



Full Circle

THE INDEPENDENT MAGAZINE FOR THE UBUNTU LINUX COMMUNITY

ISSUE #113 - September 2016



Photo: wonker (Flickr.com)

CONNECTING LINUX PCS USING SIMPLE FILE TRANSFER PROTOCOL

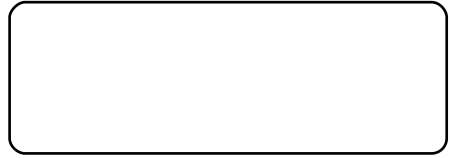
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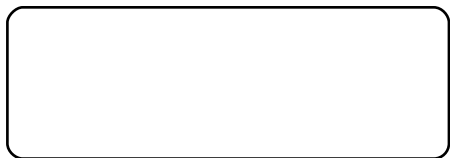
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Graphics



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```
#An alias to make the ls
command more detailed
alias ls = "ls -la --
color=always --classify"
```

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	Tot Receive	Tot Spend	Balance
Expenses:Auto:Gas	n	35.00	1
- Split Transaction -	n	100.00	2
Expenses:Dining	n	23.45	2
		100.00	Tot Spend
Assets:Cash in Wallet	n	100.00	

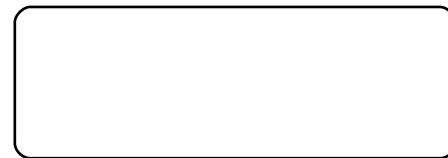
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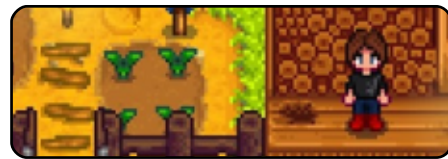
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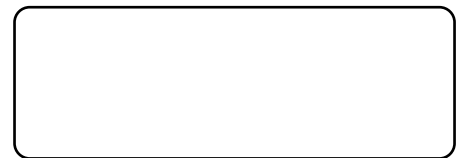
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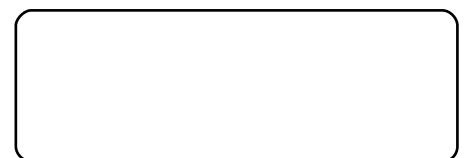
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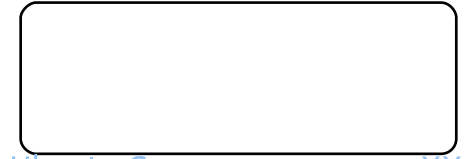
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WELCOME TO ANOTHER ISSUE OF FULL CIRCLE.

If you've ever had that horrible situation where the file(s) you need are on that other machine (and, of course, there's never a USB stick when you need one) then our cover story this month should help you. Using a couple of simple commands will allow you to gain access to your files on that other PC. As stated in the article though: this is not a secure method, so use it then close it. The usual Python, FreePascal, and Inkscape are, of course, here for you this month.

If your finances need to be in order we have a nice review of GNU Cash. It certainly seems to be fully featured with things such as importing Quicken files, and a standard double entry system. It may even be useful to those of you with a small business.

Charles has an interesting Linux Labs piece on Syd Bolton's PC Museum. If you'd like a trip down memory lane then it's a great article. The URL for the museum is in the article as are details on how to visit the museum.

If you have an Ubuntu device then you're probably playing around with OTA-13. My Ubuntu Devices column lists the new goodies.

Last, but not least, a big thank you to the people who've submitted articles over the past month, or two. They're in my email folders for a future issue. To those of you who haven't submitted: you should! Full Circle needs articles from everyone. Email them to: articles@fullcirclemagazine.org, or drop me an email if you have any questions about writing an article.

All the best, and keep in touch!

Ronnie

ronnie@fullcirclemagazine.org



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UBUNTU GNOME 16.10 BETA 1 DOWNLOAD NOW AVAILABLE IN ISO AND TORRENT FILES

The Ubuntu GNOME 16.10 operating system has been in development for quite some time. And now, the links to Beta 1 ISO files for the same has gone live.

Ubuntu GNOME 16.10 Beta 1 has been released as part of the Ubuntu 16.10 Yakkety Yak launch. The Ubuntu flavors taking part in the Beta 1 milestone include Ubuntu GNOME, Ubuntu MATE, Kubuntu, Lubuntu, Ubuntu Studio, and Ubuntu Kylin. Xubuntu has decided to skip the Beta 1 release.

Ubuntu GNOME 16.10 Beta 1 comes with loads of changes and improvements. It comes with newer versions of Calculator, File Roller, Cheese, and other software. The release also comes with the GNOME 3.22 Beta 1. It uses the GTK3 version of LibreOffice 5.2. GNOME's Initial Setup utility is also included and enabled to make the

configuring process simpler. This release also includes an experimental Wayland session.

Source:

<http://www.mobipicker.com/ubuntu-gnome-16-10-beta-1-download-now-available-iso-torrent-files/>

CONNOCHAETOS 14.2 OFFICIALLY RELEASED, BASED ON SLACKWARE 14.2 AND SALIX LINUX

Based on the Slackware 14.2 and Salix 14.2 GNU/Linux distributions, Connochaetos 14.2 is powered by a de-blobbed GNU/Linux-libre 4.4.19 kernel and includes only 100% free/libre open-source software projects, such as the IceWM 1.3.12 window manager and Iceweasel 45.3.0 web browser.

If you don't see your favorite applications in the Connochaetos 14.2 release, don't panic. They are, most certainly, available in the main software repositories of the GNU/Linux-libre operating system.

For example, you'll find there the latest versions of the Icedove email and news client, as well as the LibreOffice 5.1.4 office suite.

Qt5-based web browsers like Otter Browser and QupZilla are also present there, along with the current release of the Iceape Internet suite (a libre version of Mozilla's SeaMonkey project). And if you don't find your favorite apps, you are free to drop a request to the developers of Connochaetos.

Source:

<http://news.softpedia.com/news/connochaetos-14-2-officially-released-based-on-slackware-14-2-and-salix-linux-507688.shtml>

LINUS TORVALDS ANNOUNCES LINUX KERNEL 4.8 RC4 WITH SKYLAKE POWER MANAGEMENT FIX

The development of Linux kernel 4.8 continues today with the Release Candidate 4 (RC4) snapshot, and according to Linus

Torvalds, things are looking quite normal at this stage. At the same time, it also seems that this is the smallest RC to date, the biggest new feature being a fix for an Intel Skylake power management bug. However, there are also the usual updated drivers, arch improvements, and some KVM changes.

Now that we're able to take the fourth Release Candidate build of the Linux 4.8 kernel for a test drive on our PCs, its development cycle will continue, and next week, we will get our hands on the RC5 milestone. After that, there should be only two RCs left, RC6 and RC7, until the final Linux kernel 4.8 release hits the streets, which should happen at the end of September.

Source:

<http://news.softpedia.com/news/linux-torvalds-announces-linux-kernel-4-8-rc4-with-skylake-power-management-fix-507693.shtml>

LINUX KERNEL 3.10.103 LTS HAS LOTS OF MIPS IMPROVEMENTS, UPDATED RADEON DRIVERS

Linux kernel developer Willy Tarreau has announced the release of the one hundred and third maintenance update to the long-term supported Linux 3.10 kernel series.

For some reason, the Linux 3.10 kernel branch is still getting updates, and this new version promises to add quite some improvements and updated drivers. According to the appended shortlog and the diff from the Linux kernel 3.10.102 LTS build, a total of 161 files have been changed, with 1,800 insertions and 1,293 deletions.

For those of you who are wondering what's new in the Linux kernel 3.10.103 LTS, we would like to tell you that this update brings many improvements to the MIPS, PowerPC (PPC), x86, ARM, ARC, and s390 hardware architectures, as well as various enhancements and fixes to the EXT4, CIFS, NFS, NILFS2, UBIFS, XFS, FUSE, and eCryptfs filesystems.

There are also lots of updated drivers, in particular for Radeon, InfiniBand, SCSI, USB, Virtio, Xen, MTD, MMC, MD, iIO, HID, GPIO,

ATA, Crypto, and networking (mostly Ethernet and Wireless) devices, as well as an updated networking stack with IPv6, IPv4, Netfilter, Netlabel, Ceph, Bluetooth, IrDA, mac80211, SCTP, SunRPC, and RFKill fixes. The sound stack has been updated as well with some new audio drivers.

Source:

<http://news.softpedia.com/news/linux-kernel-3-10-103-lts-has-lots-of-mips-improvements-updated-radeon-drivers-507689.shtml>

CANONICAL RELEASES SNAPD 2.13 SNAPPY TOOL FOR UBUNTU 16.04 AND FEDORA 24 (COPR)

Canonical's Michael Vogt announced the release and immediate availability of a new maintenance update of the Snapd daemon that implements support for Snap universal binary packages in GNU/Linux distributions.

New Snapd point releases are out pretty fast these days, which means that they don't include any major changes, but only some much-needed improvements and

support for requested technologies. Therefore, Snapd 2.13 is the third maintenance update introduced in the month of August 2016.

According to the release notes, Snapd 2.13 is here to introduce a bunch of new interfaces, among which we can mention lxd-support, fuse, and mpris, those adding support for LXD, FUSE, and MPRIS technologies, end-to-end support for the Snap assertions checking functionality, multiple image improvements, and many bug fixes.

Source:

<http://news.softpedia.com/news/canonical-releases-snapd-2-13-snappy-tool-for-ubuntu-16-04-and-fedora-24-copr-507781.shtml>

UBUNTU 16.04 LTS KERNEL FOR RASPBERRY PI 2 UPDATED TO FIX EIGHT VULNERABILITIES

Canonical published a new security advisory to inform the Ubuntu Linux community about the availability of an updated kernel for the Raspberry Pi 2 port of the Ubuntu 16.04 LTS (Xenial

Xerus) operating system, patching the same eight vulnerabilities discovered in the desktop and server kernel packages.

The patched kernel security flaws are an information leak in Linux kernel's RDS (Reliable Datagram Sockets) implementation, a flaw in the TCP implementation, a race condition in the MIC VOP driver, as well as a heap-based buffer overflow in the USB HID driver.

Additionally, the patched kernel addresses a race condition in Linux kernel's MIC VOP driver, some minor issues with PowerPC platforms, various bugs in the OverlayFS file system, and some errors with the airspy USB device kernel driver, which didn't function properly.

Canonical urges all users of the Ubuntu 16.04 LTS (Xenial Xerus) port for Raspberry Pi 2 single-board computers to update the kernel packages to the new version, namely linux-image-4.4.0-1021-raspi2 (4.4.0-1021.27), as soon as possible. The patched kernel is already available in the stable repositories.

Source:

<http://news.softpedia.com/news/ubuntu-16-04-lts-kernel-for-raspberry-pi-2-updated-to-fix-eight-vulnerabilities-507784.shtml>

ANDROID-X86 RELEASES EARLY BUILD OF NOUGAT FOR DESKTOP PCs

Google and Intel may not be doing much work to make sure that Android can run on devices with Intel processors anymore... but the Android-x86 project continues to release new builds of Android for computers with Intel and AMD chips. The latest release? A build of Android 7.0 for developers. In other words, you can now run Android 7.0 Nougat on a PC.

The software is based on Google's Android Open Source Project (AOSP) code, and it's still a work in progress. But some of Nougat's key features, such as split-screen, multi-window mode works, allowing you to interact with two apps on the screen at once.

Keep in mind that at this point

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Android-x86 7.0 is aimed at developers, so the official page for the software explains how to build the operating system from source, but if you want to download a pre-built disc image, Geek Till it Hertz has you covered.

Source:

<http://liliputing.com/2016/09/android-x86-releases-early-build-nougat-desktop-pcs.html>

SEVERAL LINUX DISTROS CATER TO DEEP WEB USERS

One thing to keep in mind when trying to browse the darknet is how a browser or anonymity tool is not a sufficient solution. While this is convenient and somewhat secure, a lot of data can be collected in the background. Which operating system is being used, the current timezone, and in some cases, even what type of hardware is being used.

With the specific Linux distributions, most of those problems are taken away. Keeping in mind how these solutions are created by third parties, there is always a security concern to keep in mind. Whonix, while one of the

oldest distros well-suited for darknet usage, is also rather simple to use and set up.

Booting these solutions from a removable storage device adds another layer of privacy for the user. For users who are looking for a more advanced solution, Kali Linux will have you covered. With several hundred tools focusing on penetration testing, it is safe to say this is taking things to a whole new level. However, this distro is not designed for the novice user, as they will get overwhelmed by all of the options at their disposal.

Source:

<http://themerle.com/several-linux-distros-cater-to-deep-web-users/>

ADOBE RESURRECTING FLASH PLAYER ON LINUX

Four years ago, Adobe made a decision to stop updating the Flash Player package (NPAPI) on Linux, aside from delivering security patches. It has made an about turn on this decision in the last week and has said that it will keep it in sync with the modern release branch going forward. It is

currently testing the latest build in a beta capacity.

The move will see Mozilla Firefox users bumped up to the latest release of Flash Player if they have the package installed. For the last four years, only the Flash Player (PPAPI) in Google Chrome has been kept up to date.

Testers can download the new NPAPI binaries today from the Adobe Labs download page. Unfortunately for users running a Fedora-based distribution, the beta build is not supported on those installs.

Source:

<https://www.neowin.net/news/ado-be-resurrecting-flash-player-on-linux>

NEPTUNE LINUX 4.5.2 ISO ADDS KERNEL 3.18.40, ICEDOVE 45, UPDATED GRAPHICS STACK

Neptune 4.5.2 ISO image is now available for download, and it looks like it introduces a bunch of new enhancements, such as the implementation of the

PulseAudio sound server system by default to offer support for more sound cards, and an updated graphics stack with new Intel, AMD Radeon, and Nvidia (Nouveau) video drivers.

Also new in the Neptune 4.5.2 ISO image is the addition of the long-term supported Linux 3.18.40 kernel, Chromium 52 web browser, Icedove 45 email and news client, KDELibs 4.14.22 libraries for the KDE4 desktop environment, Skanlite 1.0 scan application, and Hedgewars 0.9.22 game.

Among other improvements, we can notice that there's a new default theme for the GRUB bootloader, which follows the Neptune Linux styling, as well as updated firmware packages to offer better support for modern hardware. Of course, all the software versions and security patches released since September 1, 2016, are included.

Source:

<http://news.softpedia.com/news/neptune-linux-4-5-2-iso-adds-kernel-3-18-40-icedove-45-updated-graphics-stack-507944.shtml>

POKEMON-THEMED UMBREON ROOTKIT TARGETS LINUX X86 AND ARM PLATFORMS

Security researchers at Trend Micro have discovered a new rootkit trojan that targets only Linux-based systems running on x86 and ARM (Raspberry Pi) platforms.

The rootkit's name is Umbreon, taken after the name of a Pokemon creature that hides in the shadows, a fitting name for a rootkit. According to Trend Micro, threat actors have used Umbreon in live attacks, the company receiving samples to analyze from compromised devices. The good news is that Umbreon's installation is not automated, and attackers need to break into a system first, and then manually install the rootkit on the hacked device.

This installation procedure has its negative side as well, mainly because attackers can install the rootkit in a different location of the infected system each time, making automatic detection even harder than it already is.

As for its technical capabilities, Umbreon is a very dangerous tool, with the ability to persist between reboots, intercept all network traffic, intercept and alter terminal commands, and even open a connection to the attacker, allowing him to log on the victim's device.

Source:

<http://news.softpedia.com/news/pokemon-themed-umbreon-rootkit-targets-linux-x86-and-arm-platforms-507970.shtml>

LUABOT IS THE FIRST DDoS MALWARE CODED IN LUA TARGETING LINUX PLATFORMS

LuaBot falls into the same category as Mirai because its primary purpose is to compromise Linux systems, IoT devices or web servers, and add them as bots inside a bigger botnet controlled by the attacker.

At the moment, the LuaBot trojan is packed as an ELF binary that targets ARM platforms, usually found in embedded (IoT) devices. Based on

MalwareMustDie's experience, this seems to be the first Lua-based malware family packed as an ELF binary spreading to Linux platforms.

An initial analysis by MalwareMustDie didn't uncover any malicious functionality outside the capabilities of adding devices to a centrally controlled botnet. One day after publishing his research on LuaBot, MalwareMustDie received an extra sample, a LuaBot module, which when installed, granted LuaBot the ability to carry out Layer 7 DDoS attacks.

Unlike Mirai, which is the fruit of a two-year-long coding frenzy, LuaBot is in its early stages of development, with the first detection being reported only a week ago and a zero detection rate on VirusTotal for current samples.

Source:

<http://news.softpedia.com/news/luabot-is-the-first-botnet-malware-coded-in-lua-targeting-linux-platforms-507978.shtml>

CALAMARES 2.4 UNIVERSAL LINUX INSTALLER GETS ITS FIRST POINT RELEASE TO FIX BUGS

Calamares 2.4.1 is here as a bug fix release that promises to patch a few of the issues there were discovered or reported by users since Calamares 2.4, among which we can mention enforcement of applying timezone settings set during installation to certain desktop environments, such as KDE Plasma 5, during first boot.

There was another timezone-related issue in Calamares 2.4, which didn't allow the live system to apply the timezone changes set during installation to the live session, so thanks for the new workaround added to the timezone selector behavior, these changes are now applied immediately.

Also new in Calamares 2.4.1 are improvements to the partition scanner code, which will now always exclude ISO9660 volumes (optical disc media or USB flash drives) so that they'll no longer be

displayed in the devices list. Additionally, the code has been optimized and enhanced to handle the removal of the now-deprecated Q_FOREACH construct component of Qt.

Source:

<http://news.softpedia.com/news/calamares-2-4-universal-linux-installer-gets-its-first-point-release-to-fix-bugs-508024.shtml>

STEAMOS 2.91 BETA UPDATES LINUX KERNEL TO IMPROVE ATH10K WIRELESS SUPPORT

Valve has released a new Beta version of the next stable branch of its SteamOS gaming distribution based on Debian GNU/Linux, SteamOS 2.91, which was pushed to the brewmaster_beta channel on August 31, 2016.

The new SteamOS brewmaster update 2.91 is not a major milestone, as it only updates the kernel and firmware packages, namely linux ath10k, linux-latest, firmware-free, and firmware-nonfree to add the

ATH10K_FW_FEATURE_IGNORE_0 TP_RESULT variable for improving support for the ath10k wireless driver.

What that means exactly is that if you're installing SteamOS on a desktop computer or laptop that sports a wireless adapter from Atheros, there's a better chance for it to be supported, as well as to function within normal parameters. However, this is not a new patch in the Linux kernel, as it exists since May 2015.

Source:

<http://news.softpedia.com/news/steam-os-2-91-beta-updates-linux-kernel-to-improve-ath10k-wireless-support-508019.shtml>

KALI LINUX 2016.2 DELIVERS NEW SECURITY TESTING OPTIONS

A year ago, Kali Linux moved to a rolling release cycle in an effort to provide a continuous stream of application updates. Kali Linux is a popular open-source Linux distribution for security professionals, loaded with a growing list of tools for information gathering,

vulnerability analysis, web application analysis, database assessment, password attacks, wireless attacks and reverse engineering. Despite Kali Linux's rolling release cycle, it still puts out milestone releases as a roll-up omnibus of changes made over a period of time.

Source:

<https://www.linux.com/news/kali-linux-20162-delivers-new-security-testing-options>

YOU CAN NOW DOWNLOAD A SINGLE ISO IMAGE WITH ALL THE UBUNTU 16.04.1 LTS FLAVORS

Željko Popivoda from the Linux AIO team informed about the availability of an updated Linux AIO Ubuntu Live ISO image, based on Canonical's recently released Ubuntu 16.04.1 LTS (Xenial Xerus) OS.

These include Ubuntu 16.04.1 LTS, Kubuntu 16.04.1 LTS, Ubuntu MATE 16.04.1 LTS, Xubuntu 16.04.1 LTS, Lubuntu 16.04.1 LTS, and Ubuntu GNOME 16.04.1 LTS. Linux AIO Ubuntu 16.04.1 Live ISOs also

contain a memory test tool to verify the integrity of your computer's RAM, as well as the handy Hardware Detection Tool (HDT).

The ISO contains only untouched versions of these OSes. Therefore, the Linux AIO Ubuntu 16.04.1 Live ISO images are the perfect tool for those who want to have a single USB stick with the Ubuntu 16.04.1 LTS (Xenial Xerus) flavors mentioned above, which they can use to showcase the respective GNU/Linux distributions to their friends or family, as well as to more easily install one or more of them on new computers.

Source:

<http://news.softpedia.com/news/you-can-now-download-a-single-iso-image-with-all-the-ubuntu-16-04-1-lts-flavors-508075.shtml>

AV LINUX 2016.8.30 AUDIO PRODUCTION OS SHIPS WITH LINUX 4.4.6 REAL-TIME KERNEL

A new stable version of the AV Linux open-source and free GNU/Linux distribution designed

for audio production has been released recently, referring to version 2016.8.30, which brings an updated real-time kernel and many other improvements.

Powered by the Linux 4.4.6 real-time kernel that has been patched to support 32-bit applications and VirtualBox kernel module building, AV Linux 2016.8.30 adds the Ardour 5.3.0 and Mixbus 3.6.0 digital audio workstations, replaces VLC Media Player and Audacious with MPV, and improves AAC encoding in WinFF.

The Catfish file search tool is now integrated with the Thunar file manager, which has also received a new custom action that lets users paste a copied file path from clipboard to any application with the middle mouse button or click scroll, by using the "xclip" command-line utility, along with support for running shell scripts to install various app bundles.

Among other improvements implemented in AV Linux 2016.8.30, we can mention better support for AMD Radeon graphics cards, a brand new system theme called Zukitre, which uses new GTK+ 3.20 elements, the Hooli

desktop theme for the 32-bit edition, the addition of a new theme for the SLIM login manager, and a few wallpapers.

Source:

<http://news.softpedia.com/news/av-linux-2016-8-30-audio-production-os-ships-with-linux-4-4-6-real-time-kernel-508074.shtml>

ELEMENTARY OS 0.4 LOKI RELEASED, UBUNTU-BASED LINUX DISTRO LOOKS ELEGANT

There are lots of well-known Linux distributions that are being used by open source enthusiasts as their daily-use operating systems. While some Linux distributions are suitable for older or slower hardware, others are famous for being heavily customizable. If we discuss the ones that are most elegant, elementary OS proves to be the best option. Often called 'poor man's Apple', elementary OS looks and feels like OS X.

After spending more than a year in development, the elementary OS team has released

elementary OS 0.4 Loki. This release follows Freya, which was released in April of 2015.

For this release, Loki development team closed about 1,000 issue reports and acted on more than 20 blueprints. Overall, these changes bring stability and security improvements to the operating system.

This Ubuntu-based distribution is based on Ubuntu 16.04 LTS and Linux kernel 4.4. It brings improved hardware support, including 6th-gen Intel Skylake CPUs and graphics. More changes come in the form of support for ambient light sensors.

Source:

<https://fossbytes.com/elementary-os-0-4-loki-released-download-features/>

BLACK LAB LINUX 8 "ONYX" BETA 2 HAS FULL EXFAT SUPPORT, BASED ON UBUNTU 14.04.5

Black Lab Linux 8 "Onyx" Beta 2 is here approximately three weeks after the launch of the first

Beta build, and it adds a few local applications, among which we can mention the Abiword word processor, Gnumeric spreadsheet editor, Rhythmbox music player, Totem video player, GIMP image editor, Chromium web browser, and Thunderbird e-mail and news client. OpenJDK 8 (Java support) is available as well.

Based on the Linux 4.2 kernel packages that are being used in the Ubuntu 14.04 LTS (Trusty Tahr) operating system, Black Lab Linux 8 "Onyx" Beta 2 introduces full support for the XFS and exFAT filesystems, along with various web apps, such as Google Maps, Google Hangouts, YouTube, Google Photos, Google Contacts, and Google Translate.

Being based on Ubuntu 14.04.5 LTS, this second Beta development milestone of the Black Lab Linux 8 operating system also includes all the security updates that have been released upstream as of September 3, 2016.

Source:

<http://news.softpedia.com/news/black-lab-linux-8-onyx-beta-2-has-full-exfat-support-based-on-ubuntu-14-04-5-508114.shtml>

LINUX MINT 18 "SARAH" KDE EDITION OFFICIALLY RELEASED, BASED ON UBUNTU 16.04 LTS

Linux Mint 18 "Sarah" KDE has been in Beta until today, but now the wait is finally over, and you can get the Live ISO images for either 64-bit or 32-bit hardware architectures, and install the operating system on your personal computer. The new version is based on the Ubuntu 16.04 LTS (Xenial Xerus) distribution.

That means it will get security and software updates for 5 years, until 2021, and at the same time, that Linux Mint 18 "Sarah" KDE Edition inherits almost all of the core components of Ubuntu 16.04 LTS, including the KDE Plasma 5.6 desktop environment, as well as the long-term supported Linux 4.4 kernel.

To make this edition of Linux Mint 18 even more user-friendly, the development team had to add SDDM as default login manager, as well as the Kubuntu Backports PPA (Personal Package Archive), so you can get the newest KDE Plasma 5

releases as they're being pushed upstream.

Source:

<http://news.softpedia.com/news/linux-mint-18-sarah-kde-edition-officially-released-based-on-ubuntu-16-04-lts-508142.shtml>

AZURE SERVICE FABRIC ENTERS PUBLIC BETA FOR LINUX WORKLOADS

Developers who want help running Linux- and Java-based microservice applications will have a new Microsoft service to take for a spin.

Microsoft announced Tuesday that it's launching the public beta of Service Fabric support for running applications on the popular open source operating system with the popular programming language. It's an expansion of Service Fabric's capabilities, at a time when Microsoft is spending more effort to support Linux in addition to platforms it controls.

Service Fabric is designed to simplify the process of making and

managing applications that use microservice architecture. Microservices are what they sound like -- small, purpose-built services that can then be put together into a larger application. Microsoft's service helps simplify the complexity of operating microservice-based applications by managing things like health monitoring of services, continuous deployment, and container orchestration.

Supporting Java and Linux in Service Fabric opens it up to a new set of programmers and companies, at a time when more businesses are looking into using microservices.

Source:

<http://www.pcworld.com/article/3119826/azure-service-fabric-enters-public-beta-for-linux-workloads.html>

NETHSERVER 7 "BRUSCHETTA" SERVER- ORIENTED LINUX OS TO SUPPORT NEXTCLOUD 10

The first Beta of NethServer 7 "Bruschetta" was released on July 13, 2016, so it took the developers exactly two months to push a new Beta out the door for early adopters and public beta testers who either want to help them fix bugs and polish existing features, or just get an early taste of what's coming in the server-oriented distribution.

Being fully in sync with the CentOS 7 Linux repositories, NethServer 7 Beta 2 is here to add support for the Nextcloud 10 self-hosting cloud server platform, support for implementing advanced static routes with specific selection of metric and device, as well as to force a default gateway. It also adds a brand new bandwidth monitoring module called BandwidthD, along with a POP3 connector module.

Source:

<http://news.softpedia.com/news/nethserver-7-bruschetta-server-oriented-linux-os-to-support-nextcloud-10-508225.shtml>

THE LINUX FOUNDATION AND EDX ANNOUNCE NEW,

FREE INTRODUCTION TO OPENSTACK COURSE

The Linux Foundation, the nonprofit advancing professional open source management for mass collaboration, today announced its newest massive open online course (MOOC) is available for registration. The course, LFS152x - Introduction to OpenStack, is offered through edX, the nonprofit online learning destination founded by Harvard University and the Massachusetts Institute of Technology (MIT). The course is free and will go live this October.

LFS152x, Introduction to OpenStack, provides an in-depth primer on OpenStack. This course is designed for IT professionals who want a high-level overview of OpenStack and to gain the knowledge required to determine whether OpenStack cloud solutions may meet the IT needs of their organizations. It also serves as a first step for individuals who eventually want to take the Certified OpenStack Administrator exam. In addition, this course helps anyone who wants to set up a small scale OpenStack test

environment to gain experience working with OpenStack.

Source:

<http://www.marketwired.com/press-release/the-linux-foundation-and-edx-announce-new-free-introduction-to-openstack-course-2158434.htm>

SIXTH LINUX DDoS TROJAN DISCOVERED IN THE LAST 30 DAYS

Linux users have yet another trojan to worry about, and as always, crooks are deploying it mostly to hijack devices running Linux-based operating systems and use them to launch DDoS attacks at their behest.

Dr.Web security researchers, the ones who have discovered this threat, say the trojan seems to infect Linux machines via the Shellshock vulnerability, still unpatched in a large number of devices.

The trojan, going by the generic name of Linux.DDoS.93, will first and foremost modify the `/var/run/dhcpclient-eth0.pid` file in

such a way that its process is started with every computer boot. If the file doesn't exist, the trojan will create it itself.

Once the trojan is initiated after a boot-up, it operates using two processes. One is used to talk to the C&C server, while the second makes sure the trojan's parent process is always up and running.

When the attacker in control of the trojan's botnet issues an attack command, the trojan launches 25 child processes that carry out the DDoS attack.

Source:

<http://news.softpedia.com/news/sixth-linux-ddos-trojan-discovered-in-the-last-30-days-508309.shtml>

UBUNTU SDK 4.1.0 IDE IS POWERED BY QT CREATOR 4.1, ADDS LXD-BASED BACKEND

Ubuntu SDK developers Benjamin Zeller and Zoltán Balogh are announcing the release of the Ubuntu SDK 4.1.0 IDE

(Integrated Development Environment) for the Ubuntu Linux operating system.

As its version number suggests, Ubuntu SDK 4.1.0 is based on the recently released Qt Creator 4.1 IDE developed by The Qt Company, which came only a couple of weeks ago, at the end of August 2016, with two new themes, editor improvements, better CMake support, and many other goodies. Another change in the Ubuntu SDK 4.1.0 IDE is the addition of a new backend based on the next-generation LXD container hypervisor for Linux. It replaces the click chroot-based builders, and lets the Ubuntu SDK devs to fetch and use pre-built SDK images when a new build target is generated.

Source:

<http://news.softpedia.com/news/ubuntu-sdk-4-1-0-ide-is-powered-by-qt-creator-4-1-adds-lxd-based-backend-508271.shtml>

MICROSOFT BEEFS UP LINUX DATA SCIENCE VIRTUAL MACHINE

Microsoft R Server Developer Edition is now available on the Linux version of the company's Data Science Virtual Machine (DSVM), enabling users to build models using Microsoft's Scaler libraries.

In January, Microsoft launched R Server Developer Edition, a free version of the analytics platform for developers, students and nonproduction deployments. The offering arrived nearly a year after the software maker announced it was acquiring Revolution Analytics, the leading commercial supporter of R, the popular open-source statistical computing language.

Making Microsoft R Server Developer available on the Linux flavor of the DSVM offers a major bump in big data processing capabilities. Prior to the release, it only supported Microsoft R Open, which cloud only process as much data as would fit in memory, according to the company.

Addressing the educational and training markets, Microsoft announced that the solution now supports an interactive data science and scientific computing

platform used by schools and enterprises that are ramping up their analytics capabilities.

Source:

<http://www.eweek.com/developer/microsoft-beefs-up-linux-data-science-virtual-machine.html>

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COMMAND & CONQUER

Written by Lucas Westermann

i3wm

Last month, I posted a list of tools and tips that I use almost every day. Upon my return from vacation, I have actually swapped one of the tools out for an alternative - and have since solved every gripe I had previously. Specifically, I switched to i3wm from AwesomeWM.

Many of you might be thinking "Why? They're both tiling window managers!". And that's entirely true. However, i3's default approach is much more sane (to me) than AwesomeWM's, and it offers a systray (which many tiling window managers do not - although AwesomeWM offered one as well). The default keybindings, and the way you manage your windows, just seem more logical to me. Not to mention the configuration file for AwesomeWM is in lua, which is not a language I use often. Instead, i3 has a more legible approach.

Those are the base reasons for why I considered i3 over AwesomeWM. Once I decided that it could work, I downloaded the

community image of Manjaro Linux (based off ArchLinux) that ran i3 by default. Installing it into a virtual machine was a snap, and then I spent some time in the VM, trying out my normal daily operations. I discovered a variety of things - including i3's tabbed mode. Tabbed mode, for anyone who hasn't tried i3, is where you can have multiple applications open in a workspace, but each one gets full height/width, and you instead have the window titles available to you at the top of the screens (like tabs in a browser). So if you, like me, organize your workspaces into certain tasks, it makes the organization easier, without being forced to move a window elsewhere in order to get the full amount of space to work with.

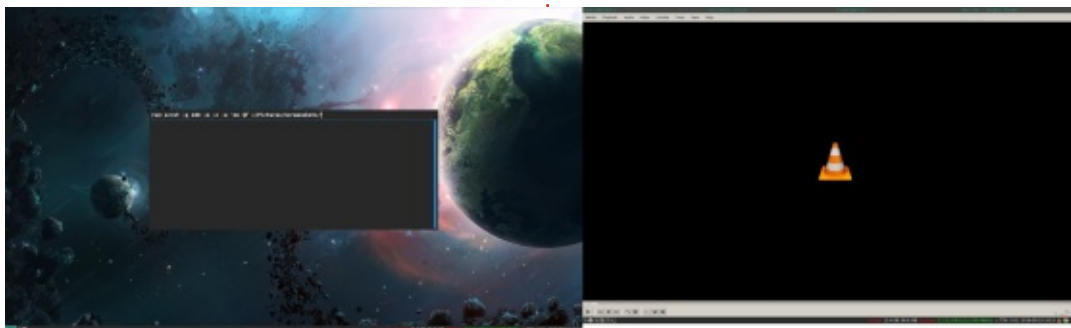
The last thing I got enthused about was the large variety of screenshots for i3 systems I've seen. Including Font Awesome icons instead of workspace title - which is exactly what I've now set up. Admittedly, both i3 and AwesomeWM could theoretically have been made to look however you want, but I find the approach in i3 to be easier for me to comprehend and to work with, as opposed to the themes in AwesomeWM.

My advice for anyone who wants to try something like this, is to find a distribution that comes preconfigured and try it out in a VM. This makes the testing period a little shorter, and gives you a basis for configurations without having to necessarily google for

screenshots of what you'd like.

Included below is a screenshot of my current system. The left monitor shows rofi (a program launcher), and the right is demonstrating tabbed mode.

I hope this article may have enticed at least one or two readers to give i3 a shot (or tiling window managers in general). I first tried TWMs about a decade ago, and since then, I've never felt anywhere near as productive in traditional window managers (in any OS). If you have questions, or comments, feel free to email me at lswest34+fc@gmail.com.



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.



HOW-TO

Written by Greg D. Walters

Python In The Real World - Pt 70

This month, we will be using the RPi to control a simple DC Hobby motor. This can be obtained from most hobby stores, electronics suppliers, and even some big box hardware stores. Here is a “shopping list” of what we will be needing.

- DC Hobby Motor
- L293D Dual H-Bridge Motor Driver Chip
- 4 AA (or AAA) Battery Holder and batteries
- Breadboard
- Male to Male jumpers
- RPi (of course)

Before we start wiring and coding, we need to talk about a couple of things.

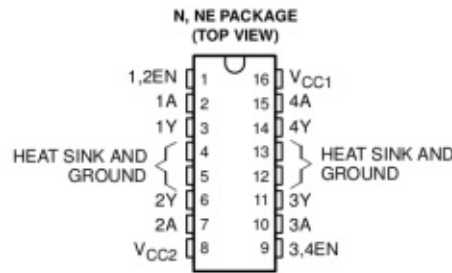
First, **NEVER EVER** connect a motor of **any kind** directly to the RPi. You are asking for disaster. The current requirements can cause the RPi to “melt down”. The driver chip is less than \$5.00 US and is a lot cheaper than a \$39.00 RPi.

Second, we will discuss the

L293D H-bridge motor driver for a few moments so you understand how this device works.

According to wikipedia, “An H bridge is an electronic circuit that enables a voltage to be applied across a load in either direction. These circuits are often used in robotics and other applications to allow DC motors to run forwards and backwards.”

Here is a pinout of the driver chip (“borrowed” from hardwarefun.com)...



Pins 1 and 9 are enable pins. Think of these pins as an On/Off switch. A low state on the enable pin means the motor is off. A high state means that the motor CAN BE on. Let’s look at it as a logic table or truth table. Pins 1A and 2A are one side of the chip and are

Enable	1A	2A	Result
LOW	HIGH	LOW	Not spinning - Enable is “off”
LOW	LOW	HIGH	Not spinning - Enable is “off”
HIGH	LOW	LOW	Not spinning - Both control inputs are “Off”
HIGH	HIGH	LOW	Turning Clockwise*
HIGH	LOW	HIGH	Turning Anti-Clockwise*
HIGH	HIGH	HIGH	Not Spinning - Both control inputs are “On”
			* Direction is based on motor wiring.

control lines like the enable pins. The same logic applies to 3A and 4A (the other half of the chip) as well. Pins 1Y and 2Y are the outputs to the motor.

The bottom line of the crazy table above is this.

If you want the motor to turn on you MUST...

- Have the Enable pin HIGH (pin 1 and/or pin 9)
- AND EITHER 1A OR 2A HIGH BUT NOT BOTH (chip pin 2 and pin 7 respectively)

Now that we have decoded the logic of the magic chip, we can start to wire our breadboard and RPi.

WIRING

The Fritzing drawing (next page, top right) shows our wiring diagram for this month. Notice that we are only using one half of the chip, so we could actually control two small DC motors instead of just one. That, however, will be up to you to experiment with.

As always, make the wiring connections to the RPi BEFORE you power the RPi on. Also double check your wiring, especially since we have an external power source. You might not be happy if something is on the wrong pin.

This first Fritzing image shows

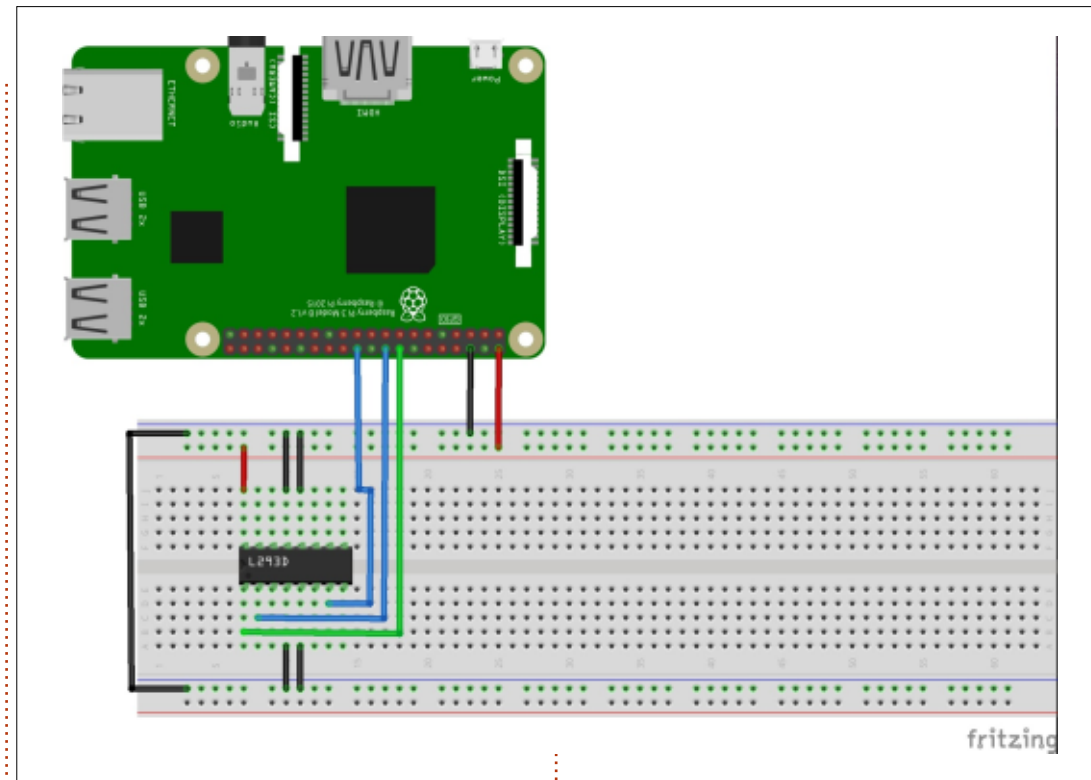
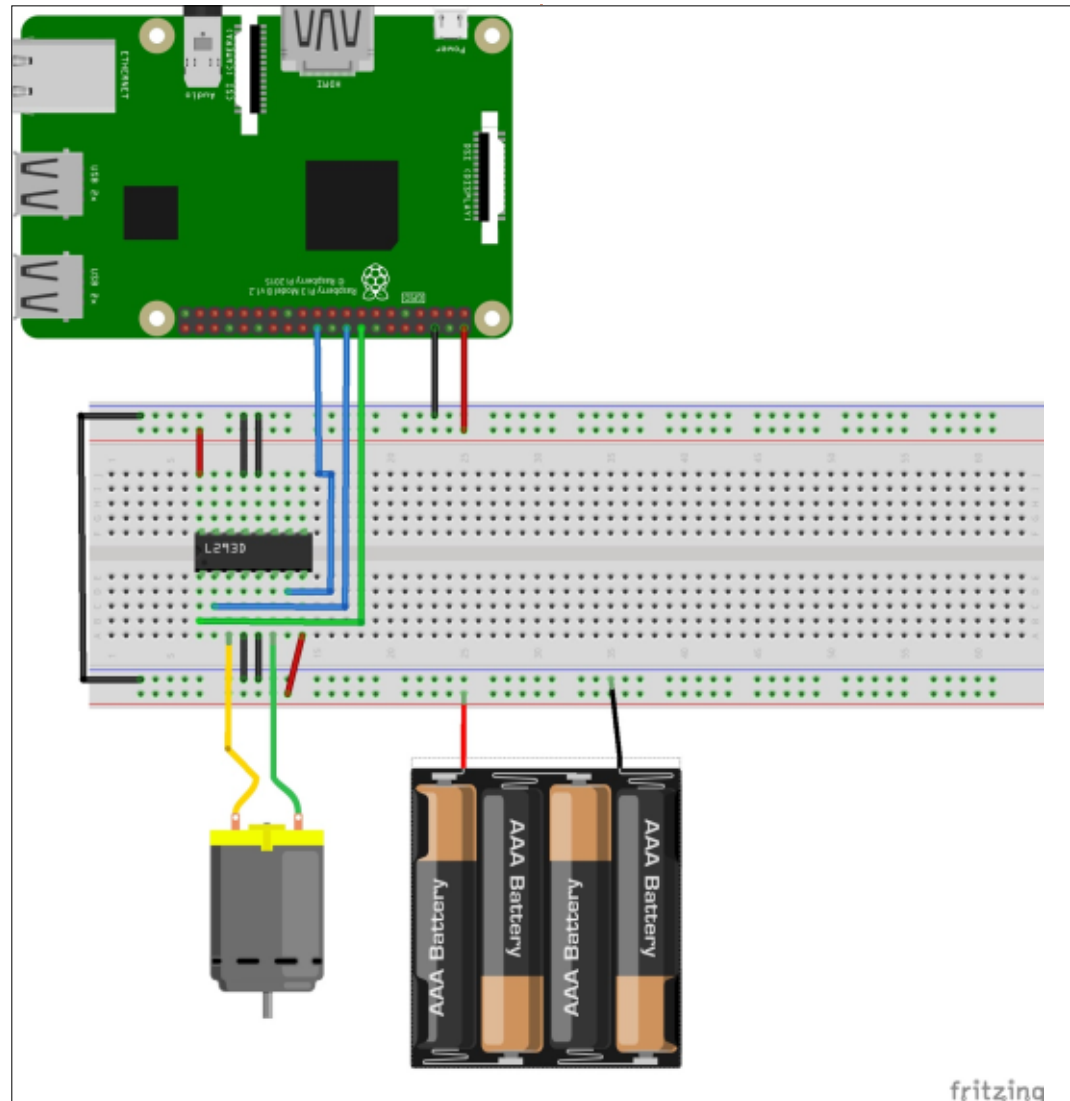


HOWTO - PYTHON

the connections to the RPi and to the breadboard/chip. Basically it breaks down like that shown in the table bottom right

The next Fritzing diagram (below) shows the battery and motor hook-ups.

We are using the +5 VDC power from the RPi to power the motor driver chip (RPi pin 2 to L293D pin 16). While the above diagram shows AAA batteries, you can use a battery pack that uses AA batteries as well. We are also providing Ground from the RPi (pin



FROM		TO	
RPi	Pin 2 (+5VDC)	Breadboard	VCC Rail
RPi	Pin 6 (Gnd)	Breadboard	Gnd Rail
RPi	Pin 16 (GPIO 23)	Chip	Pin 1 (Enable)
RPi	Pin 18 (GPIO 24)	Chip	Pin 2 (1A)
RPi	Pin 22 (GPIO 25)	Chip	Pin 7 (2A)
Chip	Pins 4,5,12,13	Breadboard	Gnd Rail
Chip	Pin 16	Breadboard	VCC Rail
Chip	Pin 8	Breadboard	BOTTOM VCC Rail
Chip	Pins 12,13	Breadboard	BOTTOM Gnd Rail
Breadboard	Gnd Rail Top	Breadboard	Gnd Rail Bottom

6) to the chip (pins 4,5,12,13). The motor is driven on chip pin 3 (1A) and pin 5 (2A). The battery connects to chip pin 8 to provide the voltage for the motor.

CODE

We will deal with code in two

programs. The first simply turns on the motor, runs for a few seconds then stops it. The second is a modified version of the first that shows how to reverse the motor.

DCMOTOR1.PY

This program (below) will

```
import RPi.GPIO as GPIO
```

```
from time import sleep
```

```
GPIO.setmode(GPIO.BCM)
GPIO.setup(23, GPIO.OUT) # 1A
GPIO.setup(24, GPIO.OUT) # 2A
GPIO.setup(25, GPIO.OUT) # Enable
GPIO.output(24, GPIO.LOW)
```

Set everything up and set 2A to low.

```
print "Starting motor"
GPIO.output(23, GPIO.HIGH)
GPIO.output(25, GPIO.HIGH)
```

```
sleep(5)
```

Set 1A to HIGH and Enable to HIGH to start the motor and let it run for 5 seconds.

```
print "Stopping motor"
GPIO.output(25, GPIO.LOW)
sleep(2)
GPIO.cleanup()
```

Stop the motor by setting the Enable to LOW, sleep for 2 seconds, then run GPIO.cleanup().

The first part of the program will be used in the next one.

simply turn on the motor in forward (clockwise) mode and let it run, then stop it. Basically it just proves that everything is working correctly.

DCMOTOR2.PY

In this program (next page), we set up the GPIO pins just as we did before, but we are now using PWM to modulate the speed of the motor. If you don't remember PWM, please refer to Part 64 back in FCM 107.

In the forward mode, the longer the duty cycle (closer to 100) means the motor will go faster.

In the reverse mode, the SHORTER the duty cycle (closer to 0) means the motor will go faster.

We speed up the motor by setting the duty cycle to a LOWER percentage, let it run for 5 seconds, then stop it, do a GPIO.cleanup(), then end the program.

Well, that's it for this month. Next month, we will be working with servos. All you need is a small inexpensive one with three wires.

We will not be using parts from this month's project, but keep them for future projects.

Until then, have fun.



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.

```
import RPi.GPIO as GPIO
```

```
from time import sleep
```

```
GPIO.setmode(GPIO.BCM)
GPIO.setup(23, GPIO.OUT) # 1A
GPIO.setup(24, GPIO.OUT) # 2A
GPIO.setup(25, GPIO.OUT) # Enable
GPIO.output(24, GPIO.LOW)
```

As I stated earlier, the above code is pretty much the same thing as we started with in dcmotor1.py.

```
fwd = GPIO.PWM(23, 40)
```

We are setting pin 23 to be a PWM Output line with 40% duty cycle (on 40% of the time and off 60% of the time).

```
print "Starting motor"
GPIO.output(25, GPIO.HIGH)
fwd.start(70)
sleep(5)
```

We start the motor by setting the enable to High and setting the Duty Cycle to 70. The motor will run for 5 seconds.

```
print "Stopping motor"
GPIO.output(25, GPIO.LOW)
sleep(2)
```

Now, we stop the motor by setting enable to low.

```
print "Starting motor in reverse"
rev = GPIO.PWM(24, 50)
GPIO.output(23, GPIO.LOW)
GPIO.output(25, GPIO.HIGH)
rev.start(50)
sleep(5)
```

We now set the motor to reverse (pin 23 to low and starting the PWM duty cycle to 50% and run for 5 seconds...

```
print "Speeding up the motor..."
rev.ChangeDutyCycle(10) # When reversing the motor, a smaller duty
                        # Cycle means faster.

sleep(5)
print "Stopping motor"
GPIO.output(25, GPIO.LOW)
GPIO.cleanup()
```



HOW-TO

Written by Cecileaux Bois de Murier

Connect Two Linux Computers

Not long ago, I kept wanting files in my laptop that were in my trusty old desktop. My desktop computer was running Ubuntu 14.04 LTS, and my laptop Linux Mint 17 Cinnamon. I scoured the 'net for solutions.

Everybody in forums wanted me to get Samba, which can network with Windows as well as Linux; I used Samba in the 1990s, when my office server ran on Linux. Once the teenager I hired set it up, it never crashed; the hardware died before it did. But this was not Samba worthy. When I connect my 'puters to my girlfriend's Windows laptop... that will be Samba time.

This is just to be able to transfer the odd files between two computers running Linux and connected to an Internet router, a typical home setup. It's simple, but works only between Linux machines. It's not the most secure, and is not a network setup, and should not be left up and running forever. Use it, then close the connection. This is not for editing

the Great American Novel remotely.

The short and simple explanation is use Simple File Transfer Protocol, or SFTP. This is a file transfer protocol that is not secured; it allows UserID login (User-id/Password combination), displays hierarchical folders, and lets the SFTP user do basic file management (rename, delete, upload, download, download with overwrite, download with append). You need to have both computers on, know each computer's local network IP address, check that the computers can "ping" each other (make contact) and that ssh is working on both, then it's simple. On either PC, open the file manager and type on the location bar:

```
sftp://username@198.168.X.XXX
```

(username at the IP of the other computer)

You may be asked for the password of the user in the other computer. Have that handy.

If you're a little lost with my short and simple, here are more detailed, step-by-step instructions.

First, before anything else, turn on both computers and boot them up.

Second, get each computer's IP address within the local network. The address identifies a computer within a network. Find it by opening the Terminal (Ctrl-Alt-T) and typing at the prompt:

```
ifconfig
```

You will get several sets of information, look for something that looks like this:

```
inet addr:192.168.X.XXX
```

The X's stand for variable numbers; yours need not be the same as mine, but 192.168 is the standard for local networks. Do this in both machines, writing down the IP numbers.

Third, make sure each computer "sees" the other. This means you "ping" each computer from the

other. To ping, go to each computer, open the command line terminal and at the prompt type:

```
ping 198.168.X.XXX
```

("ping" is the command; "198.168.X.XXX" is the other computer's IP)

You'll get something like the output shown on the next page (top right).

OK, so I pinged myself for this example report, but ... note the ^C. That's when I pressed Ctrl-C to stop the pinging. Then it gave a little report.

Next, go do the same thing on your other Linux computer. If you get a similar response, then you've pinged both ways.

Fourth, install the program openssh-server on both PCs. If you are using Ubuntu and related Linux distributions, open the Terminal and type:

```
sudo apt-get install openssh-server
```



HOWTO - CONNECT TWO LINUX COMPUTERS

Accept the defaults offered and don't provide a pass-phrase on the last step. Then check that ssh is running on both PCs: open system-monitor and see if sshd is running in the processes tab.

OK, now you're ready to transfer.

On either PC, but not both at the same time, open the file manager and type on the location bar:

```
sftp://username@198.1.68.X.XX
```

(This means: open the Username, meaning the user on the other computer whose files you are trying to retrieve, at the computer located at the particular IP address)

You may be asked for the password of the user in the other computer. Have that handy.

You should be in and be able to copy and move files back and forth, using the dual pane functions (F3 in most Ubuntu and related file managers).

```
me@mycomputer ~ $ ping 192.168.1.101

PING 192.168.1.101 (192.168.1.101) 56(84) bytes of data.
64 bytes from 192.168.1.101: icmp_seq=1 ttl=64 time=0.026 ms
64 bytes from 192.168.1.101: icmp_seq=2 ttl=64 time=0.024 ms
64 bytes from 192.168.1.101: icmp_seq=3 ttl=64 time=0.025 ms
64 bytes from 192.168.1.101: icmp_seq=4 ttl=64 time=0.029 ms
64 bytes from 192.168.1.101: icmp_seq=5 ttl=64 time=0.032 ms
64 bytes from 192.168.1.101: icmp_seq=6 ttl=64 time=0.030 ms
64 bytes from 192.168.1.101: icmp_seq=7 ttl=64 time=0.031 ms

64 bytes from 192.168.1.101: icmp_seq=8 ttl=64 time=0.031 ms
64 bytes from 192.168.1.101: icmp_seq=9 ttl=64 time=0.028 ms
^C
--- 192.168.1.101 ping statistics ---
9 packets transmitted, 9 received, 0% packet loss, time 7997ms
rtt min/avg/max/mdev = 0.024/0.028/0.032/0.005 ms
```



Cecileaux Bois de Murier's first Linux was a 1990s Red Hat running an office server whose software outlived the hardware, but he's still just a user.



In this series of articles, I will be building a text-based application with Free Pascal, using its text-based interface for user interaction. This will be combined with other, more modern, technologies such as database access using SQL and Web access with HTTP. The final aim of the project is to demonstrate how Pascal can be used to build a modern application, while avoiding the overhead associated with a graphical interface that uses a widget set such as GTK or Qt.

In the previous part of the series, we covered personalizing the Free Vision menu bar, responding to commands, and using default message boxes and dialogs. This third part will describe connecting our Free Pascal / Free Vision program with the Sqlite3 database.

INSTALLATION

Although SQLite achieved notoriety only relatively recently, the project began as far back as

2000. It certainly filled in an empty space in the universe of databases, since its big feature is that client programs link to a simple library. There is no need for installing a large database frontend on the user's machine, nor to connect to an external database server over a network. Data is stored locally, in a simple file format. This makes it quite quick and suitable for small to medium-sized databases that are accessed basically by a single user, while at the same time making data easily transportable between computer systems (simply copy a file over).

Sqlite will probably already be installed on an Ubuntu system, but let us just make sure and install both the command-line client and the developer package. We will need this second bit to compile database access into our programs. The packages required are:

```
sudo apt-get install sqlite3
libsqlite3-dev
```

Now, as a normal user, we can create a new database using the

command-line tool. For example, we can create a file of issues for our favorite magazine. Let us call the actual file "fullcircle.db". So:

```
$ sqlite3 fullcircle.db
SQLite version 3.11.0 2016-02-15 17:29:24
Enter ".help" for usage
hints.
sqlite> create table issues
(id integer primary key asc,
title varchar, description
varchar, download varchar,
tags varchar);
sqlite>
```

The CREATE TABLE commands creates a new table - named "issues" - in which several fields are defined for each entry. "id" will simply be a numerical identification code that will be used by the system to index our entries in ascending mode. For each entry, information recorded will include the title, description, download link and tags - in separate strings. This may become more clear when we populate the database with some actual information:

```
sqlite> insert into issues
values (110, 'issue 110', '-
description goes here -',
```

```
'http://dl.fullcirclemagazine
.org/issue110_en.pdf',
'python clonezilla inkscape,
chromebook');
```

```
sqlite> insert into issues
values (109, 'issue 109', '-
description goes here -',
'http://dl.fullcirclemagazine
.org/issue109_en.pdf',
'python libreoffice inkscape
netbook ltsp');
```

```
sqlite> insert into issues
values (108, 'issue 108', '-
description goes here -',
'http://dl.fullcirclemagazine
.org/issue108_en.pdf',
'python inkscape chrome
devices arduino');
```

Now, with some data inside the database, we can perform some queries:

```
sqlite> select * from issues
where title='issue 109';
109|issue 109|- description
goes here
-|http://dl.fullcirclemagazin
e.org/issue109_en.pdf|python
libreoffice inkscape netbook
ltsp
```

```
sqlite> select download from
issues where id=110;
http://dl.fullcirclemagazine.
org/issue110_en.pdf
```

```
sqlite> select id from issues
where tags like '%inkscape%';
```

108
109
110

In the first, we request all information for entries with title "issue 109". In the second, we need just the download link for the entry with ID 110. In the last, we are searching for the IDs of all numbers that have been tagged with "inkscape" - note the use of "%" as wildcards to match any string that contains "inkscape", but may have other text bits found before or after the word that interests us.

To exit the command line client, we issue command:

```
sqlite> .quit
```

INTERFACING WITH FREE PASCAL

We will begin by writing a short program, just to test connectivity between our program environment and the Sqlite library. In it, we will limit ourselves to performing a quick search and reporting results on-screen with the Writeln command.

Free Pascal project members

have prepared a suitable unit. There are actually several alternatives, but the one presented here seems to be the best supported, at least for the time being. We will need the Crt unit for Writeln, but also Strings and Classes; this latter unit contains the TStringList type that will be used to access each line of the query result. Finally, Sqlite3 and Sqlite3db handle the actual connection to the library:

```
uses  
  Crt, Classes, Strings,  
  Sqlite3, Sqlite3db;
```

We will need several variables to handle the connection. sql is the connection itself, while i and n will be used to iterate and to count the number of results returned by our query. res will format each line of results in a parseable manner. Though not really necessary, id and downloadURL will be used to hold the values of individual fields.

```
var  
  sql : TSQLite;  
  i, n : Integer;  
  res : TStringList;  
  id, downloadURL : String;
```

We begin by creating a connection, executing our query and counting the number of lines

in the result:

```
sql :=  
  TSQLite.Create(dbfile);  
sql.Query(dbquery, nil);  
  
n := sql.List_Field.count;
```

We can now iterate over the result lines:

```
for i := 1 to n do  
begin  
  res :=  
  TStringList(sql.List_Field.items[i-1]);  
  id := res[0];  
  downloadURL := res[1];  
  Writeln(id, ' ',  
downloadURL);  
end;
```

Finally, even though Sqlite is rather robust, it is always best to close the connection gracefully:

```
sql.Free;
```

The code for the complete program is available at this link: <http://pastebin.com/k4JB6fZr>.

CONNECTING SQLITE TO FREE VISION

In the previous part of this series, we designed a basic Free Vision application, with a menu that contained a File > Open item.

We programmed this item to issue the cmOpen command, which was then captured in the HandleEvent method to create a TFileDialog prompting the user to choose a file. However, the choice made by the user has not yet been properly exploited. Let us do so now.

In the first place, we will modify the code creating the TFileDialog so it filters for files with the .db extension:

```
pOpen := New(PFileDialog,  
Init('*.db', 'Open', 'File  
~N~ame', fdOpenButton,  
hcNoContext));
```

```
result := ExecuteDialog  
(pOpen, @FileName);
```

After execution, result is an integer that holds either command cmOpen indicating the user closed the dialog using the "Open" button, or cmCancel if the "Cancel" button was used. FileName is a string with the file name chosen. We can now use this input to set up a Dialog window that creates a Sqlite connection, performs the query, and displays results:

```
if not (result = cmCancel)  
then
```

```
begin  
  GetExtent (R);
```

HOWTO - PROGRAMMING WITH FREEPASCAL

```
R.A.X := R.A.X + 2;  
R.A.Y := R.A.Y + 2;  
R.B.X := R.B.X - 2;  
R.B.Y := R.B.Y - 2;  
pDisplay :=  
New(PDisplaySQLDialog,  
Init(FileName));
```

```
ExecuteDialog (pDisplay,  
nil);  
end;
```

R is a variable of type TRect that Free Vision uses to indicate a rectangular region on screen. The two fields A and B are the top-left and bottom-right positions occupied that define the rectangle, which is in this case X and Y the column and row numbers. On the other hand, pDisplay is a pointer to a TDisplaySQLDialog - an object that inherits from TDialog and is not part of the standard Vision libraries. So let us define it, overwriting only the constructor Init method to pass along the database file name to be opened and displayed:

```
TDisplaySQLDialog =  
object(TDialog)  
  constructor Init (FileName  
: String);  
end;
```

Having a tailored Init will serve two purposes: it is here that we will build up the interface, with a PListBox to hold the data to be

displayed, a PScrollBar to allow us to move up and down in the list, and a PButton to close the dialog window. Let us start by setting up the window size and title using the inherited TDialog constructor method:

```
R.Assign(0, 0, 78, 17);  
inherited Init (R, 'xxx');
```

Now, let us fit in the Sqlite routine to populate a PStringCollection with the results of our query. Unfortunately, there is a slight hiccup with the TStringList used in the previous example, already present in the days of Turbo Vision. One of the FreeVision classes also defines a TStringList type of object, which is incompatible with that used to parse Sqlite's output. So we need to specify we wish to use the version defined in the Classes unit. The code (top right) should be self-explanatory.

With this done, we have the dialog window set up and Items populated with the data retrieved from the database. It is now a simple matter of setting up the widgets and inserting each into the Dialog window (code is bottom right).

```
sql := TSQLite.Create(FileName);  
sql.Query(dbquery, nil);  
n := sql.List_Field.count;
```

```
Items := New(PStringCollection, Init(10, 1));  
for i := 1 to n do  
begin  
  res := Classes.TStringList(sql.List_Field.items[i-1]);  
  id := res[0];  
  downloadURL := res[1];  
  Items^.Insert(NewStr(id + ' | ' + downloadURL));  
end;
```

```
sql.Free;
```

```
R.Assign(67, 2, 68, 12);  
Scroll := New(PScrollBar, Init(R));  
Insert (Scroll);
```

```
R.Assign(2, 2, 66, 12);  
List := New(PListBox, Init(R, 1, Scroll));  
List^.NewList(Items);  
Insert (List);
```

```
R.Assign(60, 14, 70, 15);  
Insert (New(PButton, Init(R, '~C~lose', cmCancel, 0)));
```

That's about it. The complete code for our program, so far, is to be found at link:

<http://pastebin.com/sLFWm6pR>.

In this part, we set up a small Sqlite database, then built a command-line Free Pascal program to access it. Finally, we integrated the database code into our Free Vision application through a new Dialog type to connect to the database and display retrieved data. In the next part of the series,

we will connect to the Internet in order to refresh the information in our database directly from the Full Circle Magazine website.



Alan holds a PhD in Information and the Knowledge Society. He teaches computer science at Escola Andorrana de Batxillerat (high-school). He has previously given GNU/Linux courses at the University of Andorra and taught GNU/Linux systems administration at the Open University of Catalunya (UOC).

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A major feature of SVG filters is that they're dynamic. The calculations to produce the output aren't simply done once and then stored in the image – as is often the case with filters in bitmap editors. Rather, they're performed time and time again as you zoom, pan, rotate objects or otherwise modify your drawing. This gives you the flexibility to make changes to your filter parameters at any time, but all this recalculation takes its toll on Inkscape's rendering speed. So now that you're (hopefully) starting to create more and more complex filters, I'm going to begin this instalment by looking at a few ways to mitigate this slowdown.

When faced with a program that's slowing down due to too many calculations, there are two approaches that can be used to minimise the problem: reduce the number of calculations, or find some way to speed them up. Remembering that filters are applied on a per-pixel basis, just at the point of rendering the object, one way to reduce the number of

calculations is to zoom out. An object viewed at a low zoom, which takes up 10x10 pixels on screen, occupies an area of 100 pixels. Even for the simplest of theoretical filters that means 100 calculations – but in practice it will be many more as, at the very least, there will likely need to be separate calculations for the red, green, blue and alpha channels. Zoom in so that the object fills 20x20 pixels – what we would colloquially consider to be “twice as big” – and the area grows by four times, to 400 pixels and therefore 400 calculations per channel. Zoom right in so that your small object almost fills your HD monitor and there's a lot of calculations to perform!

As well as avoiding large zooms, you can reduce the number of pixels to recalculate by simply resizing your Inkscape window. Does it really need to be full-sized to stretch to the whole width of your widescreen monitor? Try reducing the canvas size to something with a squarer aspect-ratio in the middle of your screen,

with dialogs dragged out to floating windows at the sides.

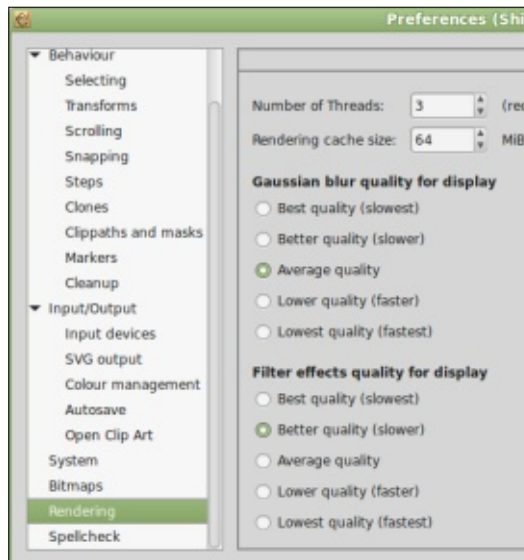
Sometimes you don't really need to see the filtered version of an object if you just want to zoom in to tweak its shape. For those occasions, there's the View > Display Mode > No Filters option. There's also an option for viewing the Outline of objects only, which can be useful for finding elements you've lost through one of the myriad ways of making things invisible, but which doesn't really offer anything more in terms of dealing with slow filters. I mention it simply because there's also a Toggle option which cycles through all three modes – if you only do one thing today, learn the keyboard shortcut for it (CTRL-5 by default, where “5” is the key on the numeric keypad). The great thing about this is that you don't have to change modes before zooming – if you zoom in and the redraw is too slow, just press CTRL-5 to switch modes, abandoning the current redraw.

How about when you've

finished tweaking a filtered object, at least for the time being? If you don't need to refer to it when working on other parts of the drawing, it's worth putting it into its own layer or sub-layer. Turn the layer visibility off, and there's nothing for Inkscape to re-calculate. If you do still want to see it, you can make a bitmap copy of the filtered object before you move the original to another layer. Select your object and use Edit > Make a Bitmap Copy (or press ALT-B): Inkscape will render a bitmap of your object, complete with filters applied, meaning that (once the original is hidden) it doesn't need to re-calculate the filters as you work on your document. When you've finished your drawing you can delete the bitmap version and re-display the hidden layer with your original content. The resolution of the bitmap copy is set in the Inkscape preferences – lower values will be created faster, but won't be as accurate when you zoom in closely. Usually this is fine, though, as the bitmap is generally there as a position or color reference, rather than needing to

be a high-resolution representation of your object.

These methods reduce the amount of calculations that need to be performed, but there are also ways to speed up filter performance even when you need to have the original filtered objects visible. Within the Inkscape Preferences (File > Inkscape Preferences... on 0.48, Edit > Preferences on 0.91) there is a panel for adjusting the rendering of filters, labelled as “Filters” on 0.48 and “Rendering” on 0.91.



Within this panel you can set the number of threads that Inkscape uses for rendering Gaussian Blur filters (0.48), or

filters in general (0.91). If you have a multi-core or hyper-threading processor in your machine, increasing this value to suit can speed up rendering. The usual recommendation is to set it to the number of cores minus 1. That, in theory, allows a single core to be used for the main Inkscape process, whilst using your remaining cores to render the filters. In practice there's a whole operating system between Inkscape and your cores, so although it's a useful guideline there's no guarantee that your OS will distribute the threads so neatly.

On 0.91 you can also set aside some memory in which to cache the results of your filter calculations. This should have an effect on things like panning – where an already calculated filter result is moved in and out of view – but it will likely have less effect if you zoom in and out, as the filters will need to be recalculated for each zoom level anyway. Nevertheless, if you have plenty of spare RAM it might be worth assigning a bit more to this option to help speed things up where possible.

Finally there are a couple of sets of radio buttons governing the trade-off between display quality and speed. Filters can be approximated by rendering at a lower resolution, giving a faster redraw but with less accuracy. The buttons here let you adjust that balance for filters in general, but also for Gaussian Blur in particular (since that tends to be the most commonly used filter primitive). Note that these radio buttons only affect the display of your image on screen – exporting to a PNG file always uses the highest possible quality.

Moving on from performance, and back to filters themselves, a small correction of the previous article: it seems that the Image primitive in 0.91 does let you use an SVG element from your drawing as its input, after all. The problem is that the element is included relative to the top left of the page – so if you try to include something that's located away from that corner, there's a good chance you'll only see empty space pulled into your filter (that's what led me to think it wasn't working at all). There are two possible solutions to this: draw your included SVG element at the top left of the page

(you can put it onto a hidden layer if you don't want it to be visible there in the final image), or increase the size of the filter region until your included element is visible, then use an Offset primitive to move it to the right place. Neither of these are great options, in my opinion, but, of the two, I tend to prefer placing the included element (or a clone of it) at the top left corner, on a hidden layer, as the latter results in a larger filter area to calculate – and hence slows down rendering.

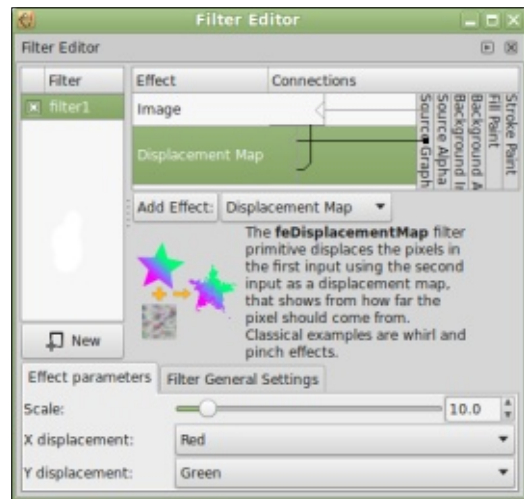
Another problem with this feature in 0.91 occurs if you try to use the same object both as a target of the filter chain, and as an input to the Image primitive. This is fairly easy to do by mistake, as the clumsiness of Inkscape's filter UI makes it likely that you'll lose track of what is selected and why, but the result is an instant crash of Inkscape, with no warning and no backup file saved. If you plan to use SVG objects as inputs to the Image primitive in 0.91 it's probably best to save your file just before you add the link.

A good use for the Image primitive is in conjunction with the Displacement Map filter. This

HOWTO - INKSCAPE

replaces each individual output pixel with one taken from elsewhere in your image, so can be used to create various whorls, waves and distortions. It takes two inputs: the first is the image you want to distort, whilst the second is another image that acts as a “map” to tell the filter where to find each output pixel. The process is really quite simple when considered on a pixel-by-pixel basis, but soon becomes rather complex when you try to create a displacement map to perform a specific distortion.

To begin to understand this primitive, let's start with a most basic of chains:



As you can see, the first input to the displacement map is our

Source Graphic, whilst the second comes from an Image primitive. In practice the Image is just a 50% gray rectangle pulled in as an SVG element (and positioned at the top left of the page so that it works in 0.91). There are also two stars in the image: the filter is applied to the red one, whereas the green one is simply there as a reference so that you can see the effect more clearly. The effect parameters are set to a Scale of 10, with the Red and Green channels being used as the source of the X and Y displacements respectively – those settings will become clear shortly.



The result of the filter is... absolutely nothing! To understand why, let's consider a single pixel in

our output image. That pixel comes from somewhere in the source image, with the exact nature of “somewhere” being defined by the displacement map (the second input image). Each pixel in the displacement map is made up of a combination of four values (Red, Green, Blue and Alpha), and the settings in the filter dialog let you choose which of those values should be used for the X offset, and which for the Y offset. From there, Inkscape goes through the following steps to find out what color the output pixel should be:

- 1) Find the color of the equivalent pixel in the displacement map.
- 2) Extract the X and Y offsets from the color components that have been set in the filter.
- 3) Divide the offsets by 255 to normalize them into a range of 0 to 1.
- 4) Subtract 0.5 from the offsets to shift them into a range of -0.5 to 0.5
- 5) Multiply the offsets by the Scale value set in the filter.
- 6) Add the offset values to the X and Y coordinates of the pixel to get a new pair of coordinates.
- 7) The output pixel should be set to the color of the pixel from the input image that is located at the

new coordinates, or an interpolated color based on the surrounding pixels if the coordinates don't point to a single pixel.

Bear in mind that our map consists only of 50% gray, with RGB values of 127, 127, 127. If you follow the steps above you'll find that gives an offset of about -0.02 pixels for both X and Y – close enough to zero to effectively mean that the output pixel is taken from the same position as the input pixel. Extend that over every pixel in the filter, and it's clear why our output looks exactly the same as the input.

Changing the rectangle to a black fill (0, 0, 0) alters the calculation somewhat. Now the offset becomes -5, -5 so our output pixel is the color of the pixel located a little up and to the left in the original image. That gives the appearance of the whole image having moved down and to the right.



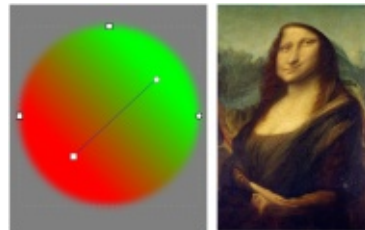
Changing the rectangle to white (255, 255, 255) has the opposite effect – the image appears to move up and to the left. Because we've specified Red and Green for the X and Y displacement, filling it with pure red (255, 0, 0) produces different displacement values for the two coordinates, effectively moving the image down and to the left; pure green (0, 255, 0) moves it up and to the right. In all cases, the value of the Blue component (or, indeed, the Alpha component) doesn't make any difference. Pure cyan (0, 255, 255) has exactly the same effect as pure green, since we've configured the filter to consider just the Red and Green components.

Used with a flat color like this, Displacement Map is just a very poor replacement for the Offset primitive. Where it comes into its own is when your displacement map contains various colors in order to use different offsets for each pixel. We know that a black fill pulls its pixels from up/left, and a white fill from down/right – what happens when we use an image with both black and white in it? Let's give it a try with a group,

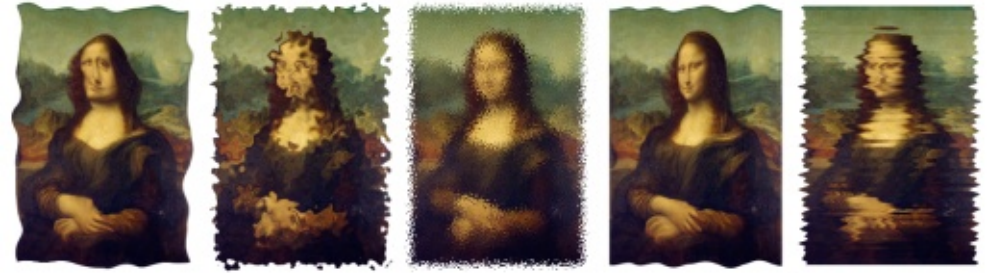
containing a black spiral on a white background – and we'll apply it to something a bit more complex than a red star.



By adding a little Gaussian Blur between the Image primitive and the Displacement Map you can soften the edges to give a nice ripple effect – with its intensity adjusted by changing the Scale parameter. Or how about a red-to-green gradient to give a fish-eye type of effect?



It's a bit of a cheat, because using just red and green only "stretches" your image in two directions. Overlaying a circle with perpendicular gradient that runs from white to transparent to black gives a more accurate result, but does start to hint at the biggest problem with the Displacement



Map primitive: creating a suitable map image for the effect you want to achieve isn't always easy or obvious. But there is one way of creating a map that's quite simple, and extremely useful: the Turbulence primitive.

If you need a refresher on this primitive, take a look at Part 51 of this series. In short, it's a fast way to create areas filled with pseudo-random colors which, when used as a distortion map, will pull your image this way and that as you tweak the parameters. Use a low frequency Fractal Noise setting to add grotesque distortions to your image. Crank up the values a little to produce the sort of modesty-providing distortions you might find in a bathroom window. Further still and you've got a pointillistic masterpiece of shattered pixels. Unlink the horizontal and vertical frequencies and you can have a fluttering flag, or horizontal ripples.

But make sure you take the time to look at the edges. And what edges they are! From slight undulations, through spattered ink, to fuzzy vignettes. Imagine how these filters might look on shapes with even more edges, such as squares, stars and text. Better still, don't imagine; roll your sleeves up, dive into Inkscape's editor, and create your own filters.

Image Credits

"La Gioconda" (aka "Mona Lisa") by Leonardo da Vinci
http://en.wikipedia.org/wiki/File:Mona_Lisa,_by_Leonardo_da_Vinci,_from_C2RMF_retouched.jpg



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



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Is it possible to use a Chromebook as the only home computer? The Chromebook would be brain to your home Personal Area Network, or known as a PAN. Exactly what is a PAN?

There are various types of computer network classifications. The most popular are local area networks (LAN), wide area network (WAN), and other subclasses venturing into wired and wireless nodes. A LAN is often a network of shared drives and functionality like a university campus or a corporation. A WAN is a connection of two or more LANs together. However a PAN is actually a wired and wireless combination of devices connected to your home.

Therefore when I review my PAN I have numerous devices connected. My Peppermint OS laptop, Chromebook, iPhone, cloud based home phone, Roku, Amazon Echo, a Kindle, Vizio smart TV, a Fitbit, Pogoplug NAS, and a printer. In the simplest of terms, it is all of the devices that work together within your house that you use on

a daily basis.

The brains to the PAN is a wireless router and working laptop. It is these two devices that enable the IoT in our lives. I keep my Chromebook for work purposes and as a backup to my Peppermint OS laptop. If my laptop dies, I can still manage my PAN using my Chromebook, since my PAN devices operate out of a browser window. Yet if the router fails, can my Chromebook still run the new replacement?

So I started up the afternoon experiment to test the limits of the Chrome OS capability in a PAN. My old router was replaced with an improved device. After confirming the new router was active from the modem, I attempted to change the manufacturer's default password using my Chromebook. I had to tether my Chromebook to my iPhone hotspot to see if I could change the options. And I had no luck after 20 to 30 minutes of work. There were no apps that helped the Chromebook either for router connectivity.

After doing numerous Google searches the only router designed for a Chromebook is the OnHub. The OnHub has an app that allows Chromebook connectivity and settings. The router is well reviewed by the regular consumer genre. However a scathing professional review by Dong Ong stated that the OnHub has limited capability as a wireless router. A router that essentially dumbs down the consumer on WiFi options.

So yes, you can have a Chromebook and OnHub as the basis of your PAN. Yet the devices create a functioning PAN for your house. This PAN would be tied solely to the Google Ecosphere. As an informed consumer, I would be uneasy with this much "Googleness" in my house.

Google recently announced the Fuschia OS. This new OS could be the working replacement for Chrome OS and Android, since Fuschia is designed for laptop and IoT devices. Only time will tell what's the true purpose of Fuschia.

I see cloud connected devices becoming more common in our PAN.



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).**

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• 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.

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GAMES/APPLICATIONS

When reviewing games/applications please state clearly:

- title of the game
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- is it Linux native, or did you use Wine?
- your marks out of five
- a summary with positive and negative points

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When reviewing hardware please state clearly:

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- any glitches that you may have had while using the hardware?
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- 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.





LINUX LOOPBACK

Written by S. J. Webb

Project Athena started in 1983. It was a conglomerate project between IBM, MIT, and Digital Equipment Corp. Project Athena's main goal was to provide an educational computer lab to MIT students and to other fields of study besides computer science.

At that time, most of MIT's computers were dedicated to scientific research. This was a unique phenomena at that time. Digital Equipment Corp. and IBM donated over 2100 microcomputers and workstations to MIT. These companies also offered grant funding and full time employees to help implement Athena. Other universities did not have corporate sponsorship.

MIT developed a Unix-based OS to use on the microcomputers; this OS was mostly based on BSD. Any student could use the computers, but they had to learn the computer languages Fortran and Lisp. The system allowed users to work with 1 megabyte of RAM and 1 megapixel display utilizing a graphical interface.

The Athena Project was supposed to end in 1988. However, an extension was granted. IBM and Digital Equipment involvement ended in June of 1991. This conglomeration brought together the X window system, Kerberos and Zephyr Notification System, and a heavy influence on thin clients.

MIT took over the Athena Project in the Fall of 1991. MIT would improve on Athena's stability and user friendliness. The Athena Project OS moved from BSD to Red Hat Enterprise Linux to Debian Linux called Debathena. You can get this distro directly at <https://debathena.mit.edu/>.



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.

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This month, I've strayed away from writing about Linux to bring you a small glimpse of Syd Bolton's Personal Computer Museum. Everyone starts somewhere in computing so I thought this would be an interesting retrospective for some of our readers.

The Personal Computer Museum is located in a farm-like building behind a very regular looking home in Brantford, Ontario, Canada. The museum is a couple of stories with the majority of computers on the first floor, an

approximately 20-foot-high wall of old software on the right side of the building, and a few precious relics like a NeXT Cube on the top floor along with some comfy seating for the theatre (projector) showing various documentaries above the wall of software.

Like the computers in the museum, the building has a bit of history behind it – it was built in the 1930s using bricks from an old opera house.

Working Computers line all four walls, and both sides of a table in

the middle of the farmhouse. Among the computers active when we visited were: an IMSAI 8080, an Amstrad CPC 464 colour computer, a number of Amigas, a few different Commodore PET computers, a Texas Instruments TI99/4A, a Hitachi MB-6890, a Magnavox Odyssey 3000, an Atari 2600, Apple computers covering several generations (III, IIgs, an all-one-one iMac G4), a Heathkit H89, several ATARI computers (400, 800, a 130 XE), an Osborne I, a Kaypro II PC, an Alextel terminal, a NeXT cube, and my favourites: the Commodore PET, VIC 20 and 64.

A complete list of the computers in the collection can be found on the museum's web site: <http://www.pcmuseum.ca/computerDetails.asp>

When we arrived, just after lunchtime, the museum was very busy. Most of the museum visitors were children. Some of the computers were there just for historical significance, but most were set up and loaded with some kind of video game for the younger audience to play. You might think that children would be bored with old games, but they all seemed not



to notice the age of the system they were playing on at all - a good game is simply a good game. The fact that the museum isn't just a "show" museum, and allows children (of all ages) to play on the computers, makes it all the more interesting.

Space at the museum is at a premium. The museum makes use of the space wherever they can



find it. There were computers below all of the desk space, on shelves, even suspended above the centre row of computers (smaller computers).

We didn't see a lot of *NIX-based computers: there was a Sun Sparcstation 5 that was semi-functional (it was sitting in the SPARC BIOS screen), and the NeXT Cube (upstairs on the second floor shut off), but with all the computers tucked into every imaginable corner, I'm sure we

missed several. Doom, Doom II, Quake, Heretic, Hexen (all iD software games) were developed on NeXT computers as well as the first web browser, so from a *NIX standpoint, NeXT holds a special importance.

Syd mentioned that the majority of computers were not displayed, but in storage. After our visit, he said that there was a Unisys ICON on display - a QNX-based computer used fairly extensively in Ontario schools in

the mid-eighties. My first exposure to a personal computer at school was the Commodore PET followed by the Unisys ICONs, so they have a special meaning for me. I almost got expelled for software I wrote on the ICONs, but that's a funny story for another time.

Syd also took us on a tour of his gaming collection which consists of thousands upon thousands of games for a variety of consoles. I didn't see my families' first console, a Coleco Gemini (a clone



of an Atari 2600), but Syd assured me he had one hidden away. One of the more interesting game consoles I spotted tucked near an Odyssey 2 was Nintendo's Famicom (Family Computer).

Syd's collection of game software covers the walls of several rooms and spans a wide range of software - and this is just the non-duplicate software he has on display. Among the collections are walls of games for the Nintendo 64, Dreamcast, Playstation, Coleco Vision, Coleco Adam, Sega Genesis, and Atari 2600 - just to name a few.

Back in 1983, I had the chance to play the stand-up console version of Dragon's Lair while visiting Orlando, Florida. Syd proudly proclaimed that he has the largest collection of Dragon's Lair games with versions for almost every console and system (we didn't see a stand-up arcade console, but Syd mentioned one was on the way). Certainly the shelves of Dragon's Lair games and memorabilia, and the fact that Syd's published a book Collecting for Dragon's Lair & Space Ace, seem to confirm this.

I remember Dragon's Lair fondly. I played Space Ace when it finally arrived where we were living, but it never felt as cool as Dragon's Lair. A version of Dragon's Lair exists for Steam Play (Windows and Mac OS X), but not Linux. There is an emulator called Daphne that runs on Linux for the hard-core Dragon's Lair fans: <http://www.aussiearcade.com/showthread.php/66519-Daphne-configuration-and-single-credit-play>

We wrapped up our visit to the museum after the game console software tour. Syd's Personal

Computer Museum is open from 6pm to 9pm every non-holiday Monday, and on special select Saturdays, so check the website before heading down. The museum website also contains a lot of information about many systems from the eighties and nineties so, even if you can't make it in person, you can visit virtually.

*NIX RELATED LINKS:

Personal Computer Museum - <http://www.pcmuseum.ca/>

NeXT Computer - https://en.wikipedia.org/wiki/NeXT_Computer

Unisys ICON - https://en.wikipedia.org/wiki/Unisys_ICON

Sun Sparcstation <https://en.wikipedia.org/wiki/SPARCstation>



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/>.



OTA-13

GENERAL FEATURES

- Copy/paste can now be carried out with legacy apps

SETTINGS AND INDICATORS

- New notifications panel with per-app settings for sound, vibrate, message bubble
- Keyboard indicator
- The updates panel has been reworked to improve robustness. App updates now show version changes for available updates and the set of recently installed updates
- The 'other vibrations' setting now works correctly

APPS

- It is now possible to sync multiple calendars
- Owncloud sync integration is now available for calendars
- Various App startup time improvements (calendar, calculator, camera, dialler)

OSK IMPROVEMENTS

- Latvian keyboard added
- Improved emoji keyboard

For full updates see:
<https://wiki.ubuntu.com/Touch/ReleaseNotes/OTA-13>



REVIEW

Written by Jamie Streeter

	Tot Receive	Tot Spend	Balance
Expenses:Auto:Gas	n	35.00	1
- Split Transaction -	n	100.00	2
Expenses:Dining	n	23.45	2
	100.00	Tot Spend	3
Assets:Cash in Wallet	n	100.00	
Assets:Checking Account	n	1,000.00	
Expenses:Taxes:Federal	n	10.00	
Income:Salary	n	1,090.00	
Expenses:Auto:Gas	n	50.00	2
Projected Minimum: \$264.10			

Since you are reading this in a free magazine about Linux software, you are probably already interested in saving money. Not that saving money is very rewarding these days with interest rates having been cut close to zero and the rates paid on savings accounts plummeting further by the day. Consequently, this review is about a piece of financial accounting software with which you can track and monitor your bank account(s) and finances. While savings may not be that rewarding these days, as the old sayings go: "look after the pennies and the pounds will look after themselves" or "a penny saved is a penny earned", hopefully this review might help you to get started on keeping track of your

finances and saving a penny or two of your hard earned money too, if you are not already doing so.

So assuming you are not already tracking your finances via a web site or your bank's mobile phone app, then this piece of software called GNU Cash can help you do it on your PC or laptop. There is also an Android App, although I have not tried this as it is apparently just designed for recording transactions while you are out and about or away from home or the office, to allow for importing them into the main desktop programme. As this is not something I need to do, I haven't tried it. I guess if you are a road-warrior who is away a lot, and has to keep track of and claim back expenses from your own credit card or bank account, then I guess that could be useful although I'm sure there are other apps too that can do that, or there may even still be real life secretaries or personal assistants to do that.

GNUCash is available across all major platforms. Indeed I first

started using it back in 2009 on Windows, when Microsoft stopped supporting MS Money as it is a suitable replacement for that and other paid-for accounting software such as Quicken. I now use it on the the latest Ubuntu 16.04 LTS, having made the switch to Linux / Ubuntu back in 2011.

As a popular piece of software, it is available in the Ubuntu Software Centre and I'm sure that other distros will probably also feature it. If not, you can read more about it and get a download relevant to your system at: <http://www.gnucash.org/>. Here you will find the latest version with other downloads available for the likes of Fedora, Mandriva, RedHat/Centos, as well as the latest version for Ubuntu, as the one in the Ubuntu Software centre is now slightly out of date. To be honest, it is perfectly fine to run this with an older version if it works for you, as it has been around for a long time and it tends to be pretty stable. If you want to be notified of and get the latest updates, I have found installing the

getdeb repository a good way to keep this and many of your other debian-based programmes up to date. If you are on an LTS version of Ubuntu, they can become quite out of date over the years.

From the home page of GnuCash, you will also be able to see that it is available in a multitude of languages and comes with quite detailed instructions and FAQs.

The main features of the program are:

- Double entry bookkeeping
- Cheque book style register
- Scheduling of transaction
- Statement Reconciliation
- Reports & Graphs
- Income & Expense Account Types
- Stock & Fund Investments
- Online Stock & Fund quote updates
- Multiple currencies
- Small Business Accounting
- Import QIF files from Quicken and Intuit and OFX from banks



THINGS I HAVE FOUND USEFUL

I have tended to use it mostly to keep track of and reconcile my bank accounts and credit cards which is usually a good idea in this day and age of increased online fraud, etc. This may seem like a chore at first as you have to enter each transaction manually, but the programme does remember the categories and payees you use, so this gets quicker and easier as time goes by. The transaction scheduling is also a useful feature as it allows you to automate the entry of regular transactions, although I have found it hard from time to time to remember how to set these up as the top menus for doing it are not obvious... but right-clicking a transaction gives you that option directly which I have found to be the easiest way to set these up. After that, there is a future transaction editor which you can use to edit them. The ability to search for a transaction is a useful feature too so you can quickly see what you paid for your insurance last year, for example.

I have also used the Investment functions to keep track of stock

and fund holdings which is fine, if a little basic, and the pricing can be a bit tricky to set up as it requires Python I think. The setup should either detect and test this or allow you to download it if you say you require that feature. This then sources price data from the likes of Yahoo Finance and others relevant to your region. The update does require you to click a button to update the prices rather than being automatic – which some may find a bit lame, but useful if you only want month-end updates, for example to calculate your monthly performance. Consequently, I have now moved to tracking these with a spreadsheet and online – where price updates are much more immediate, and analysis of holdings can be more detailed.

THINGS I HAVE NOT USED OR NOT FOUND THAT USEFUL

Personally I have not had a need for multiple currencies, business accounting, or file and transaction import, although these may be useful to others – in particular if you can import transactions from your bank or credit card, this would help to offset the need to enter all your

transactions manually. It may also be useful if you are switching from another package which offers the relevant file format to export your data.

I have tried the reporting and budgeting features, but have not gone on to use them as I found the report outputs unwieldy and difficult to customize to my liking. While the budgeting also seemed a bit fiddly, I do not really need to budget, but it could be useful if you need to set one, but again, there are probably online resources and apps, or even a humble spreadsheet, which can do this for you and keep track of your spending in the same way that this programme can.

SUMMARY & CONCLUSION

GNUCash is an extensive piece of accounting software available for free; it's been around for a long time and therefore tends to be stable and well documented and supported by its providers. Having used it myself for many years, I have come to rely on it for keeping track of my day-to-day finances, although I have moved away from it to spreadsheets and online

resources to keep track of my investments.

You may find it useful if you want to keep track of your finances and set a budget to improve your financial situation, and you are not willing or able to trust this data to a website or an app. It can also help you keep track of investments and even help you with accounting for a small business if you have one.

Overall, I would give it 4 out of 5 Stars with the one star reduction being for some of the menus not being that easy to use and some of the other features like the reports and investment portfolio being a bit underwhelming, although maybe I have not used them enough to get the most out of them.

So if you want or need to get your finances in order, then I would certainly recommend giving it a go. You might even find you are spending £40 a month on coffee which you didn't realise and could potentially save for other things.



MY OPINION

Written by Michael Davies

Free Software

Yes, I confess, I have paid for software to use on Linux. When I crossed the border 8 years ago and escaped from Windows, I relished the availability of first class, free, software. I felt a little guilty and couldn't understand how programs like LibreOffice, GIMP, VLC, Clementine and Shotwell could be supplied gratis. I was a Windows developer myself so I knew the many hours/weeks/months of work that were involved in their development.

However, sometimes I could not find exactly what I wanted. I bought a new printer and could not install it without first downloading drivers from Epson and installing them with Gdebi, something a novice may not be able to do; the Gnome printer installer could not find the drivers itself. Then the printer would not use the optional duplex unit, and would not select the photo tray when required. The solution was Turboprint; it solved all my problems and has since worked well with other printers. I only once needed tech support and

received a fix within 24 hours.

My other problem was when I moved from MariaDB 5 to MariaDB 10. The latter would not work with MySQL Workbench, and there was no other decent GUI available. The answer was JPDB Admin which makes setting up databases as simple as ABC.

Both of these programs cost money, but it is such a small amount, less than the cost of a mouse! I have no commercial interest in them, but mention them because I admire their professionalism. They do exactly what they promise without fuss or failure, and they are supported. They have licenses but no crippleware, so I have been able to install them on every distro I have tested.

I respect and admire all the work done to produce free software and the support from the wider Linux community to solve problems. However, when non-free software solves my problem, I cannot begrudge a few dollars.

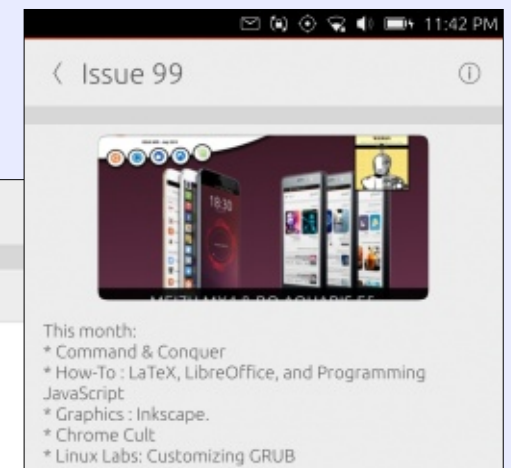
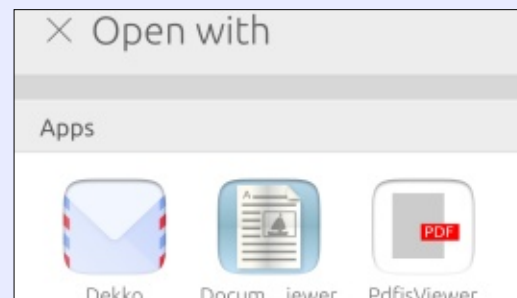
THE OFFICIAL FULL CIRCLE APP FOR UBUNTU TOUCH

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

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ubuntuforums.org/forumdisplay.php?f=270

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, and Gord will answer them in a future issue. Please include as much information as you can about your query.

Q Conky is an amazing piece of software, but only if you get it correctly configured.

The information that you get on the internet is confusing, the official website gives a whole lot of commands, but doesn't give much explanation. Is there a good tutorial on how to set up conky correctly? (module for module?)

A I googled: "conky tutorial" and got some useful hits. One led me to the official manual at: <http://conky.sourceforge.net/docs.html>

Armed with a working .conkyrc, a lot of it starts to make sense. I still have not found a good description of hwmon, which might be the most useful conky variable.

Q Which wireless adapters will work out of the box?

A It's incomplete and out of date, but this might help: <https://goo.gl/oTupHA>

That's the entry in the Community Docs for WifiDocs/WirelessCardsSupported

Q How can I change the size of a terminal window?

A It depends on exactly which terminal comes with your version of Linux. For Gnome Terminal, select Edit, Profile Preferences. Change the initial terminal size and close the window; there's no Save dialogue.

Q I experience constant screen flickering and my external monitor turns off every other 3-5 seconds on a Intel i915 with Ubuntu 16.04.

A Install kernel 4.6.4. See <https://aboutsimon.com/blog/2016/07/20/Ubuntu-16.04-external-monitor-flickering-and-turning-off-on-intel-i915.html>

TOP QUESTIONS AT ASKUBUNTU

* Environment Variable for Username
goo.gl/vyWfnC

* I permanently changed my PATH variable by mistake, and I am unable to login now. How to change my PATH variable to default?
goo.gl/m5g1CQ

* Do file-extensions have any purpose (for the operating system)?
goo.gl/n9gxs

* How to display modified time of a file?
goo.gl/0N83aJ

* CPU number of cores seems not correct
goo.gl/imMImR

* How can I restart my Wi-Fi connection from the command-line?
goo.gl/gxgAU5

* What does this line "/dev/sda5: clean, 956436/30277632 files, 37421846/121093120 blocs" mean while booting?
goo.gl/toUMnO

* Why can I modify a read-only file?
goo.gl/72v5Rz

* What steps should I take before performing a release upgrade to avoid problems?
goo.gl/qZsTk9

TIPS AND TECHNIQUES

A performance boost

Last spring, my brother gave me a seven-year-old Lenovo laptop. It was adequate to run Xubuntu 16.04.

The Lenovo has several benefits. It's built like a tank, and to swap the hard drive all you have to do is remove one screw. When a three-year-old 60 GB Solid State Drive fell into my lap, I put it in the Lenovo and installed Linux Mint 18,



64-bit Mate edition. The performance blew me away. One example: Google Chrome loads in three seconds.

It didn't take long to decide that my desktop computer should have an SSD. After a bit of research, I settled on a 250 GB Samsung 750 EVO. The 750 is the latest SSD family from Samsung, not quite as fast as the two previous families, but a lot less expensive, the equivalent of \$82 US. For context, the 256 GB Samsung 850 EVO Pro costs the equivalent of \$131 US, and I might not notice the difference in performance.

I disconnected the existing hard drive to ensure no damage would occur, then used Parted to format the SSD. I foolishly specified GPT for the drive, and had to later revert to what Parted calls msdos. Then I installed an evaluation copy of Windows 10 Enterprise in a 90 GB partition, and Linux Mint 18, 64-bit Cinnamon edition on the rest of the drive. (Windows 10 will be replaced by various evaluation versions of Linux, typically two or three a year.)

Mint would not boot into a

graphical interface if I specified `acpi=off`, so I ran without it during installation. (See Issue 111 for the `acpi` hard crash story.) Fortunately, after installing the Nvidia proprietary video driver, I could use `acpi=off`.

Even with the small fumbles, it only took an evening to get everything set up and updated. Then I re-attached the normal hard drive, so I had access to all my data.

The performance boost from the SSD should extend the life of the computer for the foreseeable future. My forecast is that my next big technology upgrade will be to a phone with a docking station, perhaps in 2021, when Mint 18 expires. Alas, there is always the possibility that the computer will fail before then, but that has always been true.

A desktop computer that lasts 12 years seems almost too good to

be true. All hail the mighty Linux!



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



Many years ago, Nintendo unleashed a hugely addictive game called Animal Crossing. Its appeal came from getting to know, and befriend, your fellow villagers, collecting artifacts such as bugs, fish and all manner of things to pass to the museum and, of course, pimping out your little house. Stardew Valley is all of that, and more, for Linux, but from indie developer ConcernedApe (and published by ChuckleFish who brought us Starbound).

The basic story is that you inherit the deeds to the Stardew

Valley farm and decide to cash them in to get out of the horrible job you're in. So, you move to the farm and it's a mess.

It's up to you to get things in order by, initially, clearing some land, planting some crops, and sell what you don't need for some ready cash.

But there's more. There's finding minerals, and all those trees give you wood that you can use. Yes, there's crafting. Don't worry about trying to remember recipes as once you're given the

plans for something, and you have the bits for it, it'll be highlighted in your inventory as ready to build. If you have a pile of wood then you can use it to make some fencing to keep your crops safe.

It's not farming 24/7 though. Each day starts at around 6am and by 1am the next morning you need to be in bed. Otherwise you'll pass out and it'll cost you money when you awaken at home. Early mornings and late nights will also cost you in health as the next day you'll start with less health and need to keep eating to keep your

health up. Yes, you need to eat to keep your strength up. Chopping down trees and smashing rocks takes its toll on you. As does owning farm animals which is also possible

Those days are required to grow crops. When you buy seeds it'll tell you that these will take X-number of days to grow, and you need to water them daily. This also comes into play with the changing of the seasons. If you've planted summer seeds near the end of the summer season then those seeds will die off when the next season comes in.



UBUNTU GAMES

And certain seeds will grow only in certain seasons. This all takes planning!

And speaking of planning: you can even court the singletons of the village. Items can be given as gifts and, through time, maybe you'll even get married!

GAMEPLAY

The look of the game is, like Starbound, a pixelated (almost) 8-bit look. Which is more than sufficient for this as the game is a blend of Animal Crossing, an RPG (as you're given quests), and a farm sim.

Controls are quite simple. It's the usual WASD for moving your character with the mouse controlling the pointer that you use for picking up items or for use in the inventory screen.

The map is pretty big, but not too big that you spend ages running and little else. There's always something in each section. Whether it be the main square with some shops, or out at the beach for some prime fishing.

There's a dungeon too. It starts off quite simple and you go down ladders to new levels. As you progress downwards you're given shortcuts, via a lift shaft, to get to those levels again. Die in there and the shortcut is forgotten and you'll need to redo several levels.

CONCLUSION

There is a metric ton of stuff in this game, so I couldn't possibly cover it all here. If you're the sort of person who wants to have collected everything, then this is the game that will drive you nuts. There's collections of fish, bugs, minerals, plants, you name it. And not all are available at all times.

Some are available only within certain seasons. So, yeah, best of luck with that.

Within Stardew Valley, you need to grow (and look after) crops and farm animals. Then there's the aspect of befriending the people you like. There's plenty of story and quests available to you.

Then there's the side of things where you can upgrade your tools, housing, and farm.

Take into account that each day isn't all that long (in real life), and it's a race to get your crops grown in time.

If the game has one downside, it's that the intro story doesn't really explain how you craft things. It took me a while to realise that the inventory was tabbed and that's where the map and crafting is done.

This is definitely a great little game that'll keep you amused for hours. It becomes a case of 'just one more day' and, before you know it, a real day has passed!



Steam page:

<http://store.steampowered.com/app/413150/>

An excellent guide which MAY contain spoilers:

<http://www.redlacegaming.com/content/guides/stardew-valley-indie-guide-v1.1.0.pdf>



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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.

<https://www.patreon.com/fullcirclemagazine>



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