



Full Circle

THE INDEPENDENT MAGAZINE FOR THE UBUNTU LINUX COMMUNITY

ISSUE #127 - November 2017



REVIEW



Photo: jProgr (Flickr.com)

PROGRAM IN GREAT COW BASIC FOR MICROCHIP PIC OR ATMEL AVR MICROCONTROLLERS



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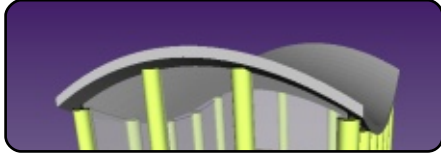


HowTo

```
root@localhost:~# mount -o 1
root@localhost:~# apt clean
root@localhost:~# df -lh
Filesystem      Size  Used 1
udev            976M  0
```

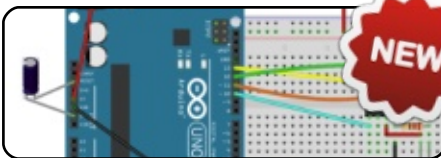
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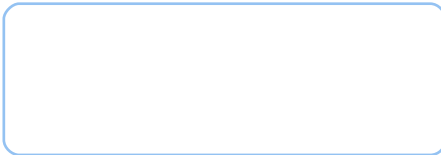
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```
#An alias to make the ls
command more detailed
alias ls = "ls -la --
color=always --classify"
```

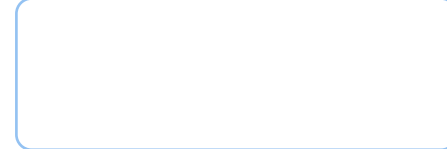
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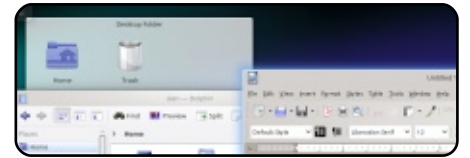
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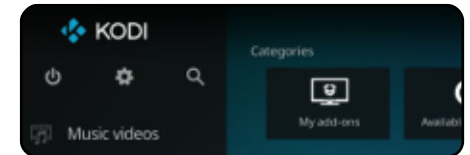
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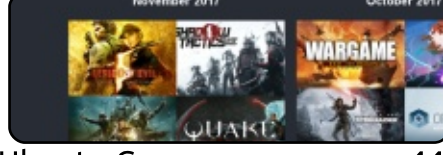
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WELCOME TO THE LATEST ISSUE OF FULL CIRCLE.

This month we have the usual suspects: FreeCAD, and Inkscape, but to fill the missing HowTo space we have an interesting article on installing Ubuntu Base (which I'd never even heard of before) and possibly the start of a new series on programming with Great Cow Basic. If you like the look of this month's article then do let us know to see more of the same.

Alan Ward has written up a nice piece on making your (KDE) Plasma 5 desktop look more like the old Plasma 4. Lucas is reviewing the 'FixMeStick' which is basically a USB virus scanner for Windows. I wasn't sure whether we should review it or not (since this is a Linux magazine) but we ran with it since I know a lot of you still use Windows machines for one thing or another.

Oscar is looking into Humble Bundles this month. Those firm favourites where you pay what you want and get rewards. No sooner had he submitted the article than news emerged that IGN bought over the Humble Bundle gig. What this means for the future of Humble Bundles is unclear, but let's hope they don't ignore the good nature behind it. Many people buy the bundles to help charity. I have a horrible feeling that IGN will want more money for themselves, but I hope I'm wrong.

Finally, I want to thank everyone who submitted an article after my last email asking for submissions. We're definitely good to go for another few months. Please don't stop sending! The more we have the better.

All the best, and keep in touch!

Ronnie

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SUSE LINUX ENTERPRISE 15 DESKTOP TO USE WAYLAND BY DEFAULT, FIREWALLD AND GCC 7

SUSE recently kicked off the development of the SUSE Linux Enterprise (SLE) 15 operating system series and they just opened the closed beta program this week by releasing the first beta milestone.

SUSE Linux Enterprise 15 will be developed with a few key objectives in mind, including support for installing and using modules and extensions easier than before, use packages across the entire SUSE universe, support multiple scenarios and architectures on 64-bit, IBM System z (s390x), ARM64 (AArch64), and Power LE systems, as well as on cloud, virtual, physical, host and guest environments.

Source:

<http://news.softpedia.com/news/suse-linux-enterprise-15-desktop->

[to-use-wayland-by-default-firewalld-and-gcc-7-518250.shtml](http://news.softpedia.com/news/suse-linux-enterprise-15-desktop-to-use-wayland-by-default-firewalld-and-gcc-7-518250.shtml)

PLASMA MOBILE: INSIDE KDE'S PLAN TO CREATE A FULL-FEATURED LINUX SMARTPHONE SOFTWARE

The Linux smartphone scenario has never been so exciting. Recently, Purism's Librem 5 smartphone achieved its crowdfunding goal and scored partnerships from GNOME and KDE. On the other hand, postmarketOS is also showing some good promise.

When KDE partnered with Purism, it announced that Plasma Mobile will be ready for the real world and integrate with a commercial device for the first time. "Slowly, but surely, hardware vendors have discovered that Plasma Mobile is an entirely different software platform to build products on top of," KDE developer Sebastian K  gler wrote

in a blog post.

Sebastian has shared a Plasma Mobile Roadmap for the interested users and companies.

Source:

<https://fossbytes.com/plasma-mobile-kde-linux-smartphone-roadmap/>

RAZOR LAUNCHES ITS FIRST "SMARTPHONE FOR GAMERS"

Razor Inc., the company known for the gaming computers, has now entered the smartphone market with a bang. Razor Phone is the new Android-powered smartphone from the company.

Probably, it has everything you might want, except the 3.5mm headphone jack which has started to lose its existence on premium smartphones. However, the company has tried to compensate for that by including the THX-certified 24-bit DAC audio adapter that they claim to deliver

"audiophile quality" sound through the headphones.

Source:

<https://fossbytes.com/razor-launches-razor-phone-for-gamers/>

WHAT'S NEW IN FEDORA LINUX 27

Fedora 26 introduced the concept of modularity to Fedora. To paraphrase Fedora's own description, the modularity project is an attempt to separate the life cycles of the applications in a distribution from both each other and the distribution itself. Users need to be able to upgrade to the most recent version of both an application stack, but also retain earlier versions of individual pieces of that stack for backward compatibility (such as Python 3.x versus Python 2.x).

Previous versions of Fedora had each software component—this database, that language runtime—as a discrete package.

Modularity groups those packages into modules—this database with this core database application and that library—and lets each module be installed and run separately. Modules also have their own versioning and life cycles, so users can deploy both cutting-edge and more conservative editions of app stacks side by side. It takes some manual work to convert packages into modules, but one of the goals of Fedora going forward will be to automate as much of the process as possible.

Source:

<https://www.infoworld.com/article/3235332/linux/whats-new-in-fedora-linux-27.html>

ARCH LINUX 2017.11.01 IS NOW AVAILABLE FOR DOWNLOAD WITH LINUX KERNEL 4.13.9

Every month, the Arch Linux developers bake an up-to-date installation image (a.k.a. ISO) that includes all the security patches and package updates that they've pushed through the stable software repositories of the

GNU/Linux distribution during the month that just ended.

Arch Linux 2017.11.01 is the ISO snapshot for the month of November 2017, powered by the Linux 4.13.9 kernel and incorporating all the updates released during October 2017. Weighing around 523 MB in size, the Arch Linux 2017.11.01 installation image is supported only on 64-bit platforms as 32-bit installations aren't possible anymore.

Source:

<http://news.softpedia.com/news/arch-linux-2017-11-01-is-now-available-for-download-with-linux-kernel-4-13-9-518338.shtml>

ZORIN OS 12 PASSES ONE MILLION DOWNLOADS MARK, 60% ARE WINDOWS AND MAC USERS

Zorin OS is an Ubuntu-based distribution targeted at those who want to migrate from Microsoft's Windows and Apple's macOS computer operating system to an Open Source alternative that

offers them a more secure, stable, and reliable computing environment. Zorin OS 12 is the latest stable version of the Linux OS, and it got its second point release in September 2017.

Both the Zorin OS 12.1 and 12.2 maintenance updates helped the Zorin OS 12 series to pass the one million downloads mark since the distro's initial release on November 18, 2016, and the best part is that over 60 percent of these downloads are from users using either Windows or macOS, which means that Zorin OS' mission was successfully achieved.

Source:

<http://news.softpedia.com/news/zorin-os-12-passes-one-million-downloads-mark-60-are-windows-and-mac-users-518337.shtml>

VMWARE ADVANCES ITS PHOTON OS LINUX OPERATING SYSTEM FOR CONTAINERS

VMware announced the release of Project Photon OS 2.0 on Nov. 1, providing users with

improved security and management capabilities.

Photon OS is an open-source Linux operating system that has been purpose-built and optimized for container deployments. The Photon container operating system was first announced in April 2015. The Photon OS project reached its 1.0 milestone the following year in June 2016.

The Photon OS became a cornerstone of the larger Photon Platform in August 2016, which aimed to provide a more complete cloud-native platform for container application deployment and management. VMware however decided to discontinue the Photon Platform, and as of October 6th, 2017, the Photon Platform reached its End of Life.

Though the Photon Platform is dead, Photon OS remains, and VMware is advancing it further with the 2.0 update.

Source:

<https://www.serverwatch.com/server-news/vmware-advances-its-photon-os-linux-operating-system-for-containers.html>

DEBIAN-BASED PARDUS 17.1 LINUX DISTRO RELEASED WITH DEEPIN DESKTOP MEDIA SUPPORT

Relased in early July 2017, Pardus 17 is based on Debian GNU/Linux 9 "Stretch" operating system and it's powered by the long-term supported Linux 4.9 kernel series. Now, the first point release, Pardus 17.1, is available to download bringing all the latest technologies from the Debian GNU/Linux 9.2 "Stretch" release.

On top of that, Pardus 17.1 makes various user-visible changes, such as to rename the Downloads folder to Downloaded, enhance the System Settings Menu, redesign the default printer test page, remove the password for the live "pardus" user, update the Symbol system theme, as well as to add a bunch of new desktop wallpapers.

Source:

<http://news.softpedia.com/news/debian-based-pardus-17-1-linux-distro-released-with-deepin-desktop-media-support-518409.shtml>

DON'T WORRY ABOUT THOSE 40 LINUX USB SECURITY HOLES. THAT'S NOT A TYPO

The Linux kernel USB subsystem has more holes than a donut shop. On Monday, Google security researcher Andrey Konovalov disclosed 14 Linux USB flaws found using syzkaller, a kernel fuzzing tool developed by another Google software engineer, Dmitry Vyukov.

That's just the tip of the iceberg. In an email to The Register, Konovalov said he asked for CVEs for another seven vulnerabilities on Tuesday, and noted there are something like 40 that have not been fixed or triaged.

Konovalov downplayed the risk posed by the flaws, based on the fact that physical access is a prerequisite to an attack. In other words, to exploit these vulnerabilities and potentially hijack a machine or infect it with spyware, you have to be able to actually insert a malicious USB gadget into a Linux-powered system.

Source:

https://www.theregister.co.uk/2017/11/07/linux_usb_security_bugs/

LATEST IPFIRE 2.19 LINUX FIREWALL UPDATE PATCHES OPENSLL, WGET VULNERABILITIES

The development team behind the IPFire professional and hardened Linux firewall distribution announced the release of the IPFire 2.19 Core Update 116 software patch, which addresses several security issues.

Coming only a few days after the Core Update 115 release, which introduced a new IPFire Captive Portal allowing for easy access control of wireless and wired networks, along with updated OpenVPN configuration options, the IPFire 2.19 Core Update 116 release patches important security vulnerabilities.

For starters, the update bumps the OpenSSL version to 1.0.2m, a release that addresses two security flaws affecting modern AMD Ryzen and Intel Broadwell

processors, as well as certificate data. More details about the two vulnerabilities are available at CVE-2017-3736 and CVE-2017-3735.

Source:

<http://news.softpedia.com/news/latest-ipfire-2-19-linux-firewall-update-patches-openssl-wget-vulnerabilities-518430.shtml>

UBUNTU LINUX-MAKER CANONICAL JOINS GNOME FOUNDATION ADVISORY BOARD

Ubuntu is a great operating system, and this year it has gotten even better. Why? The maker of the distribution, Canonical, ditched the much-maligned Unity desktop environment. Instead, the latest version of the distro uses the far-better GNOME.

Not only does Ubuntu get better by using GNOME, but GNOME should improve thanks to Canonical's contributions. Today, the GNOME Foundation Advisory board announces that Canonical has joined. This makes a lot of

sense, as the company's popular operating system should bring a renewed interest in the desktop environment. In other words, it is win/win for both.

Source:

<https://betanews.com/2017/11/01/ubuntu-linux-maker-canonical-joins-gnome-foundation-advisory-board/>

KUBUNTU 17.10 USERS CAN NOW UPDATE TO KDE PLASMA 5.11.3 DESKTOP ENVIRONMENT

Kubuntu 17.10 was released on October 19, 2017, with the KDE Plasma 5.10.5 desktop environment by default. If you're running Kubuntu 17.10 on your personal computer, you can now update it to the KDE Plasma 5.11.3 desktop environment, a bugfix release that addresses multiple issues and annoyances.

The KDE Plasma 5.11.3 packages landed today in the Kubuntu Backports PPA (Personal Package Archive), not Kubuntu 17.10's standard software

repositories, along with several other recent KDE applications and core component, including the recently released Krita 3.3.2.1 digital painting software.

To update your Kubuntu 17.10 (Artful Aardvark) installation to the KDE Plasma 5.11.3 desktop environment and also install the Krita 3.3.2.1 release, you need to first install the Kubuntu Backports PPA, and then attempt a full upgrade in a terminal emulator app, such as Konsole.

Source:

<http://news.softpedia.com/news/kubuntu-17-10-users-can-now-update-to-kde-plasma-5-11-3-desktop-environment-518475.shtml>

LINUX DISTROS ON SMARTPHONE: THE FIRST "LINUX ON GALAXY" DEMO IS HERE

Technology companies involved in desktop and mobile space have been trying hard to achieve a perfect sense of convergence. Microsoft has been doing it with

the help of Continuum; Apple has its own approach to make the iPad workflow more PC-like. Along the same lines, Samsung launched the new DeX dock with its flagship Galaxy S8.

In October, we reported on the company's plans to create an application that would let the Linux enthusiasts run native Linux distributions on their mobile devices. To do so, they would need to connect their Galaxy smartphones to a bigger screen via DeX.

Now, offering a glimpse into the future, the company has released a video. Titled "[Concept Demo] Linux on Galaxy x Samsung DeX," the video shows a device being put on DeX and using an app named "Linux on Galaxy" to launch a Linux distro.

Source:

<https://fossbytes.com/linux-distros-galaxy-first-demo-samsung/>

LINUX MINT 18.3 "SYLVIA" BETA CINNAMON & MATE EDITIONS NOW AVAILABLE TO DOWNLOAD

The Linux Mint development team has uploaded today the Linux Mint 18.3 Beta release to the official download mirror, with 64-bit and 32-bit live ISO images of both Cinnamon and MATE editions of the operating system, though no official announcement was published at the moment of writing.

We downloaded both Cinnamon and MATE editions of Linux Mint 18.3 "Sylvia" Beta and took a quick look inside to see what's new. We can confirm that the OS is based on Ubuntu 16.04.3 LTS (Xenial Xerus) and runs the Linux 4.10 HWE (Hardware Enablement) kernel from Ubuntu 17.04 (Zesty Zapus).

Source:

<http://news.softpedia.com/news/linux-mint-18-3-sylvia-beta-cinnamon-mate-editions-now-available-to-download-518503.shtml>

FIREFOX QUANTUM 57 IS HERE TO KILL GOOGLE CHROME

The first ever Quantum-fueled Firefox version, Firefox 57, is about to land on your Windows, Linux, and macOS machines. A lot of work has been done, such as implementing the new CSS engine written in Rust programming language, adding parallel processing capabilities to leverage multi-core CPUs which are a common sight nowadays.

Mozilla says they have doubled Firefox's speed since last year. Also, Firefox Quantum (Firefox 57) consumes around 30% less RAM than Google Chrome. A new feature called Tracking Protection blocks extensive requests for online user tracking. It works by default in the Private browsing window and reduces the page loading time by around 44 percent.

Source:

<https://fossbytes.com/firefox-quantum-57-is-here-to-kill-google-chrome-download-for-windows-mac-linux/>

LINUX 4.14 ARRIVES AND LINUS SAYS IT SHOULD HAVE FEWER 0-DAYS

Linus Torvalds has given the world version 4.14 of the Linux Kernel. Torvalds announced the new release with his usual lack of fanfare, but with a couple of interesting nuggets of news.

He opened by saying "it is probably worth pointing out how the 0 day robot has been getting even better (it was very useful before, but Fengguang has been working on making it even better, and reporting the problems it has found)." Said robot is an automated vulnerability-checker that scours kernel code for issues. With version 4.14 slated to be the next kernel version to receive Long Term Support, and that support now running for six years instead of two, a more secure release will be widely welcome.

Source:

https://www.theregister.co.uk/2017/11/12/linux_4_14_released/

SAMSUNG DEMOS UBUNTU RUNNING ON DEX

Samsung Electronics is entertaining the idea of bringing a full-fledged Linux operating system to the Samsung DeX platform, and these efforts were highlighted in a recent concept demo video published on YouTube by Samsung Newsroom, showcasing Samsung DeX running Ubuntu. Assuming that this feature will be implemented, it may place the DeX docking station on the radars of more potential customers as the product could grow in popularity amongst Linux users.

The Samsung DeX docking station was introduced earlier this year with the Samsung Galaxy S8 flagship series. It's an accessory that creates a bridge between the smartphone and desktop experiences and promotes the idea that a handset can provide a desktop replacement.

Source:

<https://www.androidheadlines.com/2017/11/samsung-demonstrates-ubuntu-16-running-natively-dex.html>

FEDORA 27 LINUX DISTRIBUTION NOW AVAILABLE FOR DOWNLOAD

If you want a pure, no-nonsense, Linux-based operating system, look no further than Fedora. It is stable as all heck, while also being fairly bleeding edge with up-to-date packages. Best of all, the distribution focuses heavily on open source ideology, using only truly free software. It is a great way to experience Linux as it should be. Heck, the father of the kernel, Linus Torvalds, uses Fedora -- that's saying something.

Today, version 27 of the operating system finally becomes available. Desktop users should love the GNOME 3.26 desktop environment, which offers many improvements, including color emoji support. Yes, emojis do matter -- Linux users can have fun too. Also included is LibreOffice 5.4 -- a worthy alternative to Microsoft's office suite. From a more technical aspect, some users will appreciate the addition of TRIM support for newly encrypted solid state drives.

Source:

<https://betanews.com/2017/11/14/fedora-27-linux/>

LINUX TOTALLY DOMINATES SUPERCOMPUTERS

Linux rules supercomputing. This day has been coming since 1998, when Linux first appeared on the TOP500 Supercomputer list. Today, it finally happened: All 500 of the world's fastest supercomputers are running Linux.

The last two non-Linux systems, a pair of Chinese IBM POWER computers running AIX, dropped off the November 2017 TOP500 Supercomputer list.

Overall, China now leads the supercomputing race with 202 computers to the US' 144. China also leads the US in aggregate performance. China's supercomputers represent 35.4 percent of the Top500's flops, while the US trails with 29.6 percent. With an anti-science regime in charge of the government, America will only continue to see its technological lead decline.

Source:

<http://www.zdnet.com/article/linux-totally-dominates-supercomputers/>

KDEVELOP 5.2 OPEN-SOURCE IDE RELEASED WITH IMPROVED C++, PHP AND PYTHON SUPPORT

Almost half a year in the making, KDevelop 5.2 is a major release that introduces more analyzer plugins to the Analyzer menu entry implemented in the previous release, KDevelop 5.1. These include Heaptrack, a heap memory profiler for Linux apps written in C/C++ and Cppcheck, a popular static analyzer for the C++ programming language, which can be used from inside KDevelop by default.

Apart from the new analyzer plugins, KDevelop 5.2 comes with a bunch of improvements for the C++, Python, and PHP programming languages. For PHP support, this release introduces the callable type, process member properties and calls for unsure types, null and spaceship coalesce

operators, support for non-scalar constants, support for variadic functions, and PHP7 IIFE syntax parsing.

Source:

<http://news.softpedia.com/news/kdevelop-5-2-open-source-ide-released-with-improved-c-plus-plus-and-php-support-more-518565.shtml>

GOOGLE HOME AND AMAZON ECHO HIT BY BIG BAD BLUETOOTH FLAWS

Google and Amazon have rolled out patches for their respective smart home speakers, Home and Echo, to plug the widespread Bluetooth flaws known as BlueBorne.

BlueBorne, a set of eight Bluetooth flaws, was already known to affect billions of phones and computers running iOS, Android, Windows, and Linux. The flaws were discovered by security vendor Armis, which now warns that the flaws in Home and Echo could be used as an entry point to attacking other devices with malware.

An attacker would need to be in Bluetooth range but can use the flaws to attack any device with Bluetooth enabled without pairing with it.

According to Armis, Amazon has provided an update to around 15 million Echo devices and Google has patched five million Google Home devices.

Source:

<http://www.zdnet.com/article/google-home-and-amazon-echo-hit-by-big-bad-bluetooth-flaws/>

RED HAT OPENSTACK PLATFORM 12 IMMINENT, PAVES WAY FOR KUBERNETES IN PLATFORM 13

Red Hat released Fedora 27 last week offering containers and the latest GNOME, but for big business, it's the next OpenStack release to watch out for.

Red Hat announced OpenStack Platform 12 at the OpenStack Summit in Sydney earlier this month, with the release expected within weeks.

This will be a significant release for Red Hat's version of the collaborative open-source public- and private-cloud platform OpenStack, being the first version to deliver all its services containerised. "It's the first step in a longer journey. Our vision is to deliver OpenStack deployed by Kubernetes in the long run," Nick Barcet, senior director of OpenStack Product Management, Red Hat, told iTWire. Red Hat's strategy over the last three years, Barcet explained, is to provide a stable solution. "Stable when you install it, stable when you run it, stable when you upgrade it," Barcet said.

Red Hat also announced Ceph Storage 3.0 which Barcet describes as "a very important milestone in our storage strategy because it delivers a new way to access storage held in a Ceph cluster – not only storage as a block and an object as before but also as a shared filesystem".

Red Hat further announced large Australian insurance firm IAG is being added to the array of Red Hat OpenStack reference customers, along with the French-

originating multi-national telco Origin, and the Singapore-based MyRepublic.

Source:

<https://www.itwire.com/the-linux-distillery/80865-red-hat-openstack-platform-12-imminent,-paves-way-for-kubernetes-in-platform-13.html>

BLACKARCH LINUX DISTRO FOR ETHICAL HACKING DROPS 32-BIT SUPPORT

BlackArch, one of the most popular Linux distros for ethical hacking and penetration testing, has dropped the support for systems based on 32-bit architecture. The announcement of this change was made on project's Twitter handle and official website, as reported by Softpedia.

The announcement says: "Following 9 months of deprecation period, support for the i686 architecture effectively ends today."

As a result of this change, by November end, the i686 packages will be removed from BlackArch

mirrors. At a later stage, they'll also be removed from packages archive. In case you visit their website, you won't find any 32-bit download images.

If you're running a 32-bit installation of Arch Linux, now, you won't be able to upgrade to a newer version or get updates/patches for your machine. So, you're advised to either install 64-bit version of the OS on 64-bit hardware, or choose a different ethical hacking distro that supports 32-bit architecture.

This step shouldn't be surprising as increasing number of Linux distros are phasing out 32-bit support. Following the footsteps of Arch Linux, popular Manjaro Linux had already dropped the support. Just recently, Ubuntu too took a similar decision.

Source:

<https://fossbytes.com/blackarch-linux-distro-ethical-hacking-drops-32-bit-support/>

SPARKYLINUX 4.7 "TYCHE" OUT NOW WITH LATEST DEBIAN GNU/LINUX 9 "STRETCH" UPDATES

Powered by a recent kernel from the long-term supported Linux 4.9 series, version 4.9.51, SparkyLinux 4.7 is now available for download (see link below) with all the updates pushed upstream in the software repositories of the Debian GNU/Linux 9 "Stretch" operating system series as of November 17, 2017.

This version comes with the Xfce 4.12.3, LXDE 0.99.2, and Openbox 3.6.1 graphical environments, the latest Calamares 3.1.8 graphical installer, as well as Mozilla Firefox 52.5.0 ESR, Mozilla Thunderbird 52.4.0, LibreOffice 5.2.7, VLC Media Player 2.2.6, Pidgin 2.12.0, Transmission 2.92, HexChat 2.12.4, and DeaDBeeF 0.7.2.

The SparkyLinux 4.7 release comes with live ISO images with the Xfce, LXDE, and Openbox (MinimalGUI) desktop environments/window managers, as well as a text mode edition

(MinimalCLI) for both 32-bit (i686) and 64-bit (x86_64/amd64) hardware. While the new ISO images are provided mostly for those who want to deploy SparkyLinux on new computer or reinstall, existing users using a release from the SparkyLinux 4.x "Tyche" series can upgrade to version 4.7 right now by running the commands below in a terminal emulator followed by a system restart.

Source:

<http://news.softpedia.com/news/sparkylinux-4-7-tyche-out-now-with-latest-debian-gnu-linux-9-stretch-updates-518625.shtml>

LINUX CREATOR SLAMS SECURITY BODS

Linus Torvalds, the creator of open-source computer operating system Linux, has slammed current approaches to cyber security during a recent discussion.

The Finnish-American software developer, who took part in a talk about new whitelisting features destined for Linux, disapproved of

the approaches of many security bods.

In particular, he criticized the work of Kees Cook, who's a member of Google Pixel's security team. Torvalds has previously branded him as idiotic.

As The Register reports, Cook recently wrote a request to pull hardened user copy changes for v4.15-rc1. He said: "Please pull these hardened usercopy changes for v4.15-rc1.

"This significantly narrows the areas of memory that can be copied to/from userspace in the face of usercopy bugs by adding explicit whitelisting for slab cache regions," he said in the posting.

Torvalds appeared to be displeased with Kees' post. In fact, he doubts that the points he raised are actually useful. With the support of the likes of Paolo Bonzini, Cook attempted to explain his stance on the code and counter Torvald's concerns.

He continued: "This is why I introduced the fallback mode: with both kvm and sctp (ipv6) not noticed until late in the

development cycle, I became much less satisfied it had gotten sufficient testing."

Torvalds was far from satisfied with what Cook had to say, saying: "So honestly, this is the kind of completely unacceptable 'security person' behavior that we had with the original user access hardening too, and made that much more painful than it ever should have been.

"It is not acceptable when security people set magical new rules, and then make the kernel panic when those new rules are violated."

His approach to security is completely different to Cook. Instead, he believes that security problems are just bugs, and he doesn't believe in changing the kernel completely.

Source:

<https://www.v3.co.uk/v3-uk/news/3021555/linux-creator-slams-security-bods>

KALI LINUX 2017.3 ETHICAL HACKING OS BRINGS INSPY, SUBLIST3R, AND SMB3.0 SUPPORT

Coming two months after the previous release, Kali Linux 2017.3 is here with a new kernel, namely Linux 4.13.10, which adds better support for the latest hardware components, as well as all the security patches pushed upstream in the Debian Testing repositories, as well as various new tools.

First off, the Linux 4.13.10 kernel adds SMB 3.0 support to CIFS by default, rises the EXT4 directories limit from 10 million entries to up to 2 billion, and enables TLS support. Second, Offensive Security updated several of the included tools for this release, such as The Social Engineering Toolkit, Reaver, Burp Suite, PixieWPS, and Cuckoo.

On top of that, the Kali Linux 2017.3 release adds four new tools, namely InSpy for performing enumeration on LinkedIn to find people based on company, job title, or email address, the

CherryTree note-taking app, Sublist3r for enumerating subdomains across multiple sources simultaneously, and OSRFramework for enumerating domains and users across more than 200 different services.

With the Kali Linux 2017.3 release, the ethical hacking and penetration testing distro is now shipping with the latest Maltego CaseFile bundle, which brings us both the incredible Maltego open-source information gathering tool and its little brother CaseFile. Users can still run the free Maltego Community Edition if they want, along with the Maltego CaseFile bundle, which is also free.

Source:

<http://news.softpedia.com/news/kali-linux-2017-3-ethical-hacking-os-brings-inspy-sublist3r-and-smb3-0-support-518656.shtml>

'URGENT DATA CORRUPTION ISSUE' DESTROYS FILESYSTEMS IN LINUX 4.14

A filesystem-eating bug has been found in Linux 4.14.

First reported last week by developer Pavel Goran, the problem struck bcache, a tool that lets one use a solid state disk drive as a read/write cache for another drive. bcache is often used to store data from a slow disk on faster media.

Goran noticed the problem after trying to upgrade Gentoo from version 4.13 of the Linux kernel to version 4.14. During that effort he noticed "reads from the bcache device produce different data in 4.14 and 4.13."

After plenty of analysis, he concluded that "this looks like a very serious bug that can corrupt or completely destroy the data on bcache devices.

Source:

https://www.theregister.co.uk/2017/11/22/linux_4_14_bcache_bug_destroys_data/

EXTIX, THE ULTIMATE LINUX SYSTEM, NOW HAS A DEEPIN EDITION BASED ON UBUNTU 17.10

For those not familiar with Arne Exton's work, he regularly creates live ISO images based on the latest Ubuntu or Debian operating systems and shipping with the most recent GNU/Linux technologies and Open Source software. ExTiX is an Ubuntu-based distro that has no less than five editions, including the new Deepin one.

ExTiX is dubbed by the developer as "The Ultimate Linux System," and the new ExTiX Deepin released today lives up to the name as everything just works. The distribution is based on Canonical's latest Ubuntu 17.10 (Artful Aardvark) operating system and inherits all of its core components and applications.

However, the default desktop environment is Deepin Desktop as featured in the upcoming Deepin 15.5 release. We recommend studying the list of pre-installed packages if you're curious to know what exactly is included in ExTiX Deepin, and check out the screenshot gallery below to see it in action.

Also included in the distro is

Deepin Screen Recorder and Refracta Tools. The latter you can use to create your own live system based on Ubuntu or ExTiX Deepin, even without installing anything on your personal computer.

Source:

<http://news.softpedia.com/news/extix-the-ultimate-linux-system-now-has-a-deepin-edition-based-on-ubuntu-17-10-518696.shtml>



Earlier this month, I went to the AMP Roadshow as it arrived in my city. It took place at the local Google headquarters, and was dedicated to new features coming to AMP, as well as the newer features that had already dropped. It included keynotes (with examples) as well as a codelab segment with a variety of tutorials. As such, I wanted to use my article this month to cover some of the things I learned.

LEARNING BY EXAMPLE

There are a few websites that offer examples and guides for getting started with AMP. The two best ones I've used are:

- <https://ampbyexample.com/> - A collection of individual element examples (eg. a navbar example).
- <https://ampstart.com/> - This site offers complete templates that you can download and use as a starting point. According to a keynote at the AMP Roadshow, the website should be updated with a customization option soon.

The best way to approach this would be to find a template you like from AMP Start, and then add elements from AMP By Example (or AMP Start) until you reach the layout you want. Ideally, having a goal in mind before you start will make the process go faster (such as converting an existing site).

DO I HAVE TO MANUALLY WRITE ALL THE HTML?

No. If you want to use a static site generator (such as Grow), you can embed the CSS directly into the page (required by AMP), and can set up predefined HTML structures to drop content into. If you're instead looking for a plugin for a CMS, there are apparently plugins for Wordpress or Drupal. There's also a project on GitHub called amp-library, which is intended to convert normal HTML to AMP HTML. The project can be found here: <https://github.com/Lullabot/amp-library>

SHOULD I MANUALLY WRITE ALL THE HTML AND EMBED THE CSS?

Yes. As with any programming exercises, you learn more by doing it all by hand at first, before relying on tools to automate tasks. The more you have to write the HTML for an element, after all, the better you'll remember it later. Naturally, if time is of the essence, do whatever you can to speed up the process. If you end up with some free time later, you can always return to manually writing it.

WHAT ABOUT INTERACTIVITY?

A relatively recent addition to AMP is amp-bind. It allows you to store state and interconnect elements within a page. A nice example of that is on AMP By Example: https://ampbyexample.com/introduction/amp_for_e-commerce_getting_started/

MY WEBSITE IS A PROGRESSIVE WEB APP - CAN I USE AMP?

This was actually covered a lot at the AMP Roadshow. The ability to install a service worker was added to AMP recently, which enables the ability to install the service worker in the background. This means you can set up your entry points to load the service worker, and then upgrade to the PWA as users interact with your site.

Furthermore, it's possible to create a PWA frame, which then loads content from AMP pages using a shadow DOM.

A codelab to teach you this can be found here: <https://codelabs.developers.google.com/codelabs/amp-pwa-workbox/#0>

CONCLUSION

AMP is a wonderful library to have access to. It offers a good

balance between ease of use, and performance. While there are some limitations placed on you when using it, in my experience, the limitations really just make life easier for you by preventing a lot of the hacks common on the web. Naturally, you'll always have to balance the pros and cons with what it is you need to build. That being said, AMP is definitely worth your consideration. The main exception is if you need to include custom JS - as AMP does not allow this (except in iframes).

I hope this article was interesting to at least a few readers. And perhaps a few of you will be trying AMP in the future - will maybe even contribute to the project. If you have any questions about AMP, you're welcome to contact the AMP team on GitHub or Twitter, or email me at lswest34+fc@gmail.com. If you have requests for other articles, please send them to me as well.



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 Alan Ward

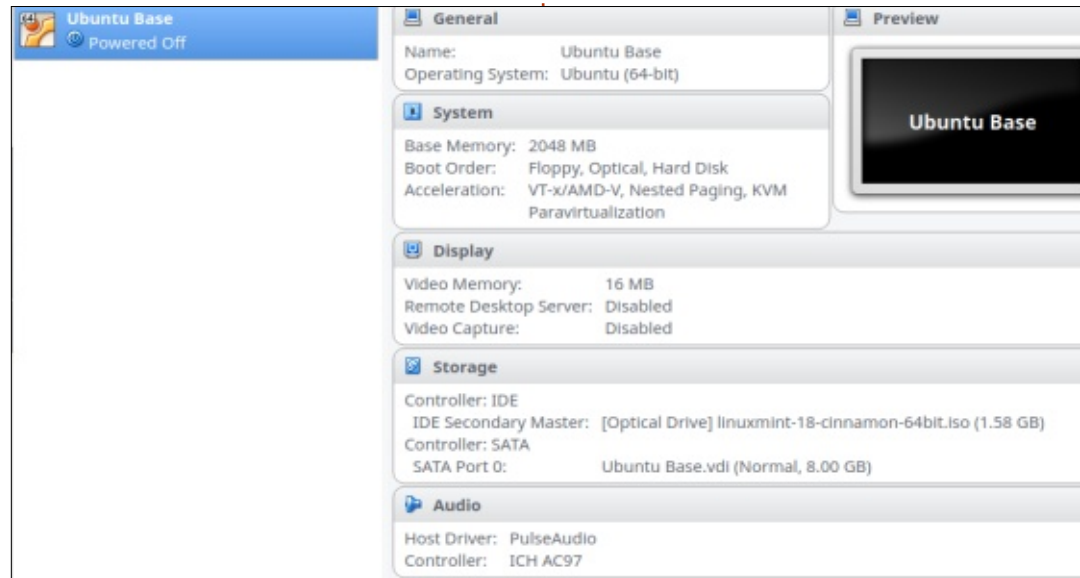
Install Ubuntu Base

Most users of Ubuntu and its derivative distributions are fairly happy with the LiveCD or USB approach to installing the distribution. However, other rather more exotic ways of creating a working operating system are also available. In this piece, I would like to show how Ubuntu Base can be installed, and then tweaked to get a working system with a minimum of software.

Ubuntu Base is described in the appropriate entry in the Ubuntu Wiki: <https://wiki.ubuntu.com/Base>. We are, in essence, starting with a very minimal disk image of an Ubuntu System, with the bare minimum to handle the apt package manager. It is, in fact, so barebones that we do not even have a kernel or initial ramdisk image. Nor is GRUB installed by default, so we will

have to download and install these pieces by hand during the setup process.

Let us begin by downloading Ubuntu Base. I chose the 64-bit “amd64” of Ubuntu version 17.10 from the download page: <http://cdimage.ubuntu.com/ubuntu-base/releases/17.10/release/>. I will be performing tests in a virtual machine under VirtualBox 5.130, running on a host with Ubuntu Budgie 17.10. It may be interesting to note my processor, an Intel Core i7, has the vmx flag activated, which means I can run a 64-bit virtual machine inside VirtualBox. I also had to activate VT-x (virtualization technology) in my computer’s BIOS settings. If this is unavailable, VirtualBox client operating systems would be limited to 32-bit versions, and we would need to choose the



corresponding 32-bit “i386” file to download. Both files are currently at about 36-37 MBytes in size, and so quite lightweight.

Another approach would be to install the system directly on an actual computer. In this case, a standard LiveCD or USB would be required to boot the system initially - or some other means of

achieving a minimal working system. Networking would also be useful on the target computer, to download the Ubuntu Base image. However, we would be able to install the 64-bit system directly, if our target hardware supports it (i.e. has a 64-bit CPU). This would be the case for most computers built over the last 6-7 years onward.

```
alan-HP-Spectre-x360-Convertible ~ # cat /proc/cpuinfo | grep vmx
flags              : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36 clflush dts acpi
mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp lm constant_tsc art arch_perfmon pebs bts rep_good
nopl xtopology nonstop_tsc cpuid aperfmperf tsc_known_freq pni pclmulqdq dtes64 monitor ds_cpl vmx est tm2
ssse3 sdbg fma cx16 xtpr pdcm pcid sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c
rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb intel_pt tpr_shadow vnmi flexpriority ept vpid fsgsbase t
sc_adjust bmi1 avx2 smep bmi2 erms invpcid mpx rdseed adx smap clflushopt xsaveopt xsavec xgetbv1 xsaves dt
herm ida arat pln pts hwp hwp_notify hwp_act_window hwp_epp
```

Once inside VirtualBox, I created a new virtual machine with the following specifications:

- Type Linux / Ubuntu (64-bit).
- 2048 MBytes of RAM (mostly for

HOWTO - INSTALL UBUNTU BASE

the LiveCD, this can be reduced significantly for the final system).

- Dynamically allocated VDI hard drive, 8.0 GBytes in size (also very much overkill).

I then connected the virtual CD drive to a Linux Mint 18 Cinnamon (64-bit) ISO image that was in my Downloads folder, to use for the initial booting of the target system.

I then booted the virtual machine from the Linux Mint CD image. Once running, I used gparted to create a new ms-dos partition table on the virtual hard drive, /dev/sda, and a single partition formatted with ext4. Any other partition management tool would have served this purpose, such as fdisk, parted or graphical equivalents.

I transferred the Ubuntu Base compressed file over from the host computer using SSH in a terminal window:

```
scp
alan@10.0.2.2: /home/alan/Downloads/ubuntu-base*
```

Another easy-to-use option would have been to re-download the file

directly from the Internet, using Firefox.

It was time to mount the virtual hard drive, decompress, and transfer the Ubuntu Base image. In a terminal:

```
sudo bash
mount /dev/sda1 /mnt
tar xzf ubuntu-base-17.10-
base-amd64.tar.gz -C /mnt/
```

At this point, the virtual hard drive contains the base Ubuntu system. Now, we need to add a kernel, an initial ramdisk, an init script, and a bootloader such as GRUB. Also in the terminal:

```
mount -o bind /dev /mnt/dev
mount -o bind /dev/pts /mnt/dev/pts
mount -o bind /proc /mnt/proc
mount -o bind /run /mnt/run
mount -o bind /sys /mnt/sys
chroot /mnt/
```

Our prompt should now change to "root@mint:/#". All commands we issue within the chroot jail will affect only the virtual hard drive on which Ubuntu Base is to be

installed, not the Mint LiveCD. Let us continue:

```
echo "nameserver 8.8.4.4" >
/etc/resolv.conf
apt update
apt upgrade
apt install init
apt install linux-image-
generic
```

Let us review these commands. The first activates DNS within the chroot, pointing domain name resolution to Google's server at IP address 8.8.4.4. We then update apt's cache of available packages. Then, we upgrade all installed software to the latest versions; this is just to stay on the safe side, since very little should have changed and need to be updated in such a small system image. Then, we install the init script. The final command installs whatever version of the generic Linux kernel is current. This requires about 111 MBytes of bandwidth. The apt tool also creates a suitable initial ramdisk. Furthermore, the software installation hooks in the package configuration are smart enough to detect that GRUB has not yet been installed on the

target system, and proposes to do so. Naturally, we accept this choice and indicate option 1 (for /dev/sda - notice no trailing "1") as our destination for GRUB.

At this point, I like to install basic networking tools, in order to access the ifconfig and route commands:

```
apt install net-tools
```

Finally, we need to create a root password, and perhaps also create a new user profile that can be used for non-administrative tasks. Still within the chroot jail:

```
passwd
adduser alan
```

The first command prompts us for a new administration password, while the second creates a normal user named "alan". Adapt to your needs as appropriate. This normal user will not have administrative privileges, unlike the first normal user the standard Ubuntu installer application creates; i.e., the user will not have sudo. This can, naturally, be changed if we so wish.

This is basically all we need to have

HOWTO - INSTALL UBUNTU BASE

a bootable Ubuntu Base system. We get out of the chroot, unmount the Ubuntu Base virtual hard drive, and perform a system reboot of the virtual computer:

```
exit
```

```
umount /mnt/*/* ; umount /mnt/* ; umount /mnt
```

```
shutdown -r now
```

VirtualBox should now disconnect the Live CD image from the virtual computer's CD drive. On reboot, the internal virtual hard drive should be booted from, and our new system should boot up in text mode. Log in using either root, or the new user profile created above.

For some reason, the root filesystem is mounted read-only on reboot. This can easily be fixed by

remounting in read-write mode by hand, and then apt caches may be cleaned releasing yet more disk space. As root:

```
mount -o remount,rw /
```

```
apt clean
```

If required, we can also start networking. There are several ways of doing this, but a quick-n-dirty fix taking into account the quirks of VirtualBox's way of doing NAT networking would be:

```
ifconfig enp0s3 10.0.2.15/24
```

```
route add default gw 10.0.2.2
```

```
echo "nameserver 8.8.4.4" > /etc/resolv.conf
```

Once done, our new system consumes just 770 MBytes of disk space, and 30 MBytes of RAM. As a consequence, it is at about the fastest and leanest an Ubuntu-

based system of this generation could ever be. However, since no programs have yet been installed, it is also just about useless for a real user. We can change this by installing precisely the amount of software we actually need for a particular task, or set of tasks. For instance, if we needed a file server, one could install sshd or samba, and that would be all. If we needed a database server, install one of the various sql servers available, or couchdb as a more exotic alternative, and nothing more. This could even be turned into a minimalistic Internet Kiosk by installing a simple web browser, though in this case both X11 or Wayland, and a login manager such as lightdm (or even nodm) would also be needed. The possibilities are endless.

Such a lightweight system would be perfect for an older or less capable computer. That being said, in that particular perspective, installing a full desktop environment on top of the minimalistic Ubuntu Base would be something of a contradiction in terms. We would be, in essence, recreating what a normal Ubuntu distribution already offers us. For this reason, Ubuntu Base is

perhaps best seen as a means to obtain a platform on which to create very specialized virtual computers, servers on older hardware, or even IoT devices. In that context, starting out from a base system lighter than even Ubuntu Server can make sense.

```
root@localhost:~# mount -o remount,rw /
root@localhost:~# apt clean
root@localhost:~# df -lh
Filesystem      Size  Used Avail Use% Mounted on
udev            976M    0  976M   0% /dev
tmpfs           200M   3.1M  197M   2% /run
/dev/sda1       7.8G   770M  6.6G  11% /
tmpfs           999M    0  999M   0% /dev/shm
tmpfs           5.0M    0   5.0M   0% /run/lock
tmpfs           999M    0  999M   0% /sys/fs/cgroup
tmpfs           200M    0   200M   0% /run/user/0
root@localhost:~# free -m
              total        used        free      shared  buff/cache   available
Mem:           1996          30         1912           3          54         1864
Swap:              0              0              0
```



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).





HOW-TO

Written by Alan Ward

Intro To FreeCAD - Pt8

In this series, we will be examining the world of FreeCAD, an open-source CAD modelling application that is still in Beta, but has been gaining acceptance in recent years. Naturally, it is readily available in the Ubuntu repositories. In the previous (seventh) article on using FreeCAD, we concentrated on the mesh as a complex primitive object that allows us to create forms and volumes, either from scanned data or by using simple programming techniques.

In this part, we will use this technique in combination with other, more standard FreeCAD tools, to build a 3D representation of a modern building with a lattice roof structure.

ARCHITECTURAL MESHES

Some of the inspiration for this article comes from buildings such as the Esplanade Theatres on the Bay, Singapore (DP Architects), and the Rhike Park music theatre in Tbilisi, Georgia (Studio Fuksas). In all cases, a lattice arrangement has

been used for the exterior of the building. From an architectural standpoint, this technique has at least two salient points:

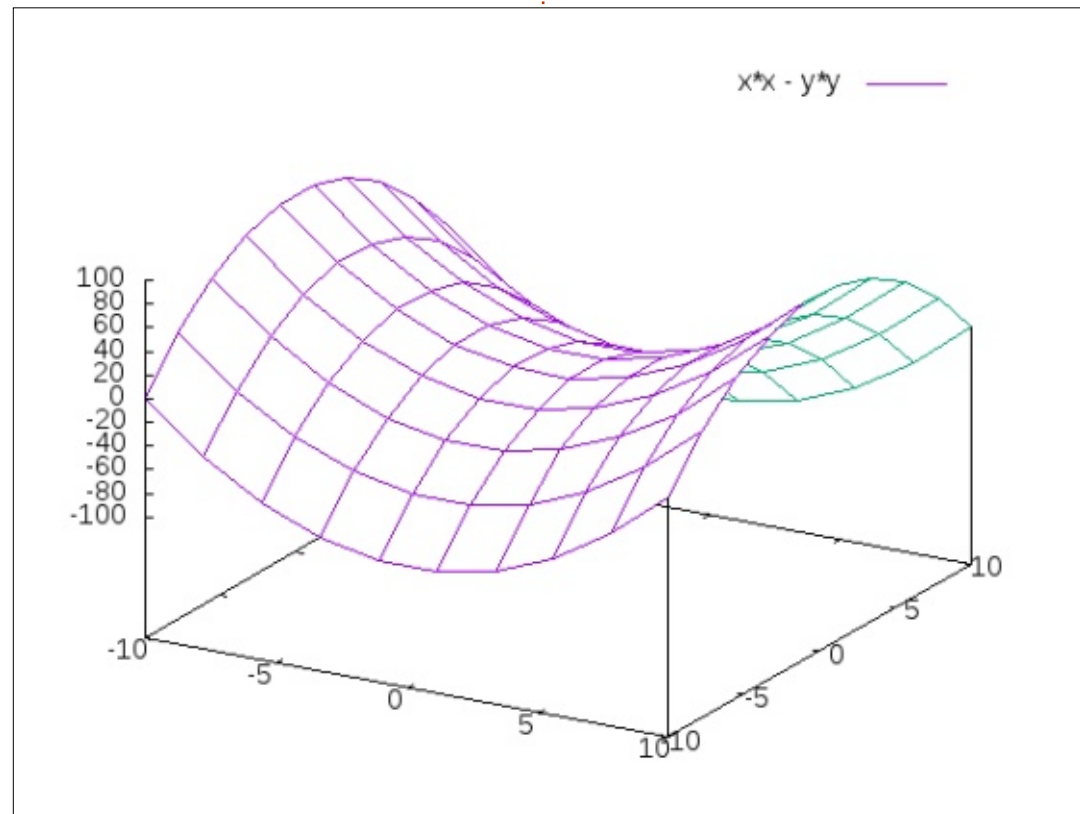
- On the one hand, the lattice can support a large proportion of its own weight, which allows the architect to cover a large area without using internal supports such as columns. This is perfect for large open spaces such as concert halls or sports venues, or even the open concourses inside airport buildings, such as Hong Kong International Airport at Chek Lap Kok.
- On the other hand, using a lattice implies that part of the structural strength comes from working with curved surfaces that share some of their properties with the arch. The final result is a building that eschews the flat, regular shapes that have become so common in urban architecture during the last century.

Some simple lattices can be drawn "by hand", as long as the overall shapes remain planar or use a single curvature. However, once the final shape contains double

curvatures - along two intersecting axes at once - things do tend to get a little complicated. This is when a computer comes in as an essential tool to calculate the position of each lattice point, and from there to calculate the constraints expected within the physical structure.

For instance, let us consider the height function $h(x, y) = x^2x - y^2y$. A

simple surface plot shows us that, in the vicinity of coordinate origin point (0, 0, 0), this surface shows a concave curvature in the upwards direction, along axis X. However, curvature is convex along axis Y, also towards the top. This very simple function shows a double curvature that is easy to calculate, but not easy to draw with precision without the help of a computer.

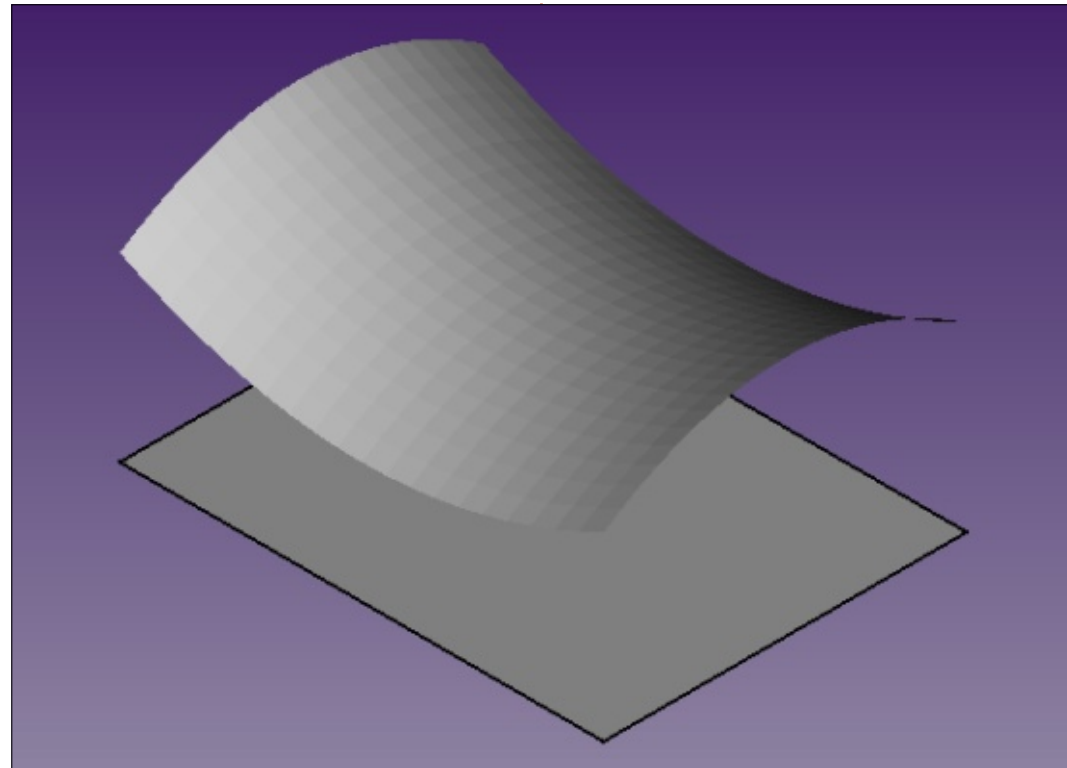


INTEGRATING A LATTICE INTO A BUILDING

In the following discussion, we will create a medium-sized pavilion using a lattice defined with the above function. Naturally, the reader is not encouraged to actually build such a structure in real life - at least, not unless considerable architectural and engineering experience is available to ensure materials are correctly chosen and dimensioned, local building codes are followed, and the construction has some chance

of holding up to its intended use. There are some tricky aspects to consider with this type of construction, not least of which is the fact that the lattice would be stressed in compression along axis Y, and in tension along axis X, all by its own weight. Factors such as wind pressure, and the weight of rainfall, ice, snowfall, etc, would also need to be accounted for.

Let us begin by writing a short Python program to create an STL file with the mesh. The complete code can be found at:



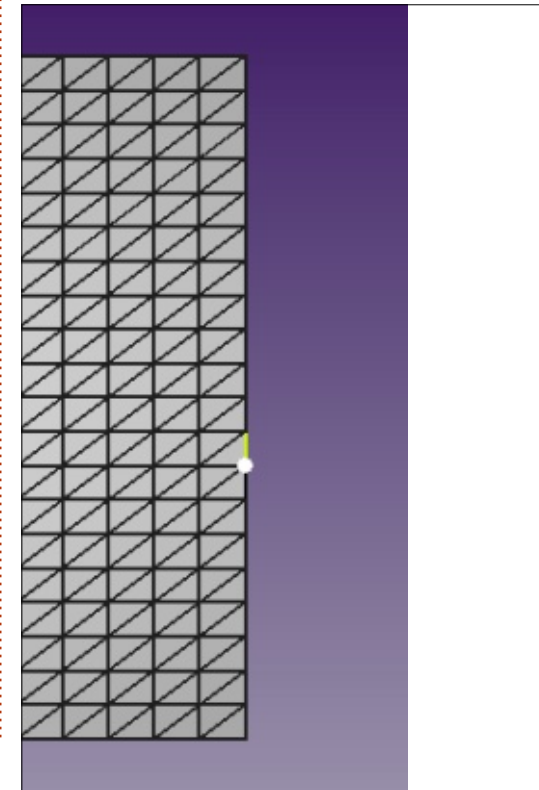
<https://pastebin.com/tsi5dbLw>. Working on a floor plan of 40 x 30 m in the XY plane, we will calculate a value for height along the Z axis. Minimum and maximum heights have been taken, for this example, at 10 and 20 m above ground level respectively, though this could easily be scaled and adjusted to suit a particular implementation. Finally, 20 separate mesh separations have been taken, along both the X and Y directions.

The end result of this program is an STL file that can be imported into a new FreeCAD project using the technique discussed in the previous part of this series. To better visualize proportions, a 40x30 m rectangle has been drawn at ground level, under the roof.

Closing off the walls on all four sides of this building will be no easy task, since all four walls will have three straight edges, but the fourth (upper) edge needs to follow a parabolic line. There are several solutions for this problem. One would be to write further programs in Python to create mesh files to suit. However, FreeCAD does offer alternatives. In this case, I made mesh lines visible. Select the mesh object, and, in the

Property box, select "Display Mode" and switch from the original "Shaded" mode to "Flat Lines".

We can then go into the Draft workbench, and, working carefully, draw a new Wire - selecting, point by point, all the vertices along one edge of the roof. Then, close the shape by selecting the corners of the ground rectangle beneath this edge. This flat shape can then be promoted to a plane?plain? DWire object. Then proceed in the same way for the other walls.



Once the walls have been defined, the roof mesh can either be left with its mesh structure apparent, or the Display Mode can be switched back to "Surface", as desired.

One can then add columns to hold up the roof mesh. However, it then becomes apparent that the mesh has no thickness. Even if much care is taken with column heights, some discrepancy appears since column ends are horizontal disks, but the part of the mesh that is in contact with them is not flat. Intersections with the

building's four exterior walls also become apparent.

One relatively realistic solution is to give the roof mesh some thickness. Simply select the mesh, and, in the Part workbench, create a new Extrusion. Top and bottom surfaces will have the shape of the mesh, while the vertical depth of the object will be the same along its surface. A value of one meter seems appropriate for this building.

Finally, the colors and transparency levels of each object can be adjusted in the Properties

box. For instance, to represent glass walls - allowing light to enter the building between columns - the four walls can be left with their default color ([204, 204, 204]), but with a transparency of 40.

WHAT NEXT?

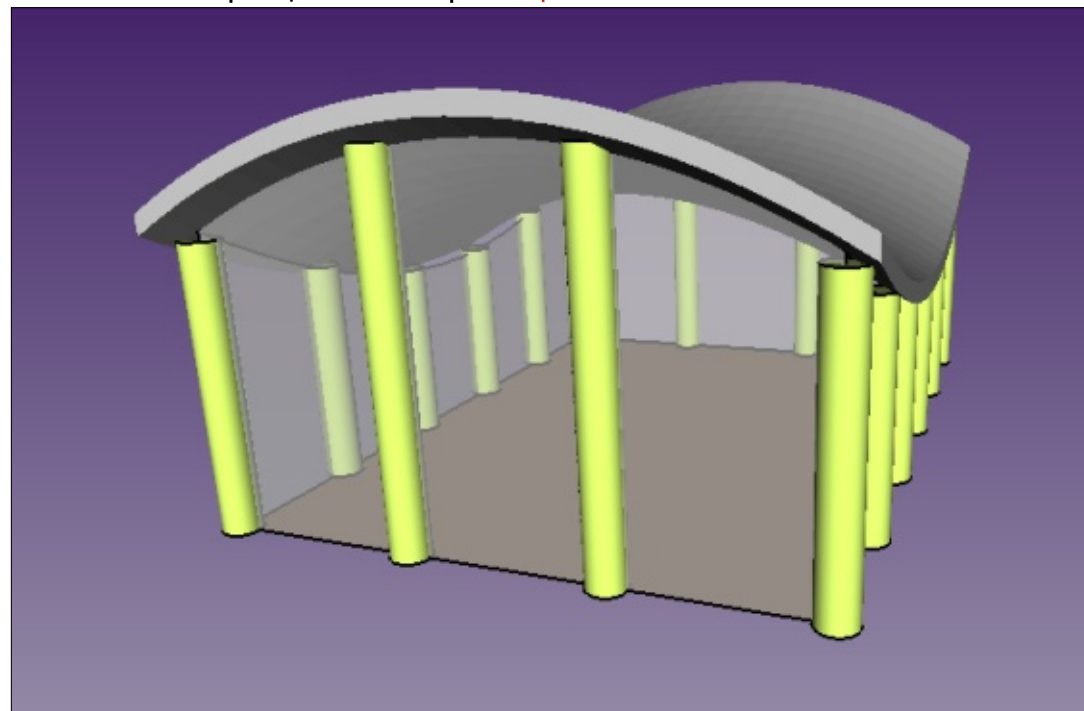
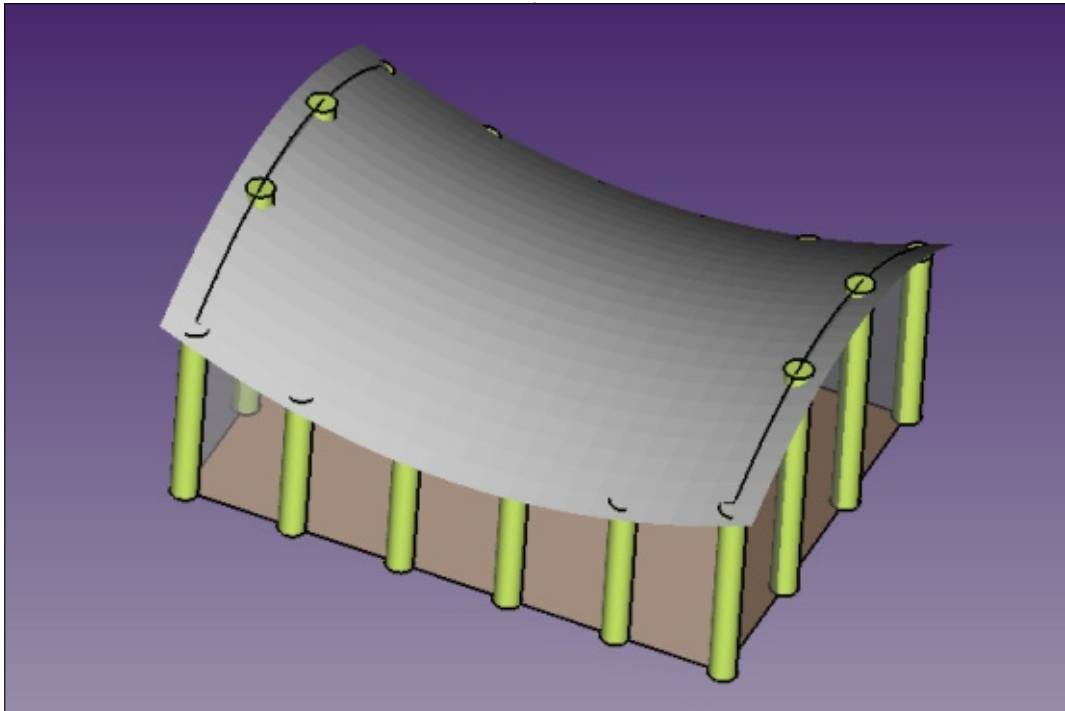
In this article on using FreeCAD, we used a mesh in combination with other, more standard FreeCAD tools, to build a 3D representation of a modern building with a lattice roof structure.

In the next part, we will explore

going from a computer model to something physical, by exporting a finished project and printing it using a 3D printer.



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).





HOW-TO

Written by Boris Breuer



Program In Great Cow Basic

For a few challenges at home, I thought I could make some projects with a microcontroller. A microcontroller is small, affordable, and it seemed fun to learn something new. I chose the attiny13a from ATMEL Corp for my first few projects because this microcontroller is not too complicated (with a low pinout), but has enough functions for the first projects, and the attiny13a can operate under low power conditions. First, I tried the obvious for a beginner, and installed Arduino and the smeezekitty-core. But, after some experiments, the compiled code got too big and I had to often refer to the Help to look up the Arduino syntax. Thus, I was looking for a BASIC compiler for AVR for Linux – to flatten the learning curve and eventually get smaller hex files. After research, it shows that, unfortunately, most available products are for MS Windows. In the first place, I thought this was the case for Great Cow Basic - no Linux distribution. The Integrated Development Environment (IDE) or the Graphical Programming Tool are not (yet)

available for Linux. However, the Great Cow BASIC compiler can run natively on Linux. And, to edit the source user programs in Linux, you could use any text editor you like. The result... a native Linux compiler, with an editor of my choice, and support for the microcontroller I had chosen.

GREATCOWBASIC OVERVIEW

GreatCowBasic comes with a syntax similar to QBASIC/FreeBASIC, and supports flow control statements, math operators and data type, subroutines, functions, data tables, and inline assembler. On the hardware side, things like PWM, SPI, ADC and timer handling are handled via an extensive set of libraries.

With GreatCowBasic, you can produce portable, reusable code for most 8-bit PIC and AVR microcontrollers (actually the project lists around 1100 supported chips); due to some hardware differences, one would have to change the code slightly if

one changes from AVR to PIC and vice versa. In addition, the code is, as far as I can say, highly optimized both in speed and size aspects. Recently, a new version (v0.98.01) was released, for this article I used the former version (v0.97). I recommend using the newest release.

INSTALLATION

Because FreeBASIC and GreatCowBasic are not available through the package management, you have to install a binary tarball for FreeBASIC, and then compile GCB from source.

To install FreeBASIC, the following commands (change x86 to x86_64 if using a 64 bit computer) should do. If it is more convenient for you, download the files with your browser of choice and omit the first lines. I assume you are in your home directory:

```
wget
'https://sourceforge.net/projects/fbc/files/Binaries%20-%20Linux/_
FreeBASIC-1.05.0-linux-
```

```
x86.tar.gz' -O
FreeBASIC.tar.gz
```

```
tar xvf FreeBASIC.tar.gz
```

```
cd FreeBASIC*
```

```
sudo ./install.sh -i
```

To get the compiler to work without the path prefix, make a softlink:

```
sudo ln -s /opt/bin/fbc
/bin/fbc
```

After that, the FreeBASIC compiler should just work; try with:

```
fbc -version
```

If you get an error message, or, later on, have issues with compiling, you may need some additional software in order to get the FreeBASIC compiler to run. With the following, you install the necessary libraries as stated in the FreeBASIC README:

```
sudo apt install gcc
libncurses5-dev libffi-dev
libgl1-mesa-dev libx11-dev
libxext-dev libxrender-dev
libxrandr-dev libxpm-dev
```



HOWTO - GREAT COW BASIC

Get the archive from the GreatCowBasic project site, extract it with unrar (when prompted, enter the password "GCB").

OPTIONAL:

```
sudo apt install unrar (maybe
unrar-unfree depending on
*buntu-Version)
```

```
wget
'https://sourceforge.net/projects/gcbasic/files/_
GCBasic%20-
%20Linux%20Distribution/GCB%4
0Syn_9801.rar/download' -O
GCB.rar
```

```
sudo unrar x GCB.rar
```

For building GreatCowBASIC, I just compile it without the installation script:

```
cd Great*/Sources/
```

```
fbc -exx -v -arch native
gcbasic.bas
```

The installation part works fine, so that you can use the script at least to copy the files to the right place:

```
sudo chmod +x install.sh
```

```
sudo ./install.sh install
```

Make another softlink (to omit

the path prefix later on):

```
sudo ln -s
/opt/GCBASIC/gcbasic
/bin/gcbasic
```

After that, test if it works:

```
gcbasic /version
```

The installation is done; you are ready to develop your first programs with Great Cow BASIC!

FIRST PROGRAM

Have a look at the recently installed folder /opt/Demos. There you can find plenty of examples of projects already done with GreatCowBasic. 'First-start-sample.gcb' is a good starting point for a first physical "hello world", eg, blinking a LED. An attiny13a has an internal clock up to 9.6 MHz which is set at 1.2 MHz fresh from factory. To change this in order to get faster timing, you would have to change the fuses, which is not within the scope of this article. And unless you know what you are doing, do not change the fuses, because you could brick the chip and render it useless.

ATTINY13A FEATURES

- 1 KByte flash memory for programs
 - 64 Byte EEPROM non volatile memory
 - 64 Byte SRAM volatile memory
 - 1 8-bit Timer/Counter
 - 2 PWM Channels
 - 4 channel 10-bit analog digital converter w. noise reduction mode
 - 6 programmable I/O PIN
 - 1 programmable watchdog timer
 - 3 sleep modes (idle, ADC noise reduction, power down)
- brownout detection (e.g. detect weak batteries)
operating voltage: 1.8 V to 5.5 V depending on clock settings

```
#chip tiny13a, 1.2
Do Forever
  PulseOut PortB.4, 100 ms
  Wait 900 ms
Loop
```

This code infinitely lights up the LED for 100 milliseconds, after this period of time the LED stays off for another 900 milliseconds. Save the code in a text editor under blink.gcb. Then compile it, using GreatCowBasic with the integrated assembler, to a hex file that the attiny13a understands. Other supported AVR chips need other options, have a look at the datasheet for individual changes.

```
gcbasic /O:blink.hex /A:GCASM
blink.gcb
```

GreatCowBasic gives some information about the compilation: in blink.lst, there is info about used registers and ram usage, and, in blink.html, you get a comprehensive overview about the compile run. For this example, it shows Chip Model: TINY13A, Program Memory: 32/512 words (6.25%), RAM: 0/64 bytes (0%).

To program the microcontroller afterwards, you need:

- 1 breadboard
- 6 jumper wires, maybe some short wire bridges
- 1 LED, a 5 mm red, yellow, green would suffice
- 1 resistor, say 220 ohm
- 1 Arduino with ISP-Sketch or any other AVR programmer

HOWTO - GREAT COW BASIC

- (1 10 µF capacitor if using Arduino as ISP, see references)

If using an Arduino UNO as ISP; Put the capacitor between RESET and GND (please note the right polarity), then look at the table for how to connect from Arduino UNO to attiny13a.

After preparing the breadboard, the arduino, and the chip, use avrdude to get the hex file to the attiny13a.

```
avrdude -p t13 -P  
/dev/ttyACM0 -c avrisp -b  
19200 -U flash:w:blink.hex
```

This command tells avrdude to flash the hex file with the ArduinoISP on /dev/ttyACM0 with a baudrate of 19200 to the attiny13a (if avrdude complains that the chip identifier does not

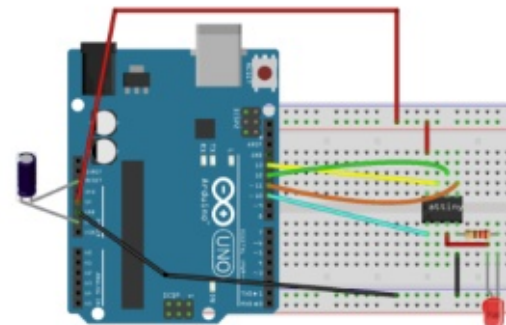
match, try the -F parameter to force the flash operation, this normally does not brick the chip). After the hex file is written successfully, connect the resistor and the anode (the side with the longer lead) of the LED to PB4 (PIN3). Connect the cathode (with the shorter lead or the flat spot on one side) of the LED with GND.

Note: you could write a small shell script which gets the name of the chip and of the hex file so that GCB has a more streamlined workflow of compiling and flashing the microcontroller. For example, see '\GreatCowBasic\flash.sh' in the programs directory, and check the cli parameter section of the help file. I omitted this step and therefore flashing the microcontroller is an extra step for me.

ARDUINO UNO	ATTINY13A	COLOR OF WIRE
5V	VCC (PIN8)	RED
GND	GND (PIN4)	BLACK
PIN10	RESET (PB5)	CYAN
PIN11	MOSI (PB0)	ORANGE
PIN12	MISO (PB1)	GREEN
PIN13	SCK (PB2)	YELLOW

Conclusion
For me, the GreatCowBasic compiler offers a convenient and efficient way to program the microcontroller of choice. Additionally, it gives the option to quickly change the microcontroller between PIC and AVR. The project is active, and the developers (and also the community) seem to be very kind and helpful. There are plenty of device drivers and example code for an array of projects which can be built with it (there are drivers for EEPROM, LCD, RTC - too many to list them all). If this article has attracted your attention, try GreatCowBASIC yourself. In further articles, I will show what the attiny13a and GreatCowBASIC have to offer.

Drop some comments at <https://www.evil-publishing.de/fcm> if you wish.



REFERENCES

- GreatCowBasic Project
<http://qcbasic.sourceforge.net/>
- GreatCowBasic Release notes
<https://sourceforge.net/p/qcbasic/discussion/579125/thread/d86422f0/>
- GreatCowBasic help file
<http://qcbasic.sourceforge.net/help/>
- GreatCowBasic cli parameter
http://qcbasic.sourceforge.net/help/_command_line_parameters.html
- FreeBASIC
<https://www.freebasic.net/>
- attiny13a datasheet
<http://www.atmel.com/images/doc8126.pdf>
- ArduinoISP
<https://www.arduino.cc/en/Tutorial/ArduinoISP>
- ArduinoISP > attiny13a
<https://gist.github.com/dwaq/8239080>



Boris holds a bachelor degree in business administration, and works for an insurance company. While not working, he is a family person and enjoys playing with his kids or tinkering with his personal projects.

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HOW-TO

Written by Mark Crutch

Inkscape - Part 67

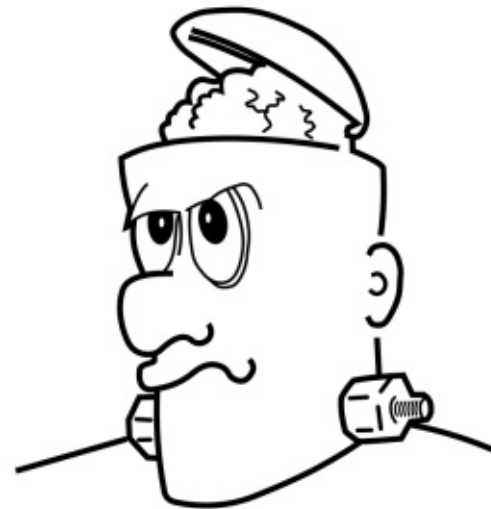
In researching last month's article, I found that Inkscape's default behaviour when adding an LPE to a clone, or when using the Edit > Clone > Clone Original Path (LPE) option, has changed from adding the "Clone original path" effect, to using the "Fill between many" effect instead. On the surface, this brings an obvious regression: it's no longer possible to move the clone independently of the original object. So why was this change made? In order to explain that, you have to understand what this LPE does in normal day-to-day use.

Something that is often misunderstood about LPEs (though hopefully not by readers of this column, as I've pointed it out previously) is that the output from an LPE is just a single path. It might be a complex path, containing sub-paths, but it's still a single path from the perspective of styling. It can have only a single stroke color and style, and a single fill. When you use something like the Power Stroke LPE (see part 47), or the new Taper Stroke LPE

(see below), it doesn't somehow imbue Inkscape with the magical ability to create variable width strokes (a feature that the underlying SVG 1.x format doesn't allow). Rather, it creates a filled shape that happens to follow your original path, and gives the appearance of being a variable width stroke. But in taking this approach, the ability to fill the original shape is lost – any fill you apply now applies to the stroke-like path that is output from the LPE.

This is a particular problem for things like cartoons and comics, where an artistically varying stroke is a necessity, but you also want to fill areas with color. So the Clone Original Path LPE (also covered in part 47) was born, which at last allowed you to apply one LPE to your stroke, but then also clone the original shape via a sacrificial path with the LPE applied which could be independently filled. But it works with only one path at a time. And cartoon characters are often made of more than one – sometimes with artistically placed

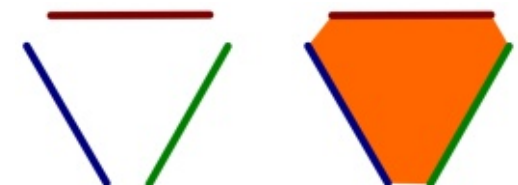
gaps in the outlines. Cue the return of "Frankie", a character from my "Monsters, Inked" comics drawn by my co-creator, Vincent Mealing. This time, I'm presenting him having already manually traced the hand-drawn lines, and with some artistic gaps inserted for demonstrative purposes:



Trying to fill a shape like this is a problem. It can be done manually by creating a separate object for the fill and adjusting its shape to suit. The Bucket Tool can help with this, but those gaps need careful plugging with temporary objects

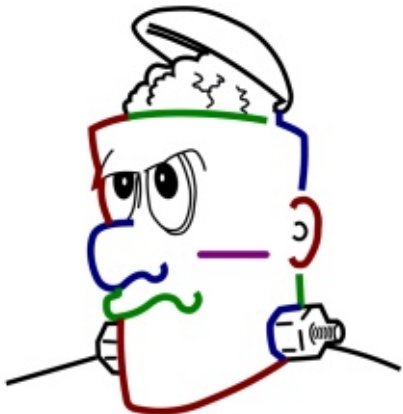
first. In either case, a tweak to the outline shape wouldn't be automatically reflected in the fill. For that, we need a clone of some sort, but that interferes with our ability to add LPEs to vary the stroke width. The Clone Original Path LPE can't help us either, as the shape we want to fill (just the face, for now) is clearly made up of more than one path. And this is precisely where the Fill Between Many effect comes to the fore.

Fill Between Many allows you to collect together several paths into a single LPE. The output is the result of creating a path that joins all of the constituent paths together into a single shape, by implicitly linking the end of each one to the next in the list, and the end of the last path to the start of the first. A trivial example should get the idea across:

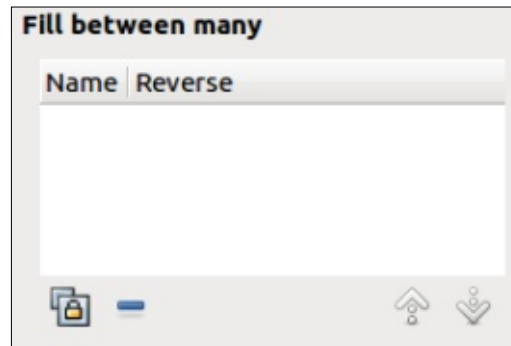


On the left are three paths – straight in this case for clarity, though curved works just as well. On the right is the result of creating a sacrificial path, adding the LPE to it, then adding each of the three paths. The result of the LPE was filled with orange, and had its stroke removed. It also automatically updates to match any changes that are made to the shapes of the original paths. Hopefully it's pretty clear that this new shape is the result of drawing a path that follows each of its component parts, and joins their ends together with straight lines.

Now that you understand the basic idea behind this effect, let's go through a more detailed example by coloring Frankie. For clarity, I'll start by changing the color and thickness of each path we'll be adding to the LPE:



You may have noticed the purple scar on his face. Don't worry, he hasn't been in a fight. That line is the sacrificial path that the LPE will be added to, and it'll disappear in just a moment. Selecting that path, and adding the Fill Between Many effect, results in this trivial UI:

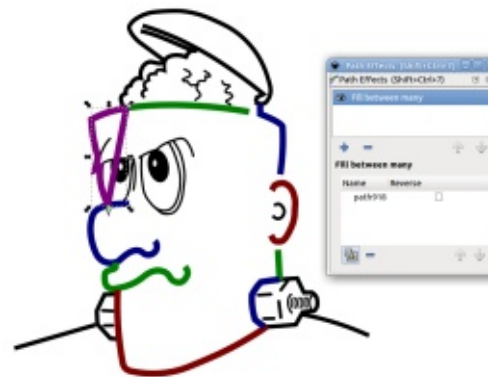


Now the hard work begins. We have to copy each of the source paths to the clipboard in order to add a link to it in this dialog using the button at the bottom left. Common sense would suggest that you could select all the paths and add them as a single operation, but, unfortunately, common sense would be wrong in this case. Instead, you have to add them one-by-one. To make matters worse, each time you select a path to copy, the sacrificial path becomes de-selected, so the UI above vanishes. You then need to re-

select the sacrificial path before you can add the copied link. It's not difficult, but it is time consuming. So, to add our first path (the top left of the face), here are the steps:

- 1) Create a sacrificial path, if you haven't already done so, and add the LPE to it.
- 2) Select the first path to add and copy it to the clipboard.
- 3) Re-select the sacrificial path.
- 4) Click the button in the bottom left of the LPE dialog to add the link.

Do all that correctly and you'll end up with something like this.



There are a few important things to note at this stage. First you can see that the sacrificial path has disappeared, replaced with the output of the LPE. This takes the same shape as the attached path,

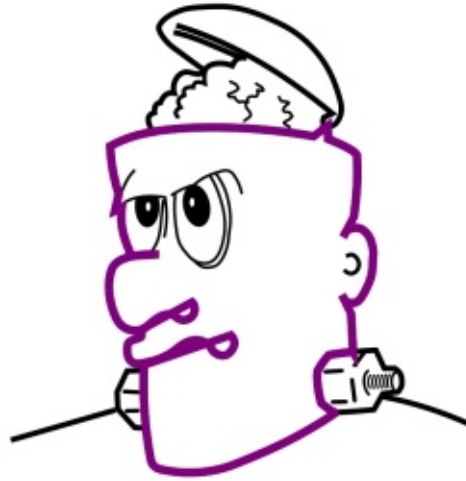
but with the ends connected. It also adopts the style of the sacrificial path. If your first path is straight, it can be easy to lose the LPE output on top of it, so I strongly recommend using a contrasting style for your sacrificial path for this stage of the process. You'll also notice that the path is listed in the LPE dialog, as "path918" in this instance. That's fine for shapes with only a handful of paths, but you can quickly lose track of which is which as the complexity grows. This name is taken from the path's label, which can be set via the Object Properties dialog on the object's context menu. As will become clear, you may need to know which path is which, so setting labels can make life a lot easier – albeit at the expense of more work initially. Be aware that the list in the LPE dialog doesn't update dynamically, so you have to set up the labels first. Repeating steps 2-4 for a few more paths gets us to this stage:



Things were going quite well, with the new path taking on the outline of Frankie's head, right up until the point where I added the ear. When this LPE connects between the ends of paths it doesn't join to the closest end, but rather from the end of one path to the start of the next. In this case, the ear path had been created "in reverse", with the start at the bottom and the end at the top, resulting in the twist in the output that you can see in the image. Fortunately, there are a couple of easy solutions to this issue: you can simply reverse the direction of the source path using Path > Reverse or, better still in most cases, you leave the source path alone and reverse it within the LPE by checking the Reverse box in the effect dialog for the appropriate path. Now you can see why it's useful to have proper names for your paths.

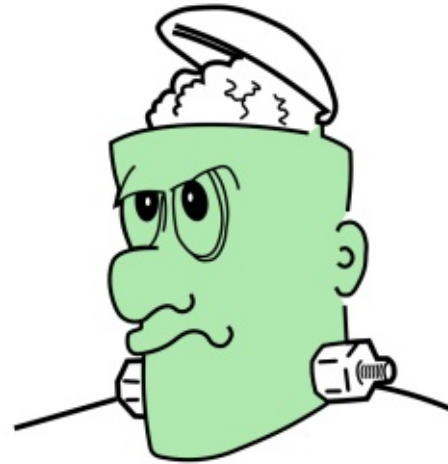
Whilst we're on the subject of editing the output path in this way, it's worth noting that the dialog also has buttons for removing a selected path from the list (multi-selection is not allowed), and for moving the selected path up or down, thus changing the order in

which the paths are joined to generate the output. Continuing to add the remaining paths, and reversing a few along the way, produces this result:



As you can see, the result isn't perfect. The fact that the ends of the nose and mouth extend inside the outline results in a shape with crossed lines, and reversing these paths only makes things worse. Breaking the nose and mouth paths into smaller pieces would have allowed me to produce the desired result but, once filled, this shape only actually leaves a small gap at the end of the mouth that can be visually patched up with another path, which I consider to be an acceptable compromise. So now I can fill the resultant path, lose its outline, send it to the back,

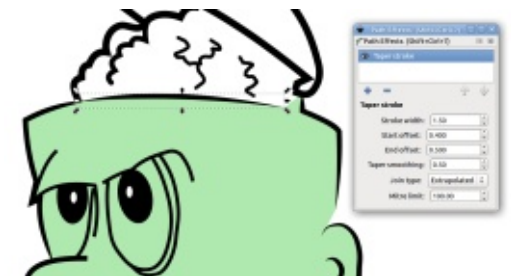
and add in a small patch to cover the hole. And revert the original paths back to thinner black lines as well.



It's worth pausing at this point to really appreciate what we've just achieved. Although the end result appears to be similar to that produced by manually drawing an outline, or filling some gaps then using the Bucket Fill tool, there is one substantial difference: this shape is live. A change to Frankie's nose, or the curve of his ear, is accompanied by an instant change in the fill shape. If we need to make more radical changes, it's possible to add, remove and reverse paths accordingly. And ultimately that is the reason why this effect is now used by default when adding an LPE to a clone.

Unlike the Clone Path effect, the Fill Between Many LPEs is more flexible, but still serves a similar purpose if it is used on a single path. Unfortunately, as discussed last time, the inability to move the resultant paths does make it useless for some applications, so there's definitely still a place for Clone Path in your toolbox.

To finish Frankie in style, we can apply yet other LPEs to the original lines: Power Stroke is a classic option for cartoon-style pieces that lets us change the stroke width arbitrarily, but, most of the time, just a little tapering in and out of the width is all that's required. For that, the new Taper Stroke effect is a far simpler option.



Rather than fiddling around with additional node types on the canvas (the approach taken by the Power Stroke effect), this LPE simply lets you set the stroke

HOWTO - INKSCAPE

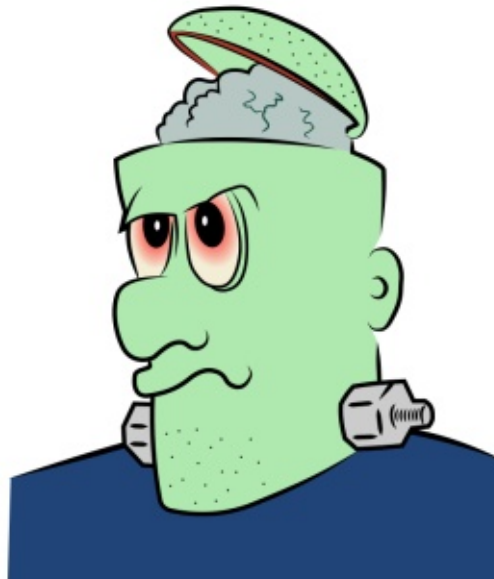
width for the non-tapered part of the line, and two offsets representing the distance from each end that the stroke reaches that width. Set an offset to zero and that end gets a normal square cap with no tapering; otherwise larger numbers generally mean longer tapers.

Now there are a couple of caveats here: firstly the taper can only progress as far as the first cusp node; secondly, I have no idea what sort of units are used for the offsets. In practice I tend to just roll my mouse wheel over each field and watch the path on the canvas to set a value that gives the artistic result I'm looking for. These values can also be set by switching to the Node tool, and moving the on-canvas handles, if you prefer to work that way.

The Taper Smoothing control effectively sets the shape of both tapers, but can give some odd results at extreme values. I tend to stick to about 0.5, which gives a reasonably linear taper that suits the comic style I'm working with. The Join Type and Mitre Limit controls have the same effect as those in the Fill and Stroke dialog, except that the LPE also offers an

"Extrapolated" join type which can be better for some particularly tight angles.

I'll be honest, some of these new LPEs are still a little buggy at times. I found that to be the case particularly when trying to combine the Fill Between Many and Taper Stroke effects in order to complete my Frankie trace. In the end, I had to resort to some manually drawn paths, or "fixing" some of the LPEs by using Path > Object to Path, in order to get the results I expected. Still, even with those compromises, this take on Frankie is one of the best yet.



Mark uses Inkscape to create three webcomics, 'The Greys', 'Monsters, Inked' and 'Elvie', which can all be found at

<http://www.peppertop.com/>



RESEARCHING WITH LINUX

Written by S. J. Webb

My ITS department cycled out older laptops in our research institute. The new computers are running Windows 10, and numerous programs required updating. We use a specialized 2D camera system that requires Adobe Photoshop. We contacted our ITS and it turns out that Photoshop is now available only as a monthly subscription. As the department does not want to accommodate this new monthly expense, I suggested using GIMP as a free solution. We used Photoshop only about 4 times a year.

This new detail is a byproduct of 'subscription as a sales' phenomena. This arises from so many items moving to the cloud. I read a few online articles. The main premise is that the subscription is a cheap solution for smaller companies. These companies will not have to spend time troubleshooting or fixing the programs.

A number of free and open source software programs are

available. These programs are available for Linux and Windows, and sometimes macOS. For example, GIMP is available for those three operating systems. However, I will focus mostly on free programs for Windows that I use on some of the research laptops.

My main resource for finding free software is using the website

AlternativeTo (<https://alternativeto.net/>), The website covers all of the mainstream desktop and mobile operating systems. It has an easy-to-use search interface that lists all free and commercial programs.

For example, I wanted to find free alternatives to MS Office. The website gave a quick overview of MS Office, and a list of 39

alternatives. Each alternative is given a quick description, and a user's ratings if it is an acceptable substitute program. From this list, I would find an alternative that was available for both Windows and Linux platforms. Accordingly, I would place this program onto my Linux machine, so I can transport any work between the two computers.

The screenshot shows the AlternativeTo website interface. At the top, there are tabs for 'Alternatives · 39', 'Comments · 2', and 'Reviews · 1'. A blue button labeled 'MORE APP INFO' is on the right. The main heading is 'Alternatives to Microsoft Office Suite for all platforms^ with any license^'. Below this, there is a large orange banner for 'SolarWinds® Official Site' with the text 'Powerful IT Management Tools' and a button to 'Download Your Free Trial Here To See How Our Tools Can Help You!'. Below the banner, the 'LibreOffice' entry is highlighted. It features a document icon, the text 'LibreOffice is a free and open-source office suite that is compatible with other major office suites, and is available on all operating systems. It is an...', a '1865' rating, and a 'Like' button. Below the text are tags for 'Free', 'Open Source', 'Mac', 'Windows', 'Linux', 'Android', and 'BSD'. Further down are feature tags: 'Built-in PDF converter', 'Extensible by Plugins/Extensions', 'Compatible with Microsoft Office', and 'Customizable'. A '+ Add a feature' button is at the bottom. On the right side, there is a 'What's in' section with text about alternatives to Microsoft Office and a 'List updated: 11/3/20'.

This is a quick and relatively easy way to find an alternative program. The reviewers will list the perks and fails of each program. Additionally, the website will also flag an application that could be potential malware. However, I have come to the conclusion there is a large pool of free software for Windows. There is a secondary resource that I use – the Free Software Directory (<https://directory.fsf.org/wiki/Category/All>). Yet I do not venture down this path very often.

This directory is maintained by the Free Software Foundation with ties to Richard Stallman. There is a list of free applications in various categories, however the list is restricted. The foundation has a unique way for classifying what is truly free and non-intrusive. There can not be any commercial ties into the software application listed within the directory. Yet Stallman is correct in developing the software philosophy that we are in control of technology.

I mostly use AlternativeTo though, to find the “free programs.” For MS Publisher, I use LibreOffice or Scribus; however it is an adequate replacement. MS



Publisher is utilized to create conference posters.

I use a ‘Mass File Renamer’ when I need to do batch file renames. GIMP is my replacement for Photoshop. When I have to do paperwork at home, I use the Google Productivity Apps. These apps being Google Drive and Google Docs mostly. I use Openshot when I need to edit videos, it is OS agnostic. When I need to share electronic documents off-campus, I use Dropbox.

Nitro PDF reader is a great PDF app. It enables me to strip text or pictures out of PDFs when necessary for research development or if I need an electronic signature; I dislike Adobe Reader. For mouse/keyboard recorders, I utilize Jitbit, or some program similar to it. When I need a disposable email

for research recruitment, I use Proton Mail.



Overall, the trend of monthly subscription can be avoided by utilizing free and open software sources. I donate small amounts to LibreOffice, GIMP, and other projects. This is my answer to this new and developing trend. This is an opportunity for the open software niche to become more mainstream and gain greater rates of adoption by new individuals. The open solution is the best answer many times.



Work began on the Plasma 5 desktop environment more than three years ago at the time of writing, since its first edition came out in the year 2014. Built upon version 5 of the famous Qt widget libraries, it can now be considered to have achieved relative stability. The previous version, Plasma 4, had, at the time, received quite a bit of criticism due to issues in its initial offerings, perhaps due to the rather radical paradigm change from the KDE 3 desktop to KDE 4. Some of us received the arrival of KDE 5 / Plasma 5 with some trepidation. With a bit of hindsight, however, it would seem that the change to version 5 has gone quite well, and the final product does seem to run quite more sprightly even on lower-end hardware. It must be said that some of the main peeves about KDE 4 were its use of resources and general lack of speed. So Plasma 5 is definitely a step forward in this sense.

However, all is not well. The change from version 4 to version 5 came with the KDE project succumbing to the recent tendency

for flat graphics. The new Breeze themes have flat icons, flat window borders, and, pretty much, flat everything. This may be to some users' taste, and does fit with other operating systems and desktop managers such as Apple's Mac OS Sierra, Microsoft's Windows 10, and recent versions of the Android mobile operating system. However, some of us do prefer more visually complex themes, and, in this sense, KDE 4's default Oxygen theme can be preferred.

Luckily, even a more recent

Plasma 5 desktop can be tuned to resemble Plasma 4, but with stability and performance as added benefits. In this article, we will see how to do this. It is a rather straightforward process, and needs no special knowledge of the inner workings of Ubuntu or Kubuntu.

Let us begin by installing an LTS version of Kubuntu, though the basic procedure will be the same for editions without long-term support. In this case, I used CD image kubuntu-16.04.2-desktop-amd64.iso downloaded in

February, though more recent images are available. The first thing I did was a "plain vanilla" installation, with automatic partitioning and no special choices or strange configurations. I then opened up Konsole, and updated the complete system and all software packages to their latest versions:

```
sudo bash
```

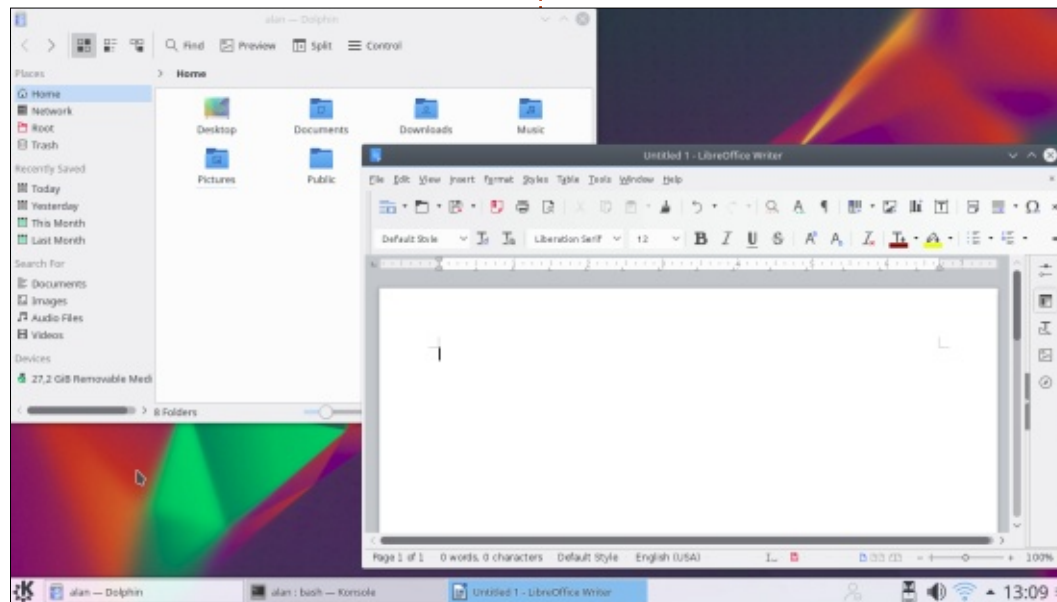
```
apt update
```

```
apt install aptitude
```

```
aptitude safe-upgrade
```

There are, obviously, many other ways of doing this, but, in the past, I have found graphical software managers to be slightly more involved than inputting straightforward terminal commands - which probably says more about myself than about software managers.

The end result is a standard Kubuntu 16.04 desktop, with Plasma 5 in all its (rather flat) glory:

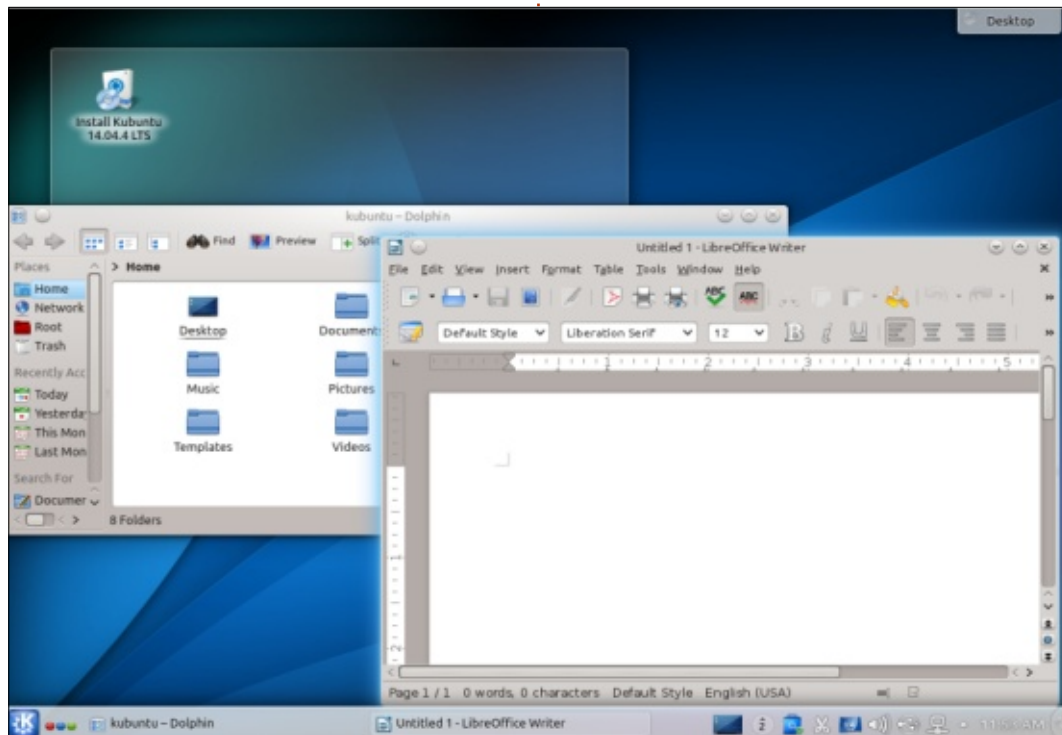


The default icon set is not to my liking. For instance, I find the difference in style between the desktop icon and those for folders to be a bit off-putting. In my view, the small, monochrome, icon set used in toolbars on all windows is not clear, and I question the need to have two different icon sets as standard. In comparison to the very small icons in the toolbars, the large top border in the standard window decoration theme sticks out a little, and the default background may very well not be to everyone's liking. These are all subjective issues, but also

very easy to modify if so inclined.

Now, to achieve a perfect lookalike to an earlier Plasma 4 system, we need a point of comparison. Here is a screenshot of a Kubuntu version 14.04 Live CD session running inside Virtualbox. In comparison to Plasma 5, we are clearly back to 3D effects or what has been called at times "skeuomorphism". Some of the main differences include:

- The desktop is seen in "Default desktop" mode, and not in "Files".
- Desktop background.
- Icon theme.



- Application widget theme.
- Window shadows - that are, in fact, more of a glow than a proper shadow.
- Desktop and panel theme.

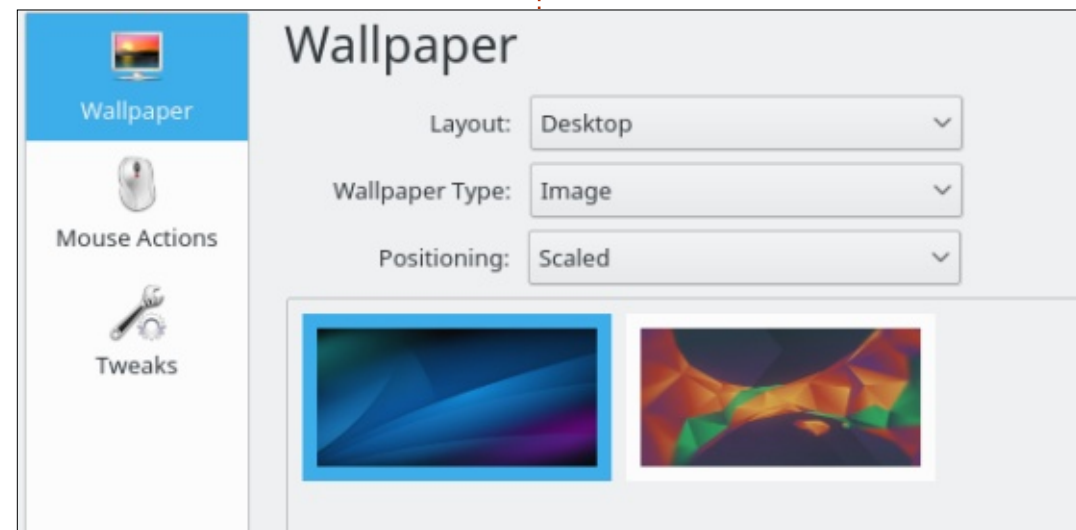
We note that the "Newspaper" mode available in Plasma 4 is no longer present in Plasma 5, but, aside from that particular aspect, all of the differences can be seen to and reversed in Plasma 5.

Let us go point-by-point, and begin with the desktop mode. Simply do a right-click on the desktop, choose "Desktop Settings", and change the Layout to "Desktop" if necessary.

As for the background or wallpaper, the default Kubuntu

14.04 wallpaper is easily located on the Internet. Tip: look for "KDE 4.10" in Google Images, and a 1600x1200 pixel version will be found. Download a suitable background and then, still in "Desktop Settings", load it from the file icon and set it as default.

Let us go on to the icon theme. In "System settings", choose Appearance > Icons, and then Icons. We can find the Plasma 5's default icon set (Breeze), as well as some standard Ubuntu icon sets such as Humanity and Ubuntu-Mono. However, at least in Kubuntu 16.04, we still have access to the Oxygen icon theme. Choose that, and apply changes. Once the system configuration has been saved, icons in the panels and



MY OPINION

taskbar should change to the new theme. However, those in specific applications such as Dolphin or Libreoffice will not come up until these applications have been quit and restarted.

If not present, the Oxygen icon theme can be installed with the following command:

```
sudo aptitude install  
oxygen5-icon-theme
```

On to application style; choose “System Settings”, then Appearance > Application Style, and Widget Style. Here, as before, the default widget style is “Breeze”, but “Oxygen” is still available in Kubuntu 16.04.

In the same window, choose the Window Decorations tab. Here, we run into a small problem, since the only choices available are “org.kde.breeze”, i.e. the large, grey Breeze window bars, and “Plastik”. We will need to get back into Konsole, and install the appropriate software package:

```
sudo aptitude install kwin-  
decoration-oxygen
```

Close “System Settings”, and reopen the application. Back in Appearance > Application Style > Widget Style, a new option named “org.kde.oxygen” should now be available. Choose and apply. Things are already quite a bit closer to Plasma 4 than before.

Window shadows (“glow”) should also appear. These are configurable: just hit the monkey wrench icon beside the theme, and the appropriate dialog box should come up.

Finally, we need to change the general desktop and panel theme. This is done in “System Settings”, then Appearance > Workspace Theme, and then “Desktop Theme”. However, in Kubuntu 16.04, the only themes available are “Air”, “Breeze” and “Breeze Dark”. This strikes one as lacking in coherence, in comparison to the availability of application widget Oxygen artwork. So it’s back to Konsole, and let us install the necessary package:

```
sudo aptitude install plasma-  
theme-oxygen
```

Now, in “System Settings”, Appearance > Workspace Theme and “Look and Feel”, we can choose “Oxygen” as the general workspace theme. Then, go into the next tab, “Desktop Theme”, and replace “Breeze” with “Air”.

Finally, the graphical desktop launcher and login manager, SDDM, seems to lack an Oxygen theme. The closest match can be found in software package “sddm-theme-circles”, if desired.

The end result of our modification process is not quite a perfect clone of Plasma 4, since desktop themes such as Air have



been altered in subtle ways. For instance, the "KDE" logo is not the same, nor is the level of transparency in desktop widgets' surface areas. The icons in the bottom panel's notification area are also different, though the new versions can actually be found more readable since their new, dark color shows up better against the panel's light background. The icons for logout buttons are also the new version, not Plasma 4's. However, the general look of our desktop is much the same as in earlier versions of the desktop, though the underpinnings are more modern: Plasma version 5.5.5, using Qt library version 5.5.1 when we work on Kubuntu 16.04, going up to Plasma 5.10.4 and Qt 5.7.1 on alpha versions of Kubuntu

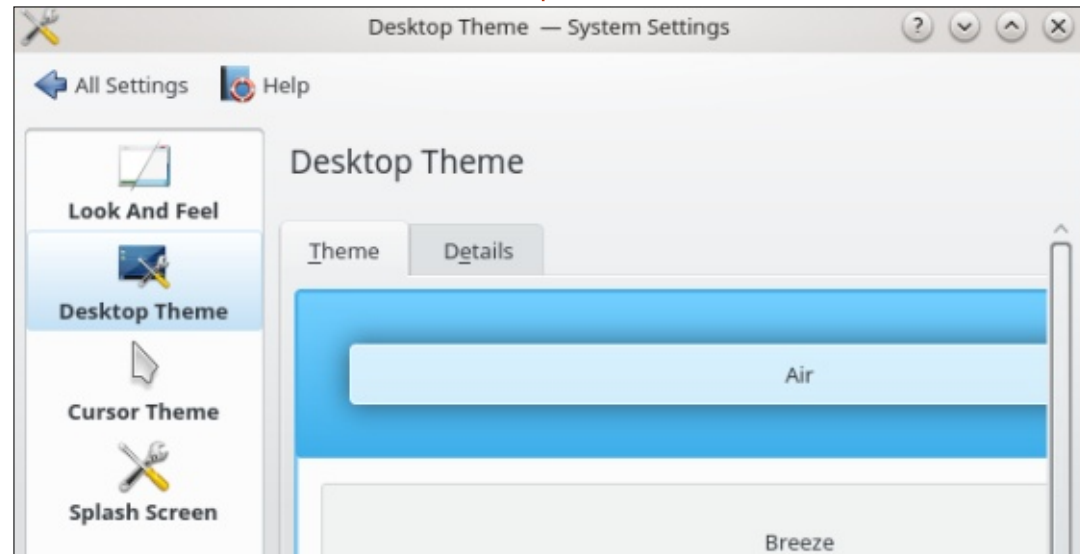
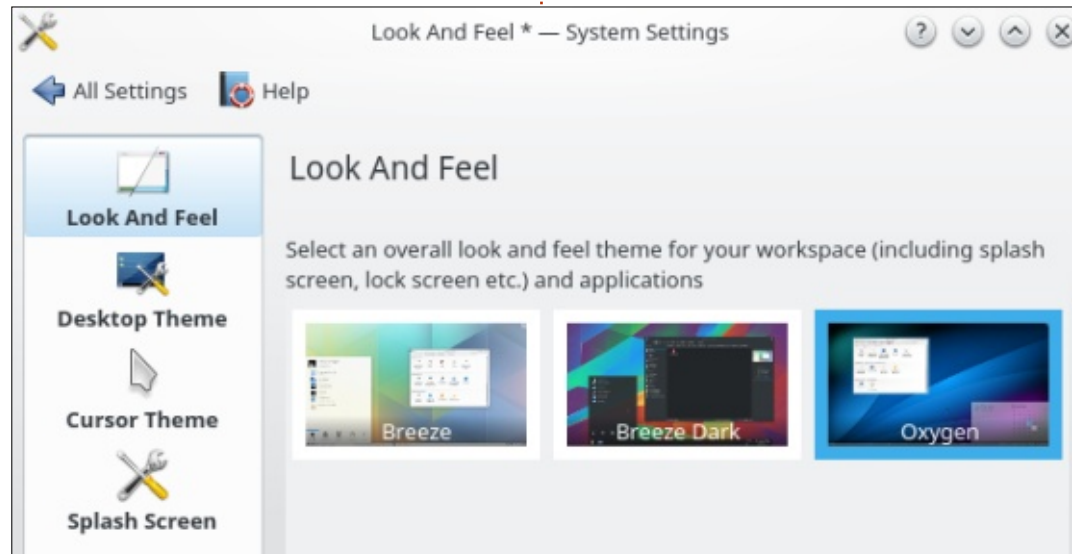
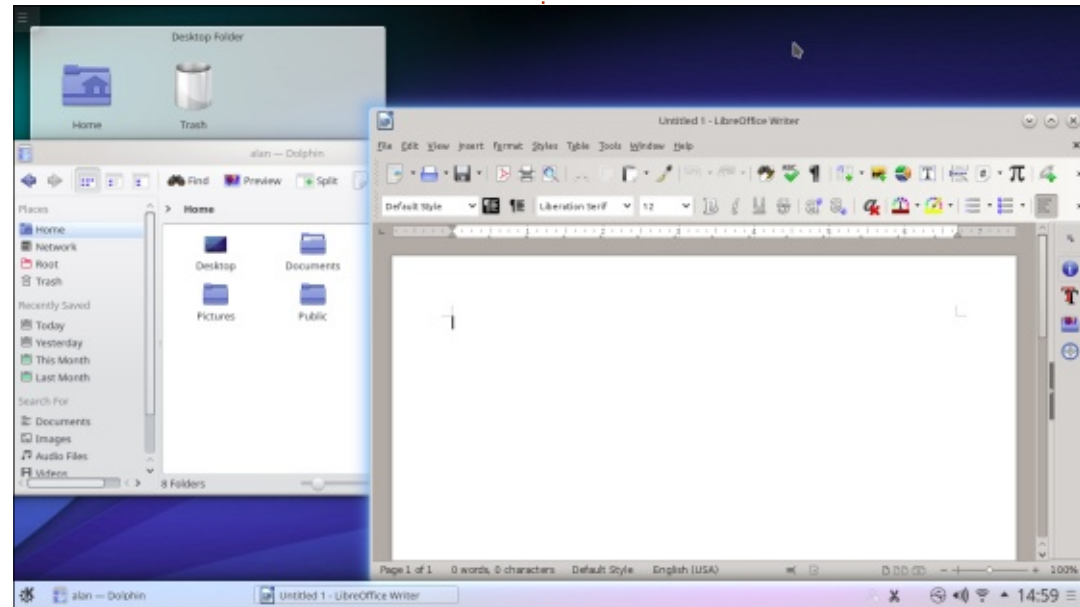
17.10.

As a side-note, it should be mentioned that this process was tested on a slightly ancient and very underpowered Acer Aspire One model 722 (11.6" screen version), equipped with a dual-core AMD C-60 processor and a USB 32 GByte stick en lieu of a hard drive. Performance was good, though not stellar. The final system ran at the same speed as the original, unaltered, Kubuntu installation.

My final thought on this subject is that no one is obliged to alter their Plasma 5 desktop setup. On the other hand, neither is anyone obliged to keep the flat look of Plasma 5 if they are adverse to it. Other options, based neither on

Plasma 4's nor Plasma 5's default looks, are also available. As often applies to general discussions about Linux and Ubuntu, the final choice is left to the user; all the moreso in a highly configurable

desktop manager such as KDE/Plasma.





MY STORY

Written by Brian Bogdan

I was always a die-hard Windows fan.

It started with Windows 3.1 – I was amazed at what I could draw (cartoons) with MS Paint. My son was 3 years old when I introduced him to computers using a custom desktop program called Kid Desk. It was a way to introduce him to working with computers, while keeping my install safe from him. Windows 3.1 used, I think, 3 diskettes, but even a video resolution change could destroy the installation. That would require me to install DOS first (6 floppies, I think).

I went into Windows 95 and remember it didn't come with a mail program. Most people were using a different version, that included Outlook Express, but I couldn't afford that. I tried to download it via 56K modem, which resulted only in large charges for my phone bill – I lived out of town, so the ISP was long distance. I remember the dawn of the world wide web. I went to a site (using Quarterdeck Mosaic as my

browser), and literally screamed when I saw an image of the Canadian Flag on my screen. It was the first image I had ever seen on the net!

I finally bought Windows 98 and was blown away by the OS. Cost was ~\$200. Compared to Windows 95, it was positively elegant. I kept Windows 98, and skipped the SE version. The next upgrade was to Windows ME. I paid around \$200 again. The icons were rendered better, I don't remember if there were any other differences, so there probably weren't.

I waited in line for the next release, Windows XP. I had heard how much better this OS was over ME. I used XP until Vista came out, and yes, I was Microsoft blind and bought that for around \$250. It was horrible! All my old programs failed to run, and I was forced to buy another version of MS Office at around \$400. This was SERIOUS money.

But I wasn't fazed; as soon as Windows 7 came out I plunked

down \$250 and installed it. Everything worked! I used Windows 7 until I decided that I'd spent enough cash on Microsoft products. I had heard about Linux before, but dismissed it, thinking I wasn't computer savvy enough to use it. A friend mentioned Ubuntu. He showed me his laptop and I was intrigued. He wasn't a computer geek (like me), and he was using this beautiful OS!

And it was FREE!!

I heard thru the grapevine that Windows 8 was coming out. I was unsure whether I would get the upgrade.

I stayed with Windows 7 on my main machine, and downloaded and ran Puppy Linux on my laptop. I was visiting my dad's and he was having troubles with Windows 7 so he had upgraded to Windows 8. He was having significant issues with some of his old apps which failed to work. I managed to get all but one working after several long, frustrating hours. It was then I decided to never purchase another

OS again.

I made the jump to Ubuntu on my main machine with Karmic Koala – that was the only CD I had. I later upgraded (fresh install) of Lucid Lynx (2010), and have never looked back since.

I am currently on release 16.04, Xenial Xerus. I look forward to many more years with Linux, specifically Ubuntu. I am disappointed with the discontinuation of support for 32-bit systems. Perhaps I will buy a new PC when this LTS runs out of support. But for now, Long Live Linux! Long Live Ubuntu!





HOW-TO

Written by Ronnie Tucker

Write For Full Circle Magazine

GUIDELINES

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

RULES

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

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

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

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

document.

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

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

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

When you are ready to submit your article please email it to:
articles@fullcirclemagazine.org

TRANSLATIONS

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

REVIEWS

GAMES/APPLICATIONS

When reviewing games/applications please state clearly:

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

HARDWARE

When reviewing hardware please state clearly:

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

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





KODI Room

Written by Charles McColm

Lately, we've been using our living room KODI server for playing background music more than any other use. Background music is great, but sometimes we want news, to learn something new, or to listen to something a bit more practical like podcasts.

AudioPodcatcher is a music add-on that takes an OPML-file you specify and lets you play shows from the feed. OPML, or Outline Processor Markup Language, is an XML format for outlines. There's

an interesting article on Wikipedia about the OPML format:
<https://en.wikipedia.org/wiki/OPML>

For now, the important point to understand is that OPML can be used to deliver podcasts. If you follow the Wikipedia article, you'll end up on pages where you can create your own OPML feed. You could open vi on your Linux-based KODI machine and create an OPML file by hand, but the simplest method for creating an OPML file

is just to use a program that can export to OPML. In our case, we're using a separate Linux box (that we use for everyday desktop use) and install software that can read and write OPML files.

gPodder is a Free Libre Open Source Software Podcast client available for Linux, Mac OS X, Windows and BSD OS's. gPodder is a great starting podcast client because it's relatively simple to use and widely supported.

On startup, gPodder lets you pick from a list of podcasts, but, if you dismiss the startup prompt, you can always add podcasts individually via the 'Subscriptions' > 'Add Podcast via URL' menu. I chose several Linux-themed podcasts from the startup menu. Exporting the podcasts to an OPML file is as simple as clicking 'Subscriptions' > 'Export to OPML file'.

How you get the OPML file to your KODI box is up to you (USB



sneakernet, SSH, SAMBA shares), but you should put the file somewhere where your KODI box can access it (this could be a share from your desktop computer). In our case we transferred via SSH.

On your KODI box, hover over the AudioPodcatcher add-on and hit 'c' to configure, or, if you're using a remote, use the menu key to bring up the context menu. From the context menu, select Settings. The Settings menu for AudioPodcatcher is pretty sparse; click on the space between GENERAL and the OK button to add the location of your OPML feed.

Click the OK button, and AudioPodcatcher does the rest. Now press ESC (or the back button on your remote) until you are at the add-ons menu. Click the AudioPodcatcher and browse through your Podcasts.

I recently had some soldering to do, and catching up on podcasts – while soldering – was a nice way to pass the time.

Another recent time sink crept up through a project at work. I suddenly found myself looking at writing code for the first time in many years. To bone up on my coding skills, I went looking through the KODI repositories and

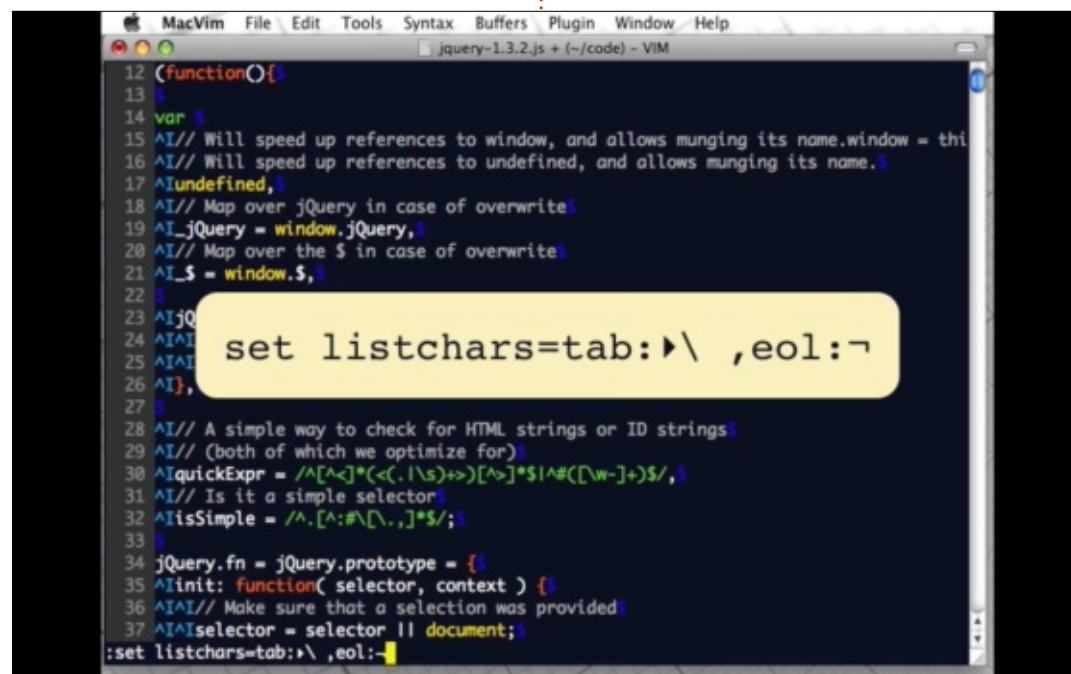
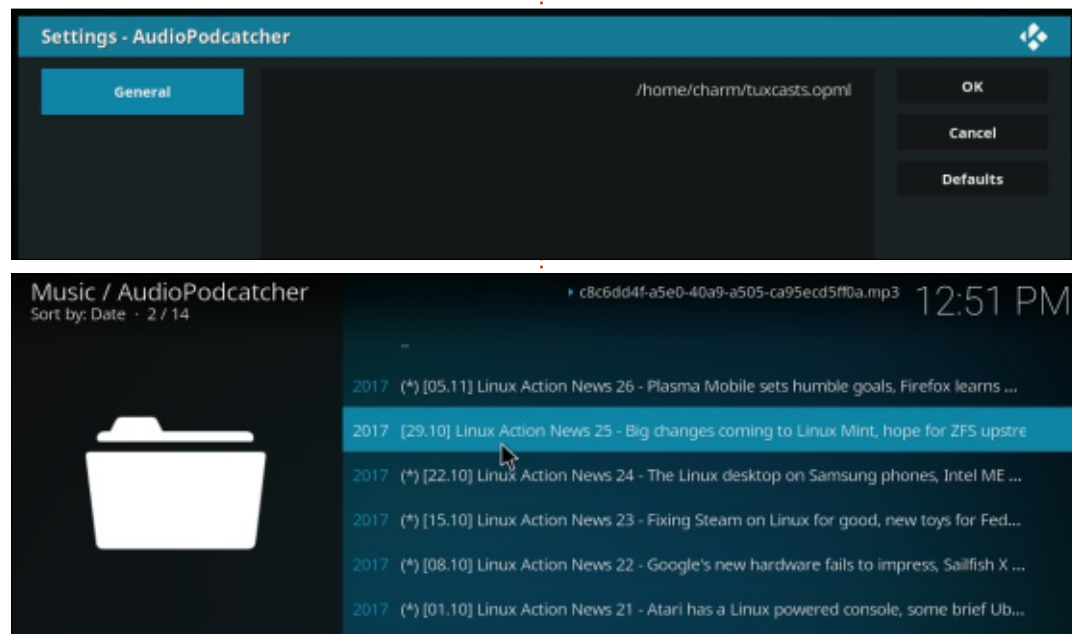
found a couple of interesting add-ons: Vimcasts and TheNewBoston.

Although VIM is an editor, learning to use coding tools is perhaps as important as learning to code. When you know your tools inside and out, you tend to work more productively. The Vimcasts add-on, found under Video add-ons, is a collection of tips and tricks for using Vim. Vimcasts isn't a gentle introduction to Vim; it dives right into enabling/disabling features right from the first podcast. If you don't know how to get into/exit insert mode, save files, insert lines below a line, yank text, you might want to bone up on

Vim via Youtube videos before diving into Vimcasts.

TheNewBoston add-on, also available under the Video add-ons, covers learning Adobe products, Computer Programming, Computer Science, Networking and Security, and some miscellaneous topics that don't fit into those four categories. Within the Computer Programming section are videos covering AJAX, Android App development, C, C#, C++, Java, Python, PHP, ReactJS, and Ruby – to name just a few.

Videos are produced by different individuals (though, when



we first looked at TheNewBoston a couple of years back, they were all done by “Bucky”), but, all told, there are over 7,000 videos available through TheNewBoston add-on. If you’d like to browse the same collection via web browser, visit:

<https://thenewboston.com/videos.php>

KODI tends to get a bad rap for all the “pirate” add-ons, but there are a number of great add-ons for those who like to keep busy while working on something else, or those trying to learn. Great add-ons like TheNewBoston, Vimcasts and AudioPodder are available in

the default KODI repository; it just takes some work sorting through what kind of content you want to watch or listen to.

URLS OF INTEREST:

Wikipedia OPML Article:

<https://en.wikipedia.org/wiki/OPML>

gPodder:

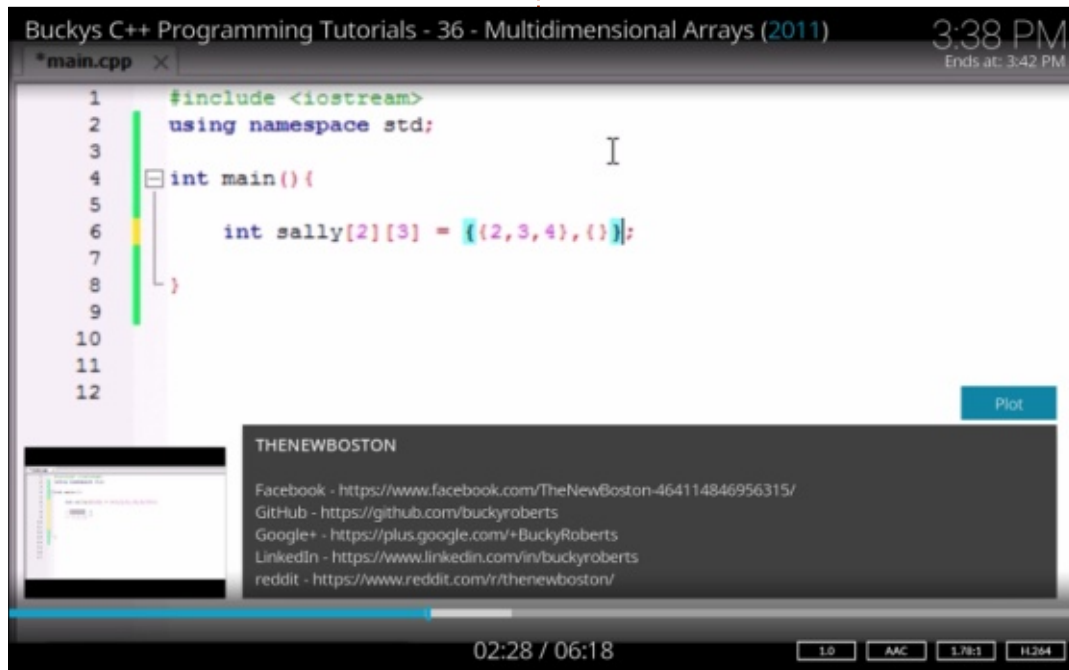
<https://gpodder.github.io/>

KODI.tv Add-on showcase:

<https://kodi.tv/addons>

TheNewBoston web-site:

<https://thenewboston.com/>



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/>.



For anyone who has never heard of a FixMeStick, it's essentially a bootable USB device for finding and removing malware on Windows computers. That being said, it will also boot and run on other computers (eg. a Linux laptop). However, the scans are intended for windows malware. I was sent a review copy, and what follows are my thoughts on the device.

EASE OF USE

The device can be booted normally via the BIOS, or booted via an executable available in Windows. In my testing, I only booted it via BIOS, and I also ran into issues running the device in a virtual machine.

Once booted to the device, it guides you into connecting to a network, and then doing the updates, registration, and scan. The steps were easily enough completed, but if your device suffers from compatibility issues with Linux and network-manager,

you may not be able to connect, which seems to prevent the stick from working.

EFFICIENCY

Once the network connection is active, the process seems to be largely automated. The exception is registration of the device, which should need to be done only once.

ALTERNATIVES

If you don't mind putting in a little more work, you can set up a linux-based live USB with linux-based AV software. It gives you

more control, but is more work to keep updated and running. That being said, you can include other tools for managing and fixing other issues, giving you more of a one-stop tool for your problems.

EFFECTIVENESS

Unfortunately, I wasn't able to test this very well. I would have run the device on a virtual machine that I had previously infested with malware. However, due to my inability to run the stick in a virtualized environment, I could not do this. As the alternative was to infest an actual Windows computer, which was not an

option, I simply ran it on a working PC. The result was no malware found (as I expected). Out of curiosity, I also ran it on a Linux laptop. It successfully scanned the EXT4 partition. I would assume it was still only checking for Windows malware, but it offers you the ability to make sure you're not sharing infected files.

You can also start a custom scan, where you can choose disks and folders to scan. This means you can take a system drive out of another computer and check it for malware.

As for performance - I didn't notice the FixMeStick completing the scans much faster than the live USB. But that could be due to USB 2.0 on my test device, or other hardware.

DOWNSIDES

The stick can only be registered on 3 computers at a time, and the updates only run for a year. Amazon (Germany) has the stick available for 60€. So depending on



REVIEW

how often you expect to use it, it may be too steep of a price for you. If the limitation of 3 computers makes you worry about false positives (i.e. the same PC being registered as a second one after a motherboard

upgrade/replacement), I was assured by their support team that it would be possible to unregister a computer.

VARIANTS



According to an Amazon listing, there seems to be a FixMeStick available for Mac as well.

VERDICT

If you're frequently scanning a computer for malware, and want to reduce the effort on your part, you may want to consider the FixMeStick. If, however, it's more of an occasional task, I would instead set up a decent liveUSB stick with a persistence so you can run your updates.

I can't say that the FixMeStick did anything better than the liveUSBs I've used in the past, but it did definitely require less effort on my part. If that's worth the price to you, go for it.



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.





LETTERS

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

WINDOWS WHO?

I have been a convert to Linux for over 5 years so far, and have forgotten what Windows is doing in recent days.

A large number of authors write about Linux as though the readers has just come from Windows and continually refer to it during explanations about some of the Linux instructions.

I would feel so much better to have all instructions for Linux be framed around the questions put to the authors, rather than have to read about the derivation from Windows.

Basically, I cannot relate to anything Windows beyond XP.

Rob Gurr

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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.



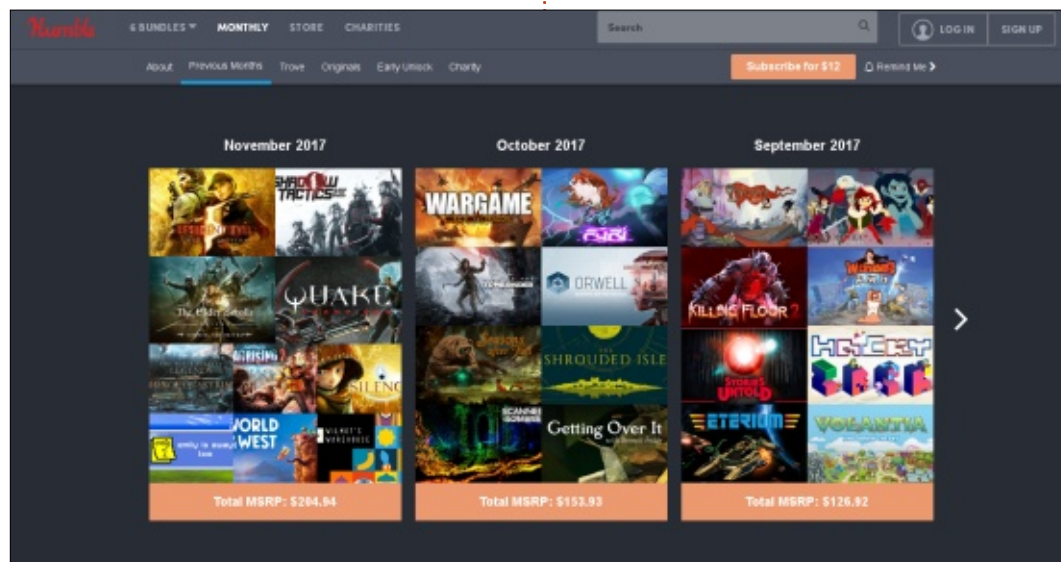
For this month I decided to give a nod to the good folks at Humble Bundle and all of the goodies that they bring to the Linux landscape. Way before Valve brought us its Steam OS along with the much needed support for Linux games, the Humble Bundle was a leading pioneer in bringing what at the time were mostly independent games to Linux. In fact, before being called the Humble Bundle, the original name was the Humble Indie Bundle, with emphasis on Indie because they were focused on delivering bundles of independent developers not just to Linux but also to Microsoft Windows, OS X and shortly thereafter to Android & iOS as well. During those early releases it became very clear, not just to the Humble Bundle people but to other bigger players (such as Valve for example), that Linux gamers were willing to not only pay for games but predominantly pay much, much more than their Windows & Mac counterparts. This was perhaps one of the turning points in Linux gaming. Before the Humble Indie Bundle, there was a

fear from game developers & publishers that Linux was not a lucrative investment which in turn was preventing them from bringing games over to Linux. It was one of those chicken and egg scenarios where the companies didn't want to bring games to Linux out of fear they wouldn't sell while at the same time there were no Linux game sales to validate or contradict such fear because of the lack of games with which to prove or disprove this theory. All of those doubts and fears were put to rest when the Humble Indie Bundle arrived, which definitely and without a doubt proved that if

games were brought over to Linux, gamers would buy them (and in many situations even pay more than premium price for these games).

What was once a small idea from a couple of guys working out of their parent's garage has grown into a 60-person operation that was just recently bought by IGN. There may be some criticism as to whether this was a good move to make or not. Since its foundation, the Humble Bundle has been involved in donating part of its proceeds to charity. One of the things I've always liked about The

Humble Bundle is that they donate to a variety of charities and let the consumer decide which percentage of their purchase will go to each charity. This is one of the main selling points of The Humble Bundle and has been since its inception. With the recent acquisition by IGN we are left to wonder if the original vision of what the Humble Bundle was and the impact it's had since its birth will continue or if the Humble Bundle will sell out and become another part of the corporate machine. So, I've decided to sort of freeze the moment of what the Humble Bundle had to offer and where its money was going at the time of acquisition by IGN, then at a later time we could revisit and see what changes have taken place. We'll begin by looking at the three-pronged portion of what is The Humble Bundle video game store. You can read more about the Humble Bundle & IGN merger at: <https://techcrunch.com/2017/10/13/ign-acquires-pay-what-you-want-game-shop-humble-bundle/>



HUMBLE BUNDLE GAME BUNDLES

The Humble Bundle has a special place in my heart because of its contribution to the Linux game scene. Back when few games were available for Linux, the Humble Indie Bundle began to offer game bundles which offered games that were Linux compatible. Originally, these bundles contained primarily games from small & independent publishers/developers. In fact, the early bundles were called Humble Indie Bundle and they were a hit among Linux gamers. The average price paid by Linux gamers was considerably more than the average price paid by Windows/Mac gamers. This phenomenon sent a clear signal to many in the game industry. The message was simple: Linux gamers were willing to pay top notch for Linux games. One interesting factor about these bundles is that you literally name your own price for each bundle, as long as it's \$0.01 or more. Times have changed and these bundles are no longer exclusively made up of independent games but two things that haven't changed are that

these bundles continue to offer games that can be played on Linux and you can still name your own price for each bundle.

Nowadays, the Humble Bundle has expanded into more than just games. Currently there are eight bundles on offer at the time of this writing. Some of these bundles continue to offer Linux games but in addition to these, there are also bundles that don't contain any games at all. In fact, on any given month, you can count on finding at least one Humble Book Bundle which can be made up of books and/or graphic novels. There are also bundles that offer software,

videos and more. Also there's the Humble Mobile Bundle which is comprised exclusively of games for mobile systems such as Android & iOS. It's always a good idea to periodically look at what bundles are available; you never know what you'll find.

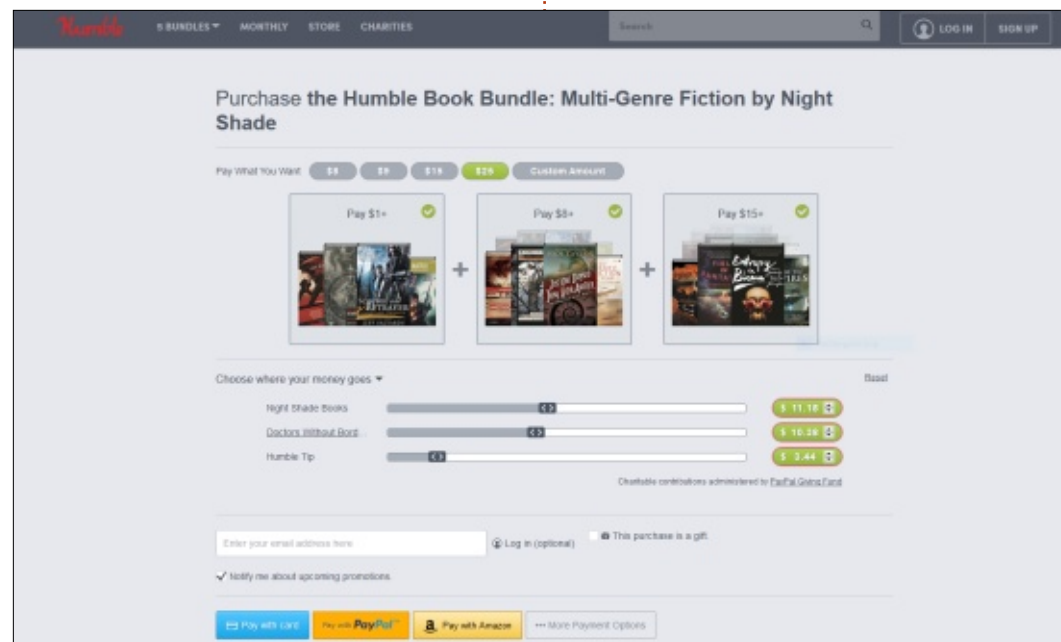
HUMBLE MONTHLY

In addition to the regular bundles, there is also The Humble Monthly subscription for the low price of \$12 per month. The Humble Monthly usually has a handful of top notch AAA titles that could each cost up to \$40 or maybe even more for each title.

Also, every month, the subscription includes other games that maybe you haven't heard of which often can turn into hidden gems that you wouldn't have discovered if they weren't included in the subscription. I've been paying for a subscription for a few months and some of the games I've gotten that run on Linux include Total War: Warhammer, Pillars of Eternity and Dirt: Rally. To name but a few.

HUMBLE STORE

Last but not least, there's the Humble Bundle Store which is much like other online video game stores & offers a very wide selection of games that you can buy the regular way which is one game at a time. These games usually run for about as much as they would cost if you were to get them from other places such as Steam or GOG. However, just like any other store, there's the Humble Store's weekly sale prices which can include games for 25%, 50% or even up to 90% off for a limited time.

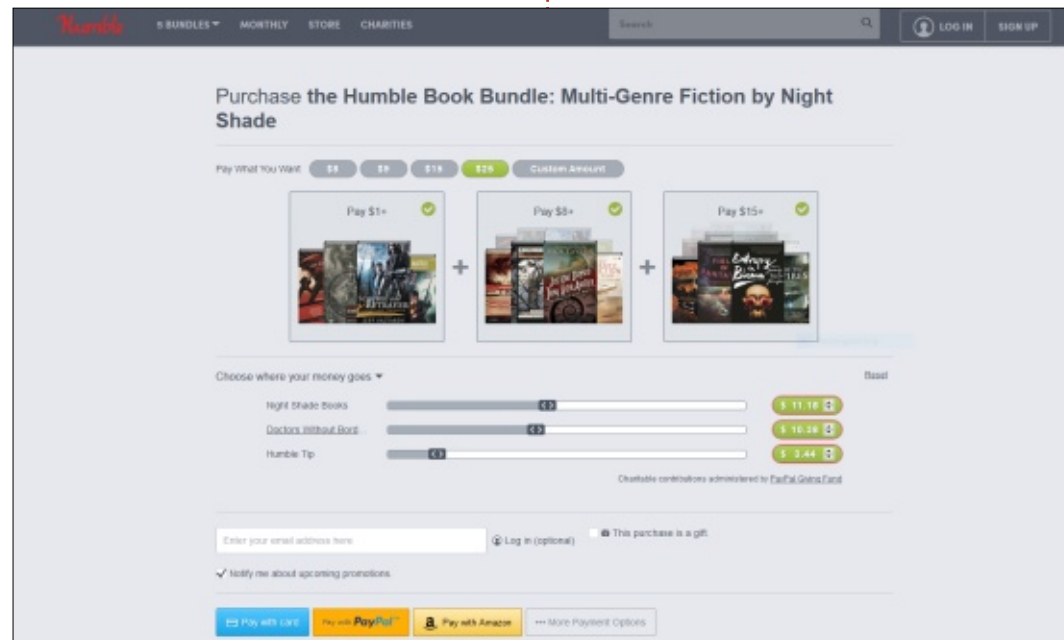


HUMBLE BUNDLE CHARITY DONATIONS

Since its inception, when you buy one of the offered Humble Bundles you've been allowed to pick where your money goes. You've been previously allowed to choose between the following three things:

- Game developers
- Charity donations
- Tip for the Humble Bundle store

Then there's more choices under each section ordinarily. For example under the charity section, you've been allowed to then pick which charities your donation is going to or divide it among any other number of charities any which way you want. The tradition is still the way it's done today. We, as consumers must periodically check to see whether this tradition of the Humble Bundle organization is still being true to its origins. Otherwise it might be hard to continue calling it The Humble Bundle after it's lost its humility and turned into yet another for-profit corporation.



Oscar graduated from CSUN, is a musician, game enthusiast and has been working with Bitcoin and other alt-coins. You can follow him at: <https://twitter.com/resonant7hand> or email him at: 7bluehand@gmail.com



PATRONS

MONTHLY PATRONS

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2017:

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 Patrick Martindale
 Antonino Ruggiero
 Andrew Taylor

2017:

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 Shashank Sharma
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The current site was created thanks to **Lucas Westermann** (Mr. Command & Conquer) who took on the task of completely rebuilding the site, and scripts, from scratch, in his own time.

The Patreon page is to help pay the domain and hosting fees. The yearly target was quickly reached thanks to those listed on this page. The money also helps with the new mailing list that I set up.

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

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



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We are always looking for new articles to include in Full Circle. For help and advice please see the **Official Full Circle Style Guide**: <http://url.fullcirclemagazine.org/75d471>

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 ... or you can visit our **site** via: fullcirclemagazine.org



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