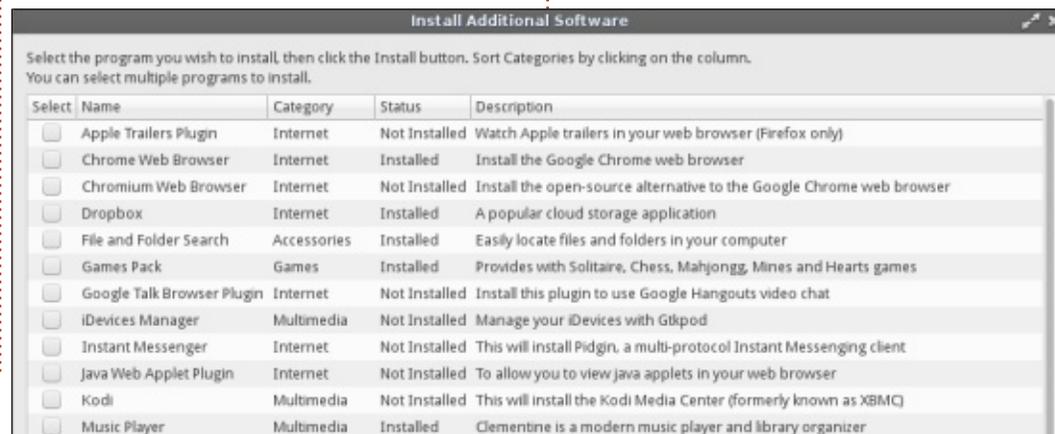
• Systemback, a unique one or two-click backup that can create a live version of your setup without having to install anything else.

Not a bad selection for what should be a light, limited distro.

Even more impressive is that after adding a load of personal program choices plus the built-in offerings, my HDD is down just 7.1GB.

Once you get everything loaded to your liking, the system is not only highly functional and stable, it's quick to perform also. In fact, the only time I experienced a slowdown was when I used Systemback for a complete ISO image (that did hijack my system for roughly 15 minutes), but I expected that.

That isn't to state that's in all hunky-dory here, folks. There was an odd failure to communicate when I went to use the Lite Software package after a couple days of system usage. It developed a tick in the software sources list and gave me an update error based upon the "trusty/main"



archives. As such, Lite Software hasn't worked since.

That's definitely going to need a workaround although most users will probably click over to other sources such as the Install/Remove Software mentioned before.

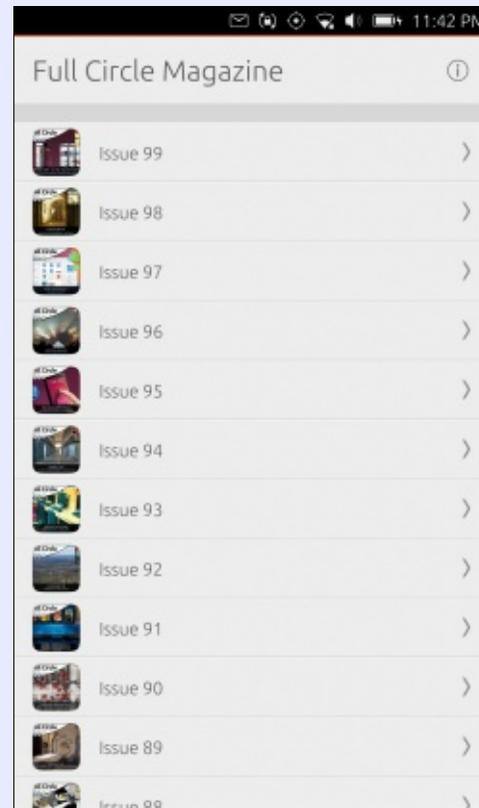
So, what's the final consensus on Linux Lite? Personally, I found it to be just as functional as other lightweights in the Ubuntu family, including Lubuntu and Xubuntu. However, LL has more included programs and is more aesthetically pleasing (it may be a near-barebones OS but it doesn't look like such).

True, it has a couple quirks and may need a little tweaking, but I've experienced a whole lot worse in my day.

In the end analysis, it has a small footprint, some great tweaks, and operates better than most in the class.

Give it a try and I'm sure you'll agree.

## THE OFFICIAL FULL CIRCLE APP FOR UBUNTU TOUCH

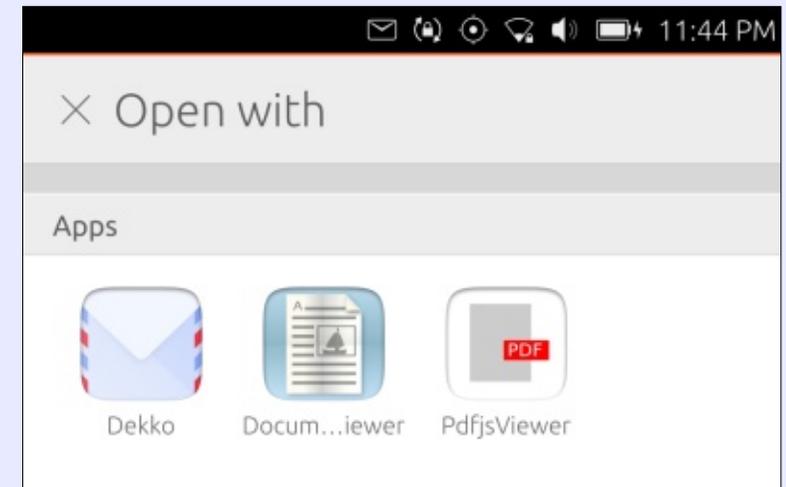
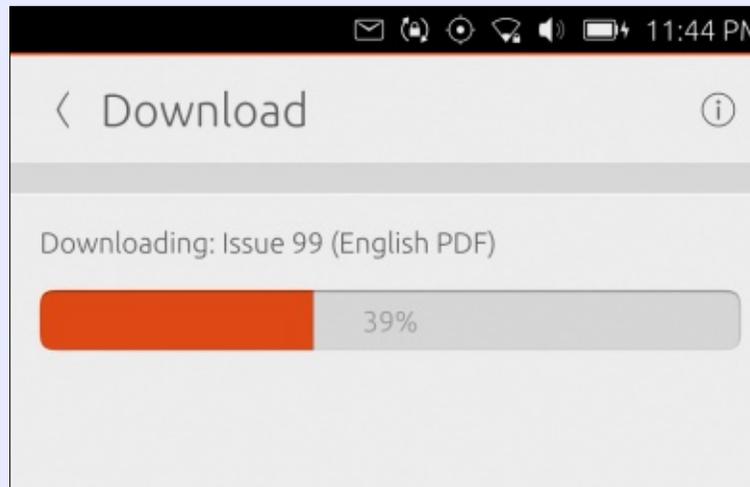


**Brian Douglass** has created a fantastic app for Ubuntu Touch devices that will allow you to view current issues, and back issues, and to download and view them on your Ubuntu Touch phone/tablet.

### INSTALL

Either search for 'full circle' in the Ubuntu Touch store and click install, or view the URL below on your device and click install to be taken to the store page.

<https://uappexplorer.com/app/fullcircle.bhdouglass>





# LETTERS

If you would like to submit a letter for publication, compliment or complaint, please email it to: [letters@fullcirclemagazine.org](mailto:letters@fullcirclemagazine.org). PLEASE NOTE: some letters may be edited for space.

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## FULL CIRCLE NEEDS YOU!



Without reader input **Full Circle** would be an empty PDF file (which I don't think many people would find particularly interesting). We are always looking for articles, reviews, anything! Even small things like letters and desktop screens help fill the magazine.

See the article **Writing for Full Circle** in this issue to read our basic guidelines.

Have a look at the last page of any issue to get the details of where to send your contributions.



# Q&A

Compiled by Gord Campbell

If you have a Linux question, email it to: [misc@fullcirclemagazine.org](mailto:misc@fullcirclemagazine.org), and Gord will answer them in a future issue. Please include as much information as you can about your query.

**Q** I installed Viber from the Viber web site, but it doesn't run.

**A** (Thanks to *howefield* in the Ubuntu Forums) Try installing `libgstreamer-plugins-base0.10-0`

It looks like the package creators have missed referencing a dependency (or the dependencies have changed) from their package.

**Q** Is there Linux software which will read and work with PowerPoint files?

**A** (Thanks to *linuxkvh* in the Ubuntu Forums) Try LibreOffice Impress. Minor compatibility issues might happen when loading PowerPoint presentations, so it's best to use only LibreOffice when working on a new presentation.

A second option is to use MS Office under Wine.

*marseille2* suggests WPS Office, which he says is particularly

good with PowerPoint files.

**Q** I have 4GB of RAM and only 2GB are available.

**A** After swapping RAM sticks around, it became apparent that two of the four slots were not working. The Original Poster also noticed "a bulged up capacitor", so it's a hardware problem.

**Q** I'm using Ubuntu 14.04 on my Asus X205T. Yesterday the updater installed some stuff and asked to restart; I said 'later'. The next time I started up, the touchpad doesn't work at all.

**A** (Thanks to *sudodus* in the Ubuntu Forums) Some computers have a button to turn the touchpad on and off. Maybe you can check if you can turn it on with a hotkey combination, maybe the 'Fn' key + an 'F' key. My laptop has the Fn + F5 key combination for this purpose. One alternative is to boot a previous kernel via the grub menu (press the shift key

during boot if you don't see it).

And the previous kernel solved the problem.

**Q** I installed my new computer with Ubuntu 12.04.4. When I start up the computer, I get one notification of "Network Disconnected - you are now offline". The Ethernet port does not appear in `ifconfig` output.

**A** New computer, old OS, bad outcome. Try 15.10. (Which worked.)

**Q** I am using `gadmin-samba` to configure shared folders, but it's not working.

**A** (Thanks to *bab1* in the Ubuntu Forums) I can't stress this too strongly -- **DO NOT USE Gadmin-samba TO CONFIGURE A SAMBA FILE SERVER**. Purge everything to do with `gadmin-samba`, and start over. Setting up a simple file server is not very difficult.

**Q** Is there a way to notify users of password expiration at logon?

**A** This does not answer your question, but it should be relevant: most security experts now feel that having passwords expire is a bad thing, which actually reduces security.

## TOP QUESTIONS AT ASKUBUNTU

\* Unable to find the .lit file reader conversion app `clit`  
<http://goo.gl/9dTGfd>

\* Moving entire Linux installation to another drive  
<http://goo.gl/k7BrZC>

\* Does rolling back the kernel in Ubuntu compromise security  
<http://goo.gl/BNZdKf>

\* How to stop the pointer jumping around due to the touchpad?  
<http://goo.gl/7Mo4N3>



\* Which package is the command 'cd' in?

<http://goo.gl/zfrmXi>

\* How do I run a sudo command needing password input in the background?

<http://goo.gl/a3OPng>

\* I have a file named "-t". How to remove it?

<http://goo.gl/vfjoL7>

\* Why won't this script run on startup?

<http://goo.gl/mn3ezn>

\* How to add accents, etc, to letters using the "English (UK)" input source?

<http://goo.gl/sLCmkM>

## TIPS AND TECHNIQUES



### Information, Please

Activity in the Ubuntu Forums has dropped by half over the past few years, which is probably a good thing, since it means that fewer people need help.

However, I have noticed that a lot of the people who ask for help

provide about 10 per cent of the information that anyone would need to help them. At the risk of repeating myself, I would like to make some suggestions.

It's almost always relevant to tell people what version of Linux you are using. For example, "Xubuntu 15.10 64-bit". There's no single way to get this information which works across various versions of Linux, so you should write it down when you download it – if there is any chance you will forget.

It is often relevant to tell people about your computer. In order of relevance: memory, video adapter, CPU, and hard disk size and layout. And sometimes, the Wi-Fi adapter or audio device. My favorite program for getting this information is lshw, which can provide nicely formatted details about your system:

```
cd Desktop
```

```
sudo lshw -html >  
myconfig.htm
```

Identify the application, if you have a question about it. It's not "my backup program," it's "rsync". (Or whatever.)

If you have a question that involves a website, identify it. "I have a problem playing video 156015647 on vimeo.com" is a lot more useful than "I have a problem playing online videos".

If you get an error message, the exact message is obviously relevant. If you can't record it any other way, take a picture with your cellphone.

Then there's one more step: put the organized data into Google! My best Google queries have used four words, but you need to think about what four words are most relevant. My personal experience is that I almost always find the answer, so I don't need to ask a question.



**Gord** had a long career in the computer industry, then retired for several years. More recently, he somehow found himself "The IT Guy" at a 15-person accounting firm in downtown Toronto.

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# AVAILABLE WORLDWIDE



Having watched the AlphaGo and Lee Sedol matches via YouTube, I decided to buy a couple of books and give Go a try.

I managed to easily find a couple of Go apps for Android, but had difficulty finding a good piece of Go software for Linux. Eventually I came across GoPanda.

GoPanda is basically a front-end for IGS PandaNet (aka: Panda Network) that allows players to watch, play and discuss Go. The software can also let you review Go games using the SGF file format. While having Java-based software may make some people groan, at least it allows Linux users to get involved in playing Go.

## REGISTERING

Head to the PandaNet site at: <http://pandanet-igs.com/>. In the right-hand-side column, there's a button saying 'Register'. Click that. Or you can click the big 'Play on Pandanet!' button to get a popup with a registration button.

Fill in the details such as username, password, email, etc.

Finally, click 'Register', and wait for a confirmation email. Since the confirmation email can sometimes take a little while, let's get installing.

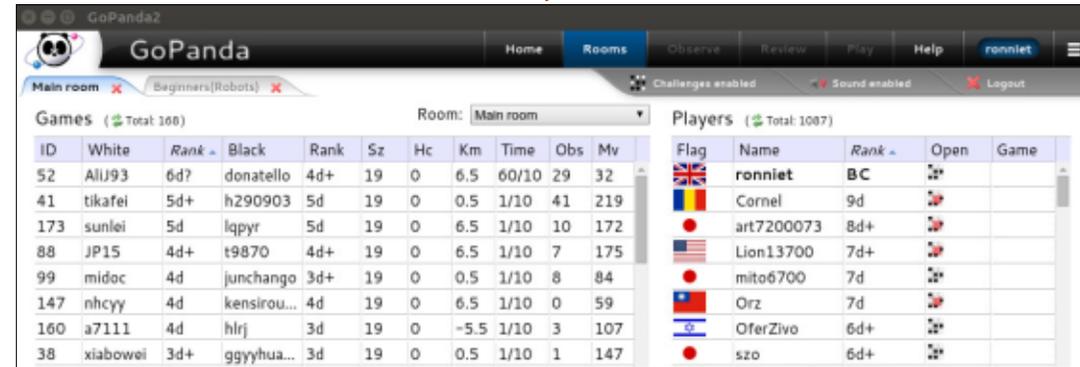
## INSTALLING

First thing to do is grab the archive file from: <http://pandanet-igs.com/communities/gopanda2/100/>

For using the software there's also a PDF manual at: [http://www.pandanet.co.jp/top\\_newspsh-igs/GoPandasmanual.pdf](http://www.pandanet.co.jp/top_newspsh-igs/GoPandasmanual.pdf)

Unarchive the .tar.gz file to somewhere, and open that newly created GoPanda2 folder. In there, you'll see an icon called GoPanda2. That's the executable to run GoPanda. Double-click it and you're off and running!

On the first run, the software will update itself.



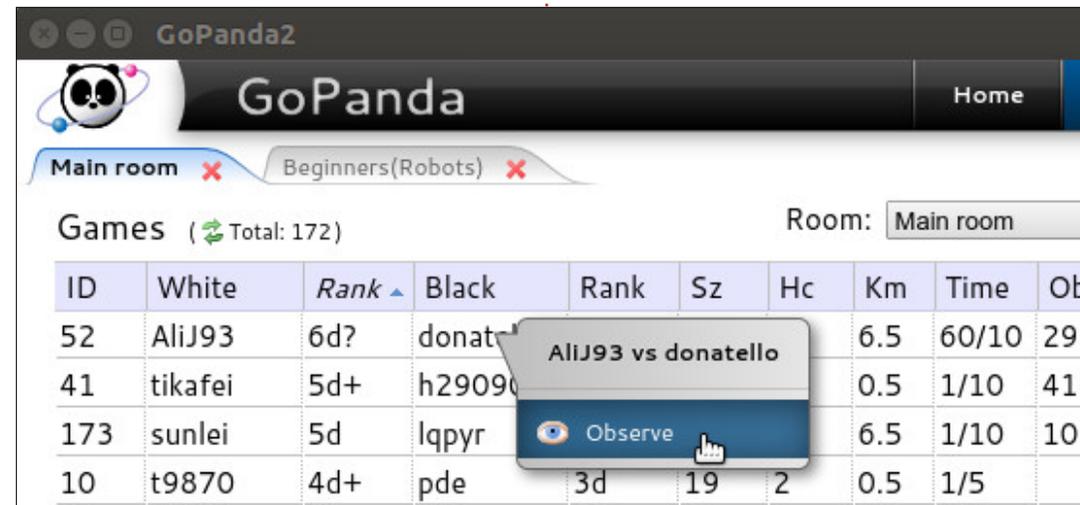
## PLAYING

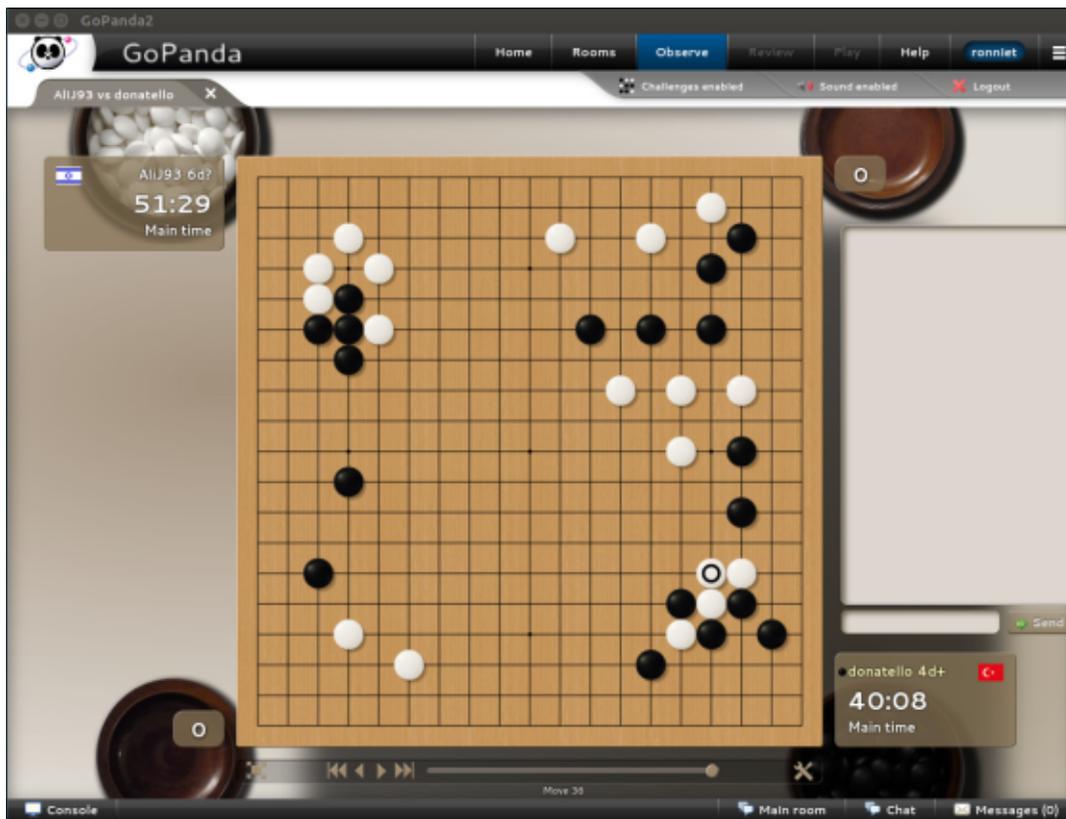
Top right, in the GoPanda window, is the login button. You'll need to log in to connect to PandaNet:

You'll now be in the main room

(shown above) with a list of currently playing matches. You can click on one of these matches, and, from the popup menu, choose 'Observe' (shown below).

You are now watching the match... live.





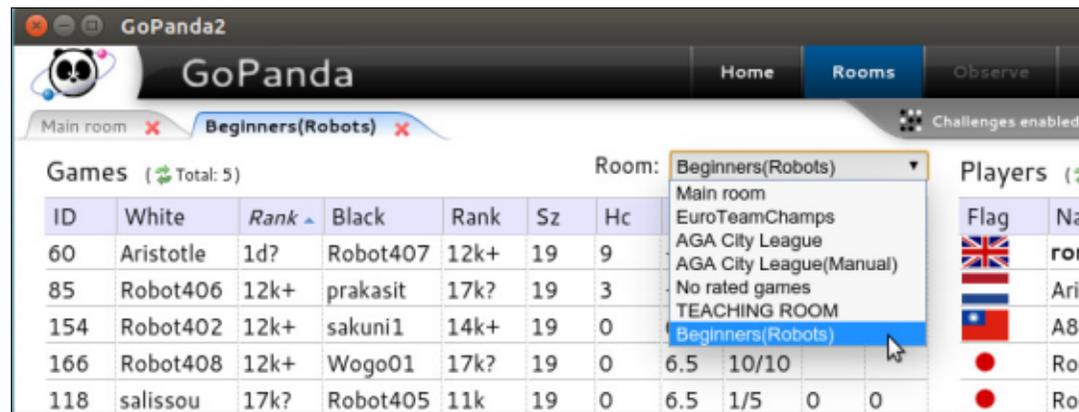
Everything in GoPanda opens like browser tabs, so clicking the X in the game tab (below the GoPanda logo) lets you leave the game.

So, now you're back to the main room. Now what? Well, if you're like me and don't want to just dive in and get soundly thrashed by a pro, you click the drop-down menu (in the main room) and choose 'Beginners (Robots)' (shown top right). This opens a new tab with

people playing robots.

But, on the right hand side (where it lists players), you'll see players named Robot. They're available for games. Most are 12k+, which means they're more than enough for a total noob like me.

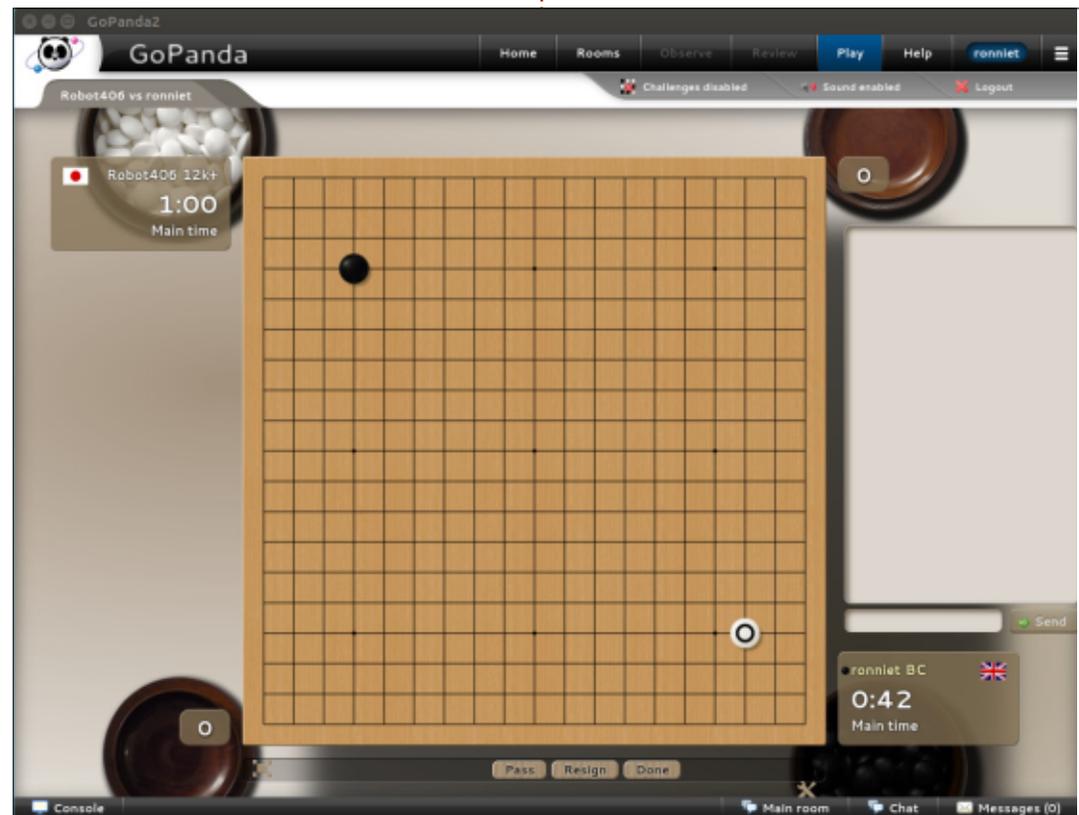
Click a robot name, choose 'Challenge', and you'll get a popup with some game settings. Things such as rules, board size, handicap/not, time, etc. Finally,



click OK.

Don't be surprised if it says the player is already in a game. This

happens when someone jumped in before you to challenge that robot. Try another robot. TIP: check the games in progress on the left to



see which robots are currently in use.

So now you know how to observe and play on PandaNet. But there's more! You can click on a player's name to view their stats, send messages, add as a friend, and (best of all) you can click 'Game archive' and see a list of their past games. From that list

you can then observe (or download) the game to watch it step-by-step.

## Go On The Go

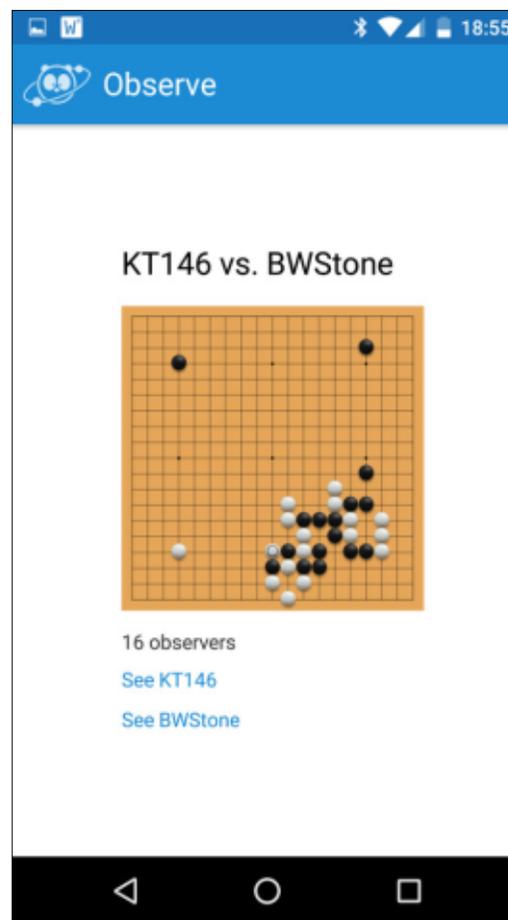
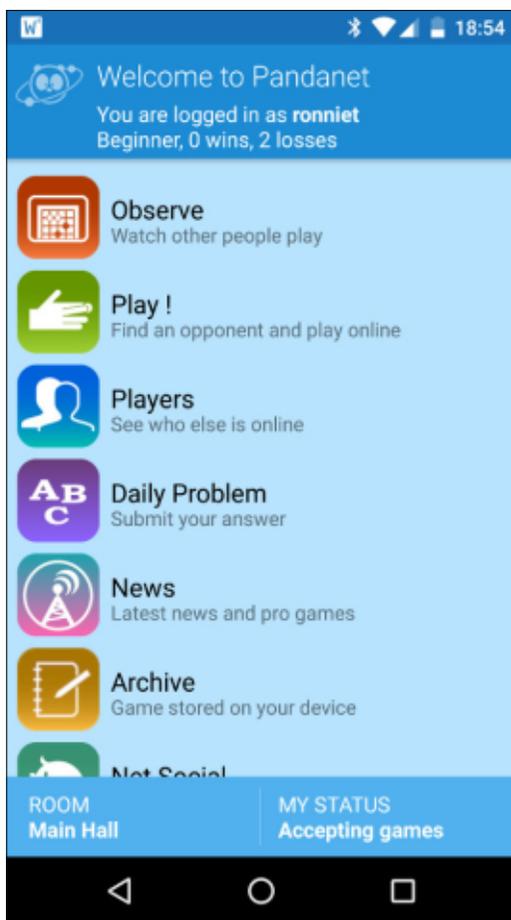
For Go, on the go, there's also Android and iOS apps for GoPanda. Android app:

[https://play.google.com/store/apps/details?id=be.gentgo.tetsuki&hl=en\\_GB](https://play.google.com/store/apps/details?id=be.gentgo.tetsuki&hl=en_GB) (sorry, I've no iOS device for an app link).

[en\\_GB](#) (sorry, I've no iOS device for an app link).



**Ronnie** is the founder and (still!) editor of Full Circle. He's a part-time arts and crafts sort of guy, and now an Arduino tinkerer.





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## CHA CHA CHA CHANGES

Our admin went AWOL for months, and I had no idea if/when the site would/wouldn't get paid. Initially the plan was to move the site and domain name to my hosting, but eventually I managed to track him down and get the FCM domain name, and site hosting transferred to me.

The new site is now up. **HUGE** thanks to **Lucas Westermann** (Mr. Command & Conquer) for taking on the job of completely rebuilding the site, and scripts, from scratch, in his own time.

The Patreon page that I've set up is to help me pay the domain and hosting fees. The yearly target was quickly reached thanks to those listed on this page. FCM is not going away. Don't worry about that.

Several people have asked for a PayPal (single donation) option, so I've added a button to the side of the site

**A big thank you to all those who've used Patreon and the PayPal button. It's a big help.**

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## FCM#109

**Deadline:**  
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