



Full Circle

THE INDEPENDENT MAGAZINE FOR THE UBUNTU LINUX COMMUNITY

ISSUE #126 - October 2017



WRITING WITH UBUNTU WITH, OR WITHOUT, AN OFFICE SUITE



HowTo



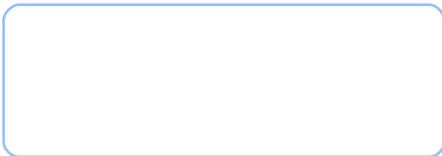
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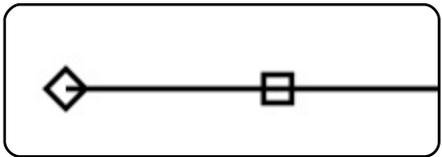
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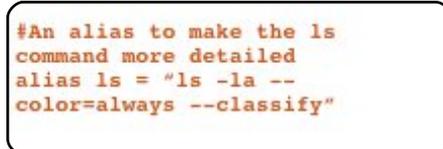


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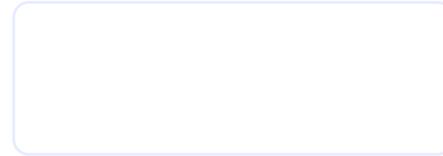


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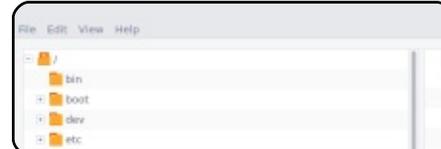
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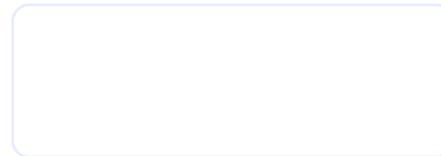
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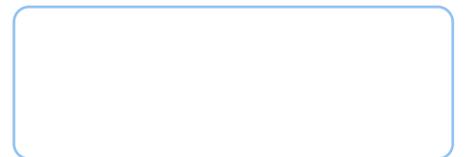
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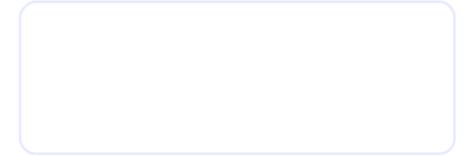
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WELCOME TO THE LATEST ISSUE OF FULL CIRCLE.

No Python again this month. Greg was feeling a bit under the weather last month, and I haven't heard from him this month. We still have tmux, FreeCAD, and Inkscape for you. To fill the missing HowTo space we have another LaTeX article.

This month's review is of **Pop!_OS**. Curiously, System76 have released their own distro. Lucas gives his thoughts on it later in this issue, but what're your thoughts on yet another distro? Have you tried it? Will you? Is it any good? Do we need it? Will it last? Feel free to chime in with your thoughts on it.

Alan Ward is here again with an interesting piece on writing using Ubuntu. As a lecturer he is always writing things and looks over the many different pieces of word processing software, and looks at those that are part of a suite of tools.

In other news, Lucas has been tinkering with the site to make us HTTPS by default, and Mark Shuttleworth (head of Canonical) has just announced the codename for 18.04. I'm not going to give it away. It's in the news article this month.

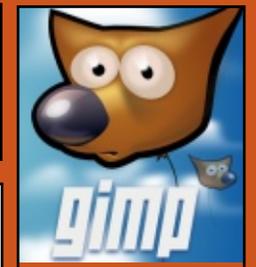
All the best, and keep in touch!

Ronnie

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

NEW LINUX RELEASES: “BEAUTIFUL” FEREN OS 2017.10 AND “ANONYMOUS” TAILS 3.2

Feren OS, a Linux Mint-based distro, is one of the most beautiful options around for a distro hopper. feren OS ships with the Cinnamon desktop environment, WPS productivity suite, and Vivaldi web browser. The developers of this operating system have just launched the new snapshot for 32-bit and 64-bit devices.

Compared to the last release, which took place in August, feren OS 2017.10 comes with new desktop background wallpapers, modified Cinnamon System Settings, one-page Themes, Maximum for tablet mode, and other minor improvements.

Following its usual release schedule, Tails 3.2 operating system for complete anonymity is out. As usual, this release fixes many security issues, so the users

are advised to update their machines soon.

Talking about the changes, Tails 3.2 Linux distro brings the support for PPPoE and dial-up internet connections. BookletImposer has been installed to help you convert PDF documents into booklets. GNOME Screen Keyboard has now replaced Florence virtual keyboard.

Tails 3.2 is now powered by Linux kernel 4.12.2, which ensures better hardware support. Thunderbird has also been upgraded to 52.3.

Source:

<https://fossbytes.com/new-linux-releases-feren-2017-10-tails-3-2/>

SERIOUS LINUX KERNEL SECURITY BUG FIXED

Sometimes old fixed bugs come back to bite us. That's the case with CVE-2017-1000253, a Local Privilege Escalation Linux kernel bug.

This is a problem with how the Linux kernel loaded Executable and Linkable Format (ELF) executables. If an ELF application was built as Position Independent Executable (PIE), the loader could allow part of that application's data segment to map over the memory area reserved for its stack. This could cause memory corruption. Then, an otherwise unprivileged local user with access to a Set owner User ID (SUID) or otherwise privileged flawed PIE binary, could gain higher-level user privileges.

Source:

<http://www.zdnet.com/article/serious-linux-kernel-security-bug-fixed/>

COMPUTERS4CHRISTIANS MIRACULOUSLY APPEARS ON UBUNTU WIKI

Ubuntu's wiki page this morning temporarily played host to a bit of info from religious

group Computers4Christians, whose aim is to propagate the use of its operating system to spread the word of the Lord.

It is not known who is behind the hijack.

While many open-source advocates might appear to be on a mission from God already, these ones literally are. C4C's homepage hijack said the body's operating system "seeks to lead unbelievers to a relationship with the Lord Jesus Christ and nurture believers in discipleship".

To illustrate the point, its permanent home page includes the image of a penguin carrying a crucifix.

Source:

https://www.theregister.co.uk/2017/10/03/ubuntu_wiki_taken_over_by_computers4christians/

FEDORA 27 BETA LINUX DISTRIBUTION NOW AVAILABLE WITH GNOME 3.26

Last week, Korora 26 was released. This is a Linux distribution based on Fedora 26, which was released back in July. That's the problem with using an operating system that is based on another operating system -- it can seem like you are never truly up to date. Case in point, today, Fedora 27 Beta sees release.

True, this is pre-release software, but recent Fedora Beta releases have been very stable, so it should be fine to run on a non-production machine. Just be aware that there can be bugs and the potential for data loss. If you are comfortable with using a beta operating system, you are in for quite the treat. Fans of Fedora can finally experience GNOME 3.26 -- the default desktop environment on version 27 of the distro. In addition, Fedora 27 Beta now supports TRIM on encrypted solid state disks.

Source:

<https://betanews.com/2017/10/03/fedora-27-beta-linux/>

ROBOCYBERWALL AIMS TO BLOCK LINUX SERVER HACKS

RoboCyberWall launched its proprietary precision firewall solution bearing the same name. RoboCyberWall is designed to protect HTTP and HTTPS (SSL) ports on Linux-based Apache2 and NGINX Web servers.

The patent-pending firewall blocks all known exploits and zero-day attacks on Apache2 and NGINX Web servers, according to the developer. It is the only firewall designed from the ground up to protect the Linux Apache2 or NGINX Web server's root directory, as well as the document root directory.

Source:

<https://www.technewsworld.com/story/RoboCyberWall-Aims-to-Block-Linux-Server-Hacks-84851.html>

DEBIAN GNU/LINUX 9.2 "STRETCH" RELEASED WITH TONS OF FIXES

In late July, The Debian Project released the first update of Debian 9 Stretch Stable in the form of Debian 9.1. This has been followed by the most recent Debian GNU/Linux 9.2 release.

This second update mainly ships to bring tons of security update corrections and some serious fixes as well. The advisories of the security updates included in this release have been already published and are available for reference.

Long-time Linux users must know that Debian 9.2 doesn't contain a new Debian version or introduce new features. If you've already installed all the recent updates in the past few months, you don't need to perform an upgrade or reinstallation.

Source:

<https://fossbytes.com/debian-9-2-stretch-released-download/>

CHAKRA GNU/LINUX 2017.10 "GOEDEL" RELEASED WITH KDE PLASMA 5.10.5, LINUX 4.12.4

Dubbed "Goedel" after the philosopher, mathematician, and logician Kurt Goedel, Chakra GNU/Linux 2017.10 was launched this past weekend as the most recent ISO image or installation medium of the Linux distro, packed full of updated technologies and core components for those who want to deploy the OS on new computers.

2017.10 "Goedel" comes with recent KDE software from the KDE Applications 17.08.1 and KDE Frameworks 5.38.0 suits, as well as the Calligra 3.0.1 office suite and the recently released Calamares 3.1.5 as default graphical installer.

The in-house built Heritage theme for the KDE Plasma 5 desktop environment was also updated in this release, receiving multiple improvements, especially for the logout screen and icons. Starting with this new ISO snapshot, Chakra GNU/Linux drops

support for the AMD Catalyst graphics drivers.

Source:

<http://news.softpedia.com/news/cakra-gnu-linux-2017-10-goedel-released-with-kde-plasma-5-10-5-linux-4-12-4-517940.shtml>

PRIVACY LIVES! PURISM LIBREM 5 LINUX SMARTPHONE EXCEEDS CROWDFUNDING GOAL

As companies continue to violate our privacy, such as Microsoft with the latest version of Skype for iOS and Android, we slowly become desensitized to it. In other words, as time marches on, people slowly become more and more accepting of being spied on. This is tragic, as our private information has value, and many will simply turn it over in exchange for a free service or other nonsense.

Purism is a company that is fighting for your rights -- regardless of whether or not you appreciate it. The company maintains the privacy-focused Pure

OS Linux distribution, plus it manufactures very secure laptops with radio, webcam, and microphone hardware kill-switches. Purism also wants to produce a secure Linux-based smartphone, called Librem 5. Unfortunately, the company needed \$1.5 million to get started. Well, folks, I am elated to say that earlier today, Purism met and exceeded that goal! In other words, it looks like the Librem 5 will become a reality.

Source:

<https://betanews.com/2017/10/09/privacy-lives-purism-librem-5-linux-smartphone-exceeds-crowdfunding-goal/>

LINUX GETS ITS FIRST MULTI-CORE, RISC-V BASED OPEN SOURCE PROCESSOR

Last year, Silicon Valley Startup SiFive released the first open source SoC (system on a chip), which was named Freeform Everywhere 310. Now, going one step ahead from the embedded systems, the company has released

U54-MC Coreplex IP, which is the world's first RISC-V based 64-bit quad-core CPU that supports fully featured operating systems like Linux.

SiFive is offering customers 100 prototype SoCs for \$100,000, according to EETimes. The customers don't need to provide any fee on third-party IP until the chips are shipped. U54-MC Coreplex also comes with a rich SDK with demo software. Currently, Microsemi and Arduino are the two announced customers of SiFive.

Source:

<https://fossbytes.com/u54-mc-coreplex-ip-linux-open-source-risc-v-processor/>

CANONICAL OUTS IMPORTANT LINUX KERNEL UPDATES FOR ALL SUPPORTED UBUNTU RELEASES

Canonical released new kernel updates for all supported Ubuntu Linux releases, including

Ubuntu 14.04 LTS (Trusty Tahr), Ubuntu 16.04 LTS (Xenial Xerus), and Ubuntu 17.04 (Zesty Zapus), fixing a total of five security vulnerabilities.

Affecting all three Ubuntu releases, as well as all official derivatives, such as Kubuntu, Xubuntu, Lubuntu, Ubuntu MATE, etc., a divide-by-zero error (CVE-2017-14106) was discovered by Andrey Konovalov in Linux kernel's TCP stack implementation, allowing a local attacker to crash the system by causing a denial of service.

Affecting Ubuntu 14.04 LTS systems and derivatives, as well as Ubuntu 12.04.5 ESM (Extended Security Maintenance) machines, a buffer overflow (CVE-2016-8633) was discovered by Eyal Itkin in Linux kernel's IP over IEEE 1394 (FireWire) implementation when handling fragmented packets.

Source:

<http://news.softpedia.com/news/canonical-outs-important-linux-kernel-updates-for-all-supported-ubuntu-releases-518001.shtml>

ISRAELI SPIES HACKED KASPERSKY, DISCOVERED TOOLS STOLEN FROM THE US NSA

Israeli hackers who managed to break into the systems owned by Russian-based security vendor Kaspersky discovered hacking tools that were stolen from the NSA, according to reports that were published by The New York Times and The Washington Post.

The Israeli officials then alerted intelligence agencies in the United States of a potential breach of their network, indicating a possible collaboration between Kaspersky and the Russian government.

US officials, including the US National Intelligence Council, have already informed NATO allies that Kaspersky customer database and source code might have been exposed due to a collaboration with Russia's intelligence agencies, which could have allowed Russian hackers to launch attacks in both Europe and the United States.

Kaspersky, however, says that it's not collaborating with Russia or

any other government, also adding that it's not aware of any breach following attacks launched by Israeli hackers.

Source:

<http://news.softpedia.com/news/israeli-spies-hacked-kaspersky-discovered-tools-stolen-from-the-us-nsa-517992.shtml>

INTEL TAKES FIRST STEPS TO UNIVERSAL QUANTUM COMPUTING

Someone is going to commercialize a general purpose, universal quantum computer first, and Intel wants to be the first. So does Google. So does IBM. And D-Wave is pretty sure it already has done this, even if many academics and a slew of upstart competitors don't agree. What we can all agree on is that there is a very long road ahead in the development of quantum computing, and it will be a costly endeavor that could nonetheless help solve some intractable problems.

The big news this week is that Intel has been able to take a qubit

design that its engineers created alongside of those working at QuTech and scale it up to 17 qubits on a single package. A year ago, the Intel-QuTech partnership had only a few qubits on their initial devices, Jim Clarke, director of quantum hardware at Intel, tells The Next Platform, and two years ago it had none. So that is a pretty impressive roadmap in a world where Google is testing a 20 qubit chip and hopes to have one running at 49 qubits before the year is out.

Source:

<https://www.linux.com/news/intel-takes-first-steps-universal-quantum-computing>

PI-TOP: THIS RASPBERRY PI AND LINUX-POWERED LAPTOP IS FOR NEW CODERS AND MAKERS

In late 2014, Pi-Top, U.K.'s education startup raised about \$200,000 on Indiegogo to fund its first DIY laptop. It was followed by pi-topCEED, a cheap desktop computer that's powered by Raspberry Pi.

Their latest offering, the new Pi-Top, is a new tinkering machine that you can assemble on your own using modular approach. Compared to the past offerings, the number of steps needed to assemble the computer and start working are much less.

It comes with a new sliding keyboard design that reveals the built-in Modular Rail. There, you can store your accessories, electronic parts, etc. This is also the spot where Raspberry Pi is placed.

It comes with an "inventor's kit," which is basically a selected collection of electronic components to help you build a wide range of hardware DIY projects.

According to TechCrunch, the software also includes a step-by-step manual that navigates one through different guides.

Talking about the operating system, the Pi-Top laptop runs a custom operating system named Pi-TopOS Polaris, which is built on Raspberry Pi's official Raspbian Linux distro. The OS ships with all

the basic software, including Gmail, LibreOffice, YouTube, Chromium, Minecraft Pi Edition, etc.

Talking about the cost, the new Pi-Top ships with a price tag of \$320. In case you have your own Pi, you can cut that cost and get it for \$285.

Source:

<https://fossbytes.com/pi-top-laptop-linux/>

LINUS TORVALDS LAUDS FUZZING FOR IMPROVING LINUX SECURITY

Linus Torvalds release notification for Linux 4.14's fifth release candidate contains an interesting aside: the Linux Lord says fuzzing is making a big difference to the open source operating system.

Torvalds' announcement says Linux kernel 4.14 is coming along nicely, with this week's release candidate pleasingly small and "fairly normal in a release that has up until now felt a bit messier than it perhaps should have been."

This week's most prominent changes concern "... more fixes for the whole new x86 TLB [translation lookaside buffer – Ed] handling due to the ASID [address space ID - Ed] changes that came in this release."

"The other thing perhaps worth mentioning," Torvalds opines, "is how much random fuzzing people are doing, and it's finding things."

Fuzzing is the practice of having code process considerable quantities of data, in order to observe any errors that produces.

Torvalds has been on his best behaviour lately, with his list comments tending to the witty rather than the swears. Last week, however, he asked kernel developer Dimitry Yukov "Do you believe in fairies and Santa Claus?" Torvalds did so to point out that there is a "_way_" higher than the likelihood" of both being real than Yukov's approach to memory dependency management being successful.

Source:

https://www.theregister.co.uk/2017/10/16/linus_torvalds_says_fuzzing_is_improving_linux_kernel_security/

PATCH AVAILABLE FOR LINUX KERNEL PRIVILEGE ESCALATION

The Linux kernel team has released a patch to fix a security bug that could allow an attacker to execute code with elevated privileges.

The issue — tracked as CVE-2017-15265 — is a use-after-free memory corruption issue that affects ALSA (Advanced Linux Sound Architecture), a software framework included in the Linux kernel that provides an API for sound card drivers.

In layman's terms, the bug takes place because the kernel ALSA code allowed an attacker to call a function, delete its output, but still use the output in another function. This is known as a user-after-free vulnerability, a known attack vector, and a common memory management issue.

ALSA developers provide an in-depth explanation for the bug and patch in the ALSA mailing list.

Venustech ADLab (Active-Defense Lab) researchers discovered the bug.

There are good news and bad news. The good news is that the attacker needs a foothold on a vulnerable machine.

This requires infecting the user through malware or other tactics. The bad news is that the attacker can use the ALSA kernel flaw to elevate access from a limited user account to root privileges.

The Linux kernel team has fixed the issue in v4.13.4-2, and the patch is currently trickling down to the multitude of Linux distros, such as Red Hat, Debian, Ubuntu, Suse, and others.

Source:

<https://www.bleepingcomputer.com/news/security/patch-available-for-linux-kernel-privilege-escalation/>

SYSTEM76 'LEMUR' AND 'GALAGO PRO' UBUNTU LINUX LAPTOPS GET 8TH GEN INTEL CORE CPUs

Earlier today, Microsoft unveiled the all-new Surface Book 2. People all over the world are probably very excited about the device. Oh, what? You aren't excited? You mean, you don't want a super-expensive non-upgradeable Windows 10 tablet that plugs into a keyboard? What a shocker! All joking aside, that is very understandable. After all, most consumers would be better served by a traditional laptop.

If you don't want a gimmicky Windows 10 tablet, a laptop running a Linux-based operating system, such as Ubuntu, is a wise alternative. System76 is one of the best sellers of these types of notebooks, and today, two of its most popular models are getting huge upgrades. You see, both the Lemur and Galago Pro laptops now have 8th generation 'Coffee Lake' Intel Core CPU options.

New processors aside, these laptops should be pretty much

identical to prior generations -- which is a very good thing. If you want to configure a Lemur with a Coffee Lake chip, you can build your own.

Keep in mind, while the laptops are still shipping with vanilla Ubuntu, that will change in the near future. System76 will soon begin offering its own Ubuntu-based Pop_OS! operating system by default.

Source: <https://betanews.com/2017/10/17/system76-intel-coffee-lake/>

LINUX KERNEL COMMUNITY TRIES TO CASTRATE GPL COPYRIGHT TROLL

Linux kernel maintainer Greg Kroah-Hartman and several other senior Linux figures have published a "Linux Kernel Community Enforcement Statement" to be included in future Linux documentation, in order to ensure contributions to the kernel don't fall foul of copyright claims that have already seen a single developer win "at least a few million Euros."

In a post released on Monday, October 16th, Kroah-Hartman explained the Statement's needed because not everyone who contributes to the kernel understands the obligations the GNU Public Licence 2.0 (GPL 2.0), and the licence has "ambiguities ... that no one in our community has ever considered part of compliance."

Those ambiguities, he writes, have been used by a developer named Patrick McHardy to run multiple copyright enforcement lawsuits.

McHardy is a former contributor to a project called Netfilter that brings useful networking functionality such as network address translation to Linux. However the project suspended him from its core team in 2016 over "license enforcement activities" that contravened the project's own policies. He's also been criticised by the Software Freedom Conservancy for "prioritizing financial gain over compliance."

Lawyer Heather Meeker believes that McHardy wrote "well

under .25% of the code in the kernel" but has parlayed that into around 50 copyright complaints about Linux companies' use of Netfilter. Most of his actions take place in Germany, where local law makes such claims easier to mount.

Source: https://www.theregister.co.uk/2017/10/18/linux_kernel_community_enforcement_statement/

"LINUX ON GALAXY" IS BRINGING YOUR FAVORITE LINUX DISTROS ON SMARTPHONES

Technology companies have worked in the past to let your smartphones work like desktop computers; Microsoft's Continuum is the most notable effort in this direction. The latest attempt was made by Samsung. The company, with the launch of its flagship Galaxy S8, introduced the new DeX dock. By spending \$150, one can get a familiar PC interface and connect your device to a big screen.

In a related development, which

is surely going to make Linux enthusiasts excited, Samsung has announced that it's working on an application that'll let you run different Linux distributions on Galaxy smartphones.

Called "Linux On Galaxy," this application will let you use DeX to turn your smartphone into a desktop PC. By connecting a mouse and keyboard, you'll be able to use many desktop apps.

This app is being developed with the developer community in mind. "Now developers can code using their mobiles on-the-go and seamlessly continue the task on a larger display with Samsung DeX," the announcement says.

Linux On Galaxy will be installed as an app on your smartphone. You can run multiple Linux distros like Ubuntu or Debian and work in a Linux OS environment.

Source:

<https://fossbytes.com/linux-on-galaxy-distros-smartphone/>

POP!_OS Is FINALLY HERE — SYSTEM76'S UBUNTU-BASED OPERATING SYSTEM FOR DEVELOPERS

Earlier this year in June, we reported that System76 is creating its own Linux distro called Pop!_OS. This development was preceded by Canonical's announcement that Ubuntu will make a move from Unity to GNOME desktop environment. It was a big step for System76, a company who creates laptops that ship with Ubuntu pre-installed.

Now, Pop!_OS has entered beta phase and available for testing. The first stable release of Pop!_OS, i.e., Pop!_OS 17.10, is slated to arrive on October 19. It'll be based on Ubuntu 17.10 operating system, so the release of Ubuntu 17.10 Final Beta and Pop!_OS beta isn't a coincidence.

In future, Pop!_OS will follow Ubuntu's version numbers and release schedule. So, we'll get two stable releases every year, preceded by Alpha and Beta releases.

While Pop!_OS is based on GNOME, it has its distinct appeal and minimalist approach. According to System76's development approach, Pop!_OS is created for the people who use their computers to create things, particularly in computer science and maker fields. In other words, Pop!_OS has made this distro for developers.

Source:

https://fossbytes.com/pop_os-beta-download-features-developers/

LINUX FOUNDATION LAUNCHES OPEN DATA LICENSING AGREEMENTS

The Linux Foundation on Monday introduced the Community Data License Agreement, a new framework for sharing large sets of data required for research, collaborative learning and other purposes.

CDLAs will allow both individuals and groups to share data sets in the same way they share open source software code,

the foundation said.

"As systems require data to learn and evolve, no one organization can build, maintain and source all data required," noted Mike Dolan, VP of strategic programs at The Linux Foundation.

"Data communities are forming around artificial intelligence and machine learning use cases, autonomous systems, and connected civil infrastructure," he told LinuxInsider. "The CDLA license agreements enable sharing data openly, embodying best practices learned over decades of sharing source code."

The agreement could help foster an increase in data sharing across a variety of industries, supporting collaboration in climate modeling, automotive safety, energy consumption, building permit processes, water use management and other functions.

The agreement calls for two main sets of licenses, which are designed to help data contributors and consumers work with a uniform set of guidelines that clarify the rules of the road and mitigate risks.

The Sharing license encourages contributions of data to the community. The Permissive license does not require any additional sharing of data.

Source:

<https://www.linuxinsider.com/story/Linux-Foundation-Launches-Open-Data-Licensing-Agreements-84903.html>

COREOS REVIEW: LINUX FOR CONTAINERS AND KUBERNETES

CoreOS Container Linux is an open-source container operating system designed to support Kubernetes. The CoreOS flavor of container infrastructure management uses the Rocket or Docker container engine, Etcd for service discovery and configuration, Flannel for networking, and Kubernetes for container management. Unique among container operating systems, CoreOS offers a continuous stream of automated updates that, in theory, do not affect running applications. That's because they run in containers.

Container Linux is all-in on containers and large-scale orchestration. You won't find a package manager or traditional Linux administration tools. As a result, Container Linux is not as easy to get started with as some of the other container-oriented Linuxes, or as easy to play around and experiment with. It is a decidedly production-oriented system, focused on providing a stable foundation for clusters of container hosts.

Source:

<https://www.infoworld.com/article/3234624/linux/coreos-review-linux-for-containers-and-kubernetes.html>

UBUNTU 18.04 LTS IS NAMED 'BIONIC BEAVER'

Just last week, the Linux enthusiasts celebrated the release of Ubuntu 17.10 Artful Aardvark, which will remain supported for a period of nine months. While many users had already upgraded their machines to this release, others are waiting for the next LTS release, i.e.,

Ubuntu 18.04.

This also brings us to its codename, which has been just revealed by Canonical boss Mark Shuttleworth. The Ubuntu 18.04 LTS release is named Bionic Beaver.

Describing the qualities of Beaver, Shuttleworth wrote on his website: "Our mascot this cycle is a mammal known for its energetic attitude, industrious nature and engineering prowess."

Giving the reasoning behind the adjective "Bionic," he called it a "neatly nerdy 21st-century twist in honor of the relentless robots running Ubuntu Core."

Source:

<https://fossbytes.com/ubuntu-18-04-codename-bionic-beaver/>

BAD RABBIT RANSOMWARE ATTACK IS ON THE RISE

Just months after Wannacrypt crippled the world in fear, a new ransomware has emerged across Europe and a few other places. This new ransomware is

called Bad Rabbit; it uses brute-forcing NTLM login credentials in Windows and a bunch of other exploits to encrypt files on an affected computer.

Victims of this ransomware are being redirected to a site on the darknet from legitimate news websites. Users are prompted to install the malware which is disguised as Adobe Flash player. Upon installation, all their files get encrypted, and the victim is asked for a payment of 0.05 Bitcoin (\$276.85 at the time of publication) to gain access to the encrypted files. Kaspersky Lab has identified almost 200 targets in Turkey and Germany.

When the disguised program is installed, the malicious DLL is saved as C:\Windows\infpub.dat which, in turn, installs the malicious executable file. The spyware also installs a modified bootloader, so users lose complete access to their computer.

Source:

<https://fossbytes.com/bad-rabbit-ransomware-attack/>

LINUX MINT IS KILLING ITS KDE EDITION, DEBIAN-BASED LMDE 3 "CINDY" IS COMING

Last month, we told you that Linux Mint 18.3 will be codenamed Sylvia and gave you a preview of what features you should expect from the upcoming release. While there isn't any specific release date fixed for Mint 18.3, we can expect to land somewhere in December 2017 with Ubuntu 16.04.3 LTS base.

In its monthly news update, Linux Mint team has just shared some interesting updates. The biggest highlight of the update is the discontinuation of KDE edition of this beginner-friendly Linux distro. As a result, Mint 18.3 will be the last release to feature a KDE edition.

"KDE is amazing but it's not what we want to focus on," the team says. The announcement adds that KDE is a fantastic environment but it's also a "different world." This makes sense as KDE's whole ecosystem and the QT toolkit have very little

in common with Mint.

Let's hope that this step gives Mint development team more time and resources to work on Cinnamon and bring an even more polished Mint desktop experience to the users.

Source:

<https://fossbytes.com/linux-mint-kills-kde-edition-lmde-3/>

CANONICAL FOUNDER EXPLAINS WHY THEY ABANDONED THE UNITY PROJECT FOR UBUNTU

Back in April, Canonical founder Mark Shuttleworth, in a move that shocked everyone, announced that the company was ending support for Unity in Ubuntu. For the uninitiated, Unity was the company's plan to build a converged Linux desktop that would work on mobile devices, desktops, and even TVs. Its latest release, Ubuntu 17.10, marks the first version of the OS to ship without Unity, employing GNOME instead. After several months of speculation, Shuttleworth has

finally outed the rationale behind the decision.

In an interview with eWeek, Shuttleworth emphasized that some of their private ventures will not be sustainable when the company goes public. As Ubuntu moves "into the mainstream in a bunch of areas", as Shuttleworth puts it, they cannot afford to have ambitious projects that have no commercial output. The company's Initial Public Offering (IPO) will deter Canonical from taking on such risky endeavors but he doesn't regret working on the Unity project in the first instance.

Source:

<https://www.neowin.net/news/canonical-founder-explains-why-they-abandoned-the-unity-project-for-ubuntu>



COMMAND & CONQUER HTTPS, Docker & Let's Encrypt

Written by Lucas Westermann

As the web moves towards a “secure by default” approach, enabling HTTPS on your website is becoming more and more important. I’ve spent the last few weeks updating the websites I manage to run HTTPS, including some that run in docker. As some readers may have noticed, I have also switched the fullcirclemagazine.org website over to HTTPS. The reason for this is simple - Google (and others) are encouraging the use of HTTPS by clearly denoting (with a green padlock) encryption on websites. This month’s article will therefore be dedicated to what HTTPS is, how to get set up with Let’s Encrypt, and how to combine it with docker.

WHAT IS HTTPS AND LET’S ENCRYPT?

HTTPS helps to protect private data when logging in, when using HTML forms, or otherwise when sharing information with a website. The information is secured via encryption, and can

also prevent man-in-the-middle attacks (where another device intercepts your packets). Depending on your host, it may be automatically configured, or an option you can pay for. Previously, SSL certificates were issued only by certain companies (at cost), and self-signed certificates were not considered secure.

That changed recently with Let’s Encrypt, which will create secure, trusted certificates for free. The main difference between paid certificates and free ones through Let’s Encrypt are the duration. Certificates from Let’s Encrypt expire after 90 days - meaning you need to actively renew them more often than paid certificates. However, this can be done with a helper tool (I use ‘certbot’), and, combined with crontab, will keep the certificates updated without much effort.

WHAT IS DOCKER?

Docker is a system for running services in virtual containers - and is built upon the existing Linux

kernel. This means that it is faster, and requires less disk and RAM space than full virtualized environments (such as Vagrant). You can use it to run any number of systems, and multiple containers can communicate with each other via a private network.

PREREQUISITES

In my case, the services I worked with covered 3 containers. One running jwilder’s nginx-proxy image, one running a basic nginx image, and one running a basic apache image. The basic nginx and apache images were linked together as a LEAMP server (an Apache server behind an Nginx server, where Nginx covers static files, and PHP files are handled by Apache).

Nginx-proxy is an image that automatically directs and manages the traffic to various other containers (so the URLs lead to the correct container).

WHERE TO START?

My original research didn’t indicate too many posts on this particular topic. There were plenty on setting up nginx or apache to serve HTTPS sites. However, the complication comes from using nginx-proxy. As the traffic is technically forwarded between 3 containers, I originally assumed that I would need to configure SSH on both the Nginx-proxy and the Nginx containers.

Fortunately, after some trial and error, it turns out that you only need to configure HTTPS on Nginx-proxy, and the settings are then carried through.

CREATE CERTIFICATE

To do this, you’ll need to install certbot, which depends on your server’s OS and version. For most Ubuntu versions, you’ll need to add the certbot/certbot ppa (instructions here: <https://certbot.eff.org/all-instructions/>).

Once you've installed certbot, you'll want to create your certificate. I did this using the certonly command, as I did not want certbot to attempt to autoconfigure anything. To configure the certificate, run the following command:

```
certbot certonly
```

Then answer the questions (you will need to point it to the actual webroot of your website that is publically accessible, otherwise Let's Encrypt cannot confirm you own the domain and the certificate is not created). Once the certificate is created, it will be stored in `/etc/letsencrypt/live/<URL>/fullchain.pem` and `/etc/letsencrypt/live/<URL>/privkey.pem`

CREATE FOLDER FOR DOCKER VOLUME

While you can link the folder from letsencrypt up with docker, I would recommend creating a new folder that you can more easily access (in your user's home folder, for example).

A command that works for this would be:

```
mkdir -p ~/nginxproxy-certs  
  
cp  
/etc/letsencrypt/live/<URL>/{  
fullchain,privkey}.pem  
~/nginxproxy-certs/
```

If you want nginx-proxy to automatically apply the certificates, you'll need to have them saved in the style of `<URL>.cert` and `<URL>.key`. These can be symbolic links, if you want to create subfolders in `nginxproxy-certs` for each URL. However, the links must be at the top level of the directory (directly in `nginxproxy-certs`).

LINK CERTIFICATE TO NGINX-PROXY

To supply the certificates to the image, you can use the following command (taken from the official nginx-proxy):

```
docker run -d -p 80:80 -p  
443:443 -v  
/path/to/certs:/etc/nginx/cer  
ts -v  
/var/run/docker.sock:/tmp/doc  
ker.sock:ro jwilder/nginx-  
proxy
```

Replace the `/path/to/certs` with the actual folder you placed the certificate in. If you set the names of the files properly, you will just need to make sure the `VIRTUAL_HOST` line is correct for each docker container.

If you prefer more control (or have one certificate for multiple domains), you can instead set the `CERT_NAME` variable in the container's environment. If your files are called `example.cert` and `example.key`, the `CERT_NAME` would then just read 'example'.

For ease of use and managing the variables, I'd recommend using docker-compose, as opposed to doing it directly with docker run.

POSSIBLE ISSUES

I ran into an issue where I had mistakenly linked the cert file in place of the private key, which resulted in `nginx -s reload` failing on `nginx-proxy`. There were no obvious errors, but it resulted in the port 443 being closed, and the connection being refused. So if `nginx-proxy` isn't working properly for you, make sure you are linking the correct folder, and have

read/write permissions; then run `nginx -s reload` manually to see if there are any errors.

WHERE CAN I FIND MORE INFORMATION ON DOCKER?

The docker hub pages for the various images typically tell you how to configure them. If you read the documentation page on docker-compose, you'll also be able to use that without issue. If you want to read my article on Docker, you can find it in FCM#107.

I hope this article proves useful for anyone who, like me, was making the process much more complicated than necessary, or was running into a similar issue as I did. If you have any questions, comments, or article suggestions, feel free to contact me at lswest34+fc@gmail.com.



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



An excellent resource for all LaTeX users – that does not get the attention that it deserves – is the journal of the TeX Users Group TUGboat. You do not have to be a member of the TeX Users Group (TUG) to get it, but, if you want to read the latest edition that is hot off the press, you have to be a member of TUG. Back issues are a free download from the TUG website –

<https://www.tug.org/tugboat/>. I joined TUG when the TUG annual convention came to Toronto last year, and I regret that I did not join TUG earlier. Some of the active members of the TUG are what we would call the top TeX gurus, who have years of experience and knowledge that go back to the very beginning of TeX/LaTeX. It was within the pages of TUGboat that I read about a major flaw in the way we compose with LaTeX.

In life, there are things we do that we call a “best practice”, and often they are easy to identify. When it is a best practice to not do something, it can be difficult to identify, especially when we can

get away with doing it so often. In the editorial comments of Barbara Beeton in TUGboat 38:1, Barbara points out a bad practice that many of us are guilty of, and that can be found in online tutorials produced by experienced users of LaTeX. New users are learning this bad practice. I know I did.

What is the bad practice that many of us are guilty of? It is the practice of ending paragraphs with a `\\`

There is good news and bad news; the good news is that this practice will not crash your document, but the bad news is, as Barbara Beeton stated “Prejudice against this practice is not just personal bias; the learners are being taught some things that could get them in trouble later on.”

Further research uncovered an earlier posting on <https://tex.stackexchange.com> where Barbara Beeton said: *There is absolutely no advantage to using `\\` to end a paragraph, and in fact, a big disadvantage -- it doesn't actually end the paragraph; it only*

goes to a new line, and probably triggers an underfull line report in the log.

There are only two ways to end a paragraph in "basic" text mode: a blank line, or `\par`. There are some (but few, and mostly obscure) situations in which `\par` shouldn't be used. but it definitely puts something "visible" in the file, and if you are sending a file using a mailer that swallows or "disappears" blank lines, then `\par` is safer.

Never try to end a paragraph with `\\!`

Frank Mittelbach says: *It is wrong because you are using the visual result of one construct to produce the appearance of a different one. A paragraph logically* <https://tex.stackexchange.com/questions/74353/what-commands-are-there-for-horizontal-spacingends> *with an empty line. How it is formatted is a question of style, and if you prefer non-indented paragraphs with some space between them, this could be adjusted simply by a declaration and wouldn't need `\noindent` in front of*

every para and `\\` at its end. This way, reusing your text is nearly impossible. Even just moving text around means adding and deleting such commands all over the place. <https://tex.stackexchange.com/questions/66495/best-choice-between-using-or-leaving-space-after-each-paragraph-to-end-the-pa>

Now, we know what is a bad practice, and a good practice. It is clear that whenever we want to make a new paragraph, we should place a blank line in our document. Not only it is all we need, it makes our code much cleaner and neater. I have always preferred a blank line between paragraphs, and now I know it is the best practice to follow.

LaTeX gives us the ability to place items on the page with far more accuracy than what is possible with any word processor. There are other commands that we may use for the control of space.

The command `\newline` will result in a new line in the



paragraph, this line is not indented, making it more suited for an address label, or something you may want to list without the use of bullets or numbers. It does take longer to type this command, but I do not believe that I will require it that often.

The command `\newpage` does as it says, nothing to it really, no other commands to enter, comes in handy sometimes.

Vertical space is managed with these commands;
`\smallskip` `\medskip` `\bigskip`
and `\vspace{<dim>}`

The command `\vspace{5mm}` will push the sentence, table or graphic that follows it 5 mm below the line that is above the command. Any units-of-measure can be used: metric, points, or inches. In a LaTeX document, you can use any combination of units of measure. You can use inches in one command, and then points or centimeters on the next command. Within LaTeX, we are not tied to a unit-of-measure like we are in a word processing document. This is what gives us incredible control with the placement of tables,

graphics and text in the document.

Horizontal space can be managed the same way with the `\hspace` command. The other commands are handy when you do not have to be too precise and just want some extra white space.

There are more commands than these, but these are the main ones that give us incredible control over how our creations look. Use the double slash when necessary, but do not use it constantly.

Help on this topic is only an Internet search away – with <https://tex.stackexchange.com> being one of the best places to click on. In fact, you will find answers there from the gurus in TUG, but do not forget to check out the <https://www.tug.org> site where you can find TUGboat and so much more.

Many thanks to Barbara Beeton, Editor of the TUGboat, for her assistance in the writing of this article.



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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 last article on using FreeCAD, we worked on an architectural project in two different ways. In the first place, we used the Arch workbench to create a modern architectural project, in which supplementary information is given to the computer, so using FreeCAD to create a Building Integrated Model (BIM). Since this approach is in an early stage of development, and is limited to simple forms, we then used a more traditional approach to create volumes in the same way as in previous projects, but on a larger scale. The sweeping technique allowed us to create an element with the shape of an arch by sweeping one sketch (a profile) around another sketch (the outline of an arch).

In today's edition, we will concentrate on a more complex

primitive object that allows us to create forms and volumes with less regularity, the mesh.

WHAT IS A MESH?

A mesh can be taken as a representation of a two-dimensional object (a surface), situated within tridimensional space. Mesh objects can be made up of very many types of elementary elements, some of which can be rather complex such as Non-Uniform Rational B-Splines (NURBS). However, the most common varieties are simple triangles and flat four-sided elements. This is for several reasons, including the fact that most complex surfaces can be approximated by triangles with a reasonable level of precision - much in the same way that the plots of simple mathematical functions are often represented on-screen with an array of straight segments, when in reality some of these functions have no straight bits all along their length. Another aspect of the equation is that many computer meta-languages

describing scenes in 3D -such as OpenGL- have primitives for such triangles.

According to the specific application, however, 3D scene file formats can hold more, or less, information about the mesh. One of the file formats commonly used in 3D printing, the STereoLithography (STL) format, merely contains a list of triangles. Vertices are repeated as needed, and no further information is recorded about the actual structure of the underlying object. In a more complex case such as Computer Fluid Dynamics (CFD), toolkits such as OpenFOAM (<https://openfoam.org/>) have a file format that draws up the mesh using a list of vertices, then a list of faces through referral to the vertices, and finally the complete mesh as a list of faces with their relative positions and associated variables. Fluid pressure, velocity and temperature are often used, and must be stored for several points in time in auxiliary structures that hinge on the mesh.

FreeCAD already knows how to build several types of basic meshes, such as the simple shapes (cylinder, cone, sphere) defined in the Part workbench. These meshes can be exported to several file formats, among them STL. Simply choose the part, then switch to the Mesh workbench and choose menu option Mesh > Create mesh form shape. A new part, with a meshed version of the original, will be inserted into the project. Also within the Mesh workbench, tools are available to export this mesh to a file (tool on the right).



Once a STL file has been saved, this can be used with most 3D printers to print a physical copy of our original shape.

IMPORTING AND USING MESHES

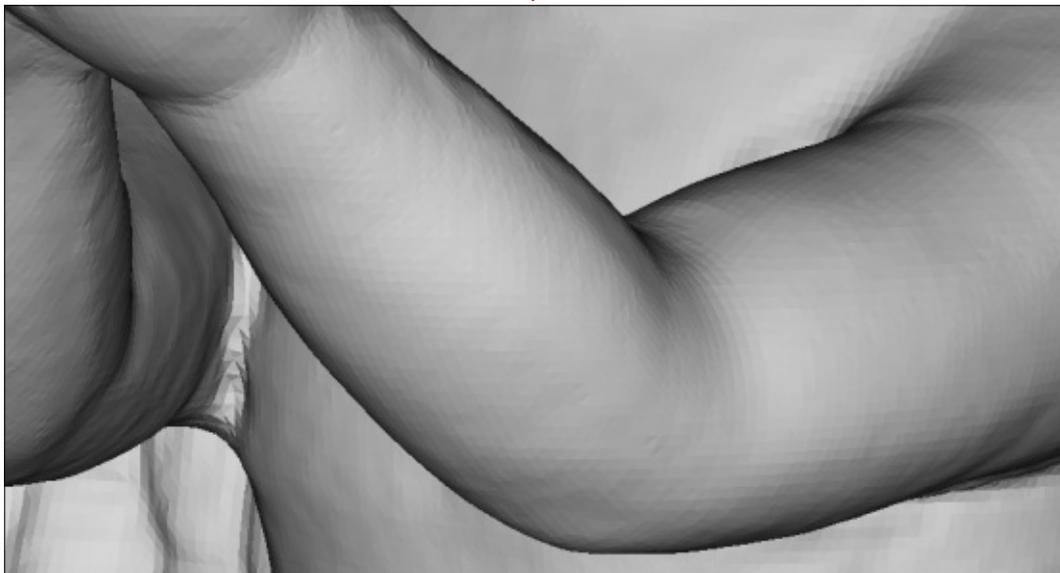
Another useful feature of the Mesh workbench is its capacity to import a mesh from a file, and create a new Part element from

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the data imported. I downloaded a test mesh named DAVID-Angel from 3D scanner producer DAVID (<http://www.david-3d.com/en/support/downloads>). I then used the Mesh tool (the leftmost of the pair) to import this mesh into a new FreeCAD project. The result was quite good, and one can navigate around the digital model and examine the statue's admittedly rather plump arms from up close – if so inclined.

Other parts can be added to the scene within FreeCAD, allowing us to modify the model and then export our modified version, if needed. One specific use for this could be to add supports or other auxiliary features to a model,

before printing in 3D. To take an example, I added a circular base to the angel statue.



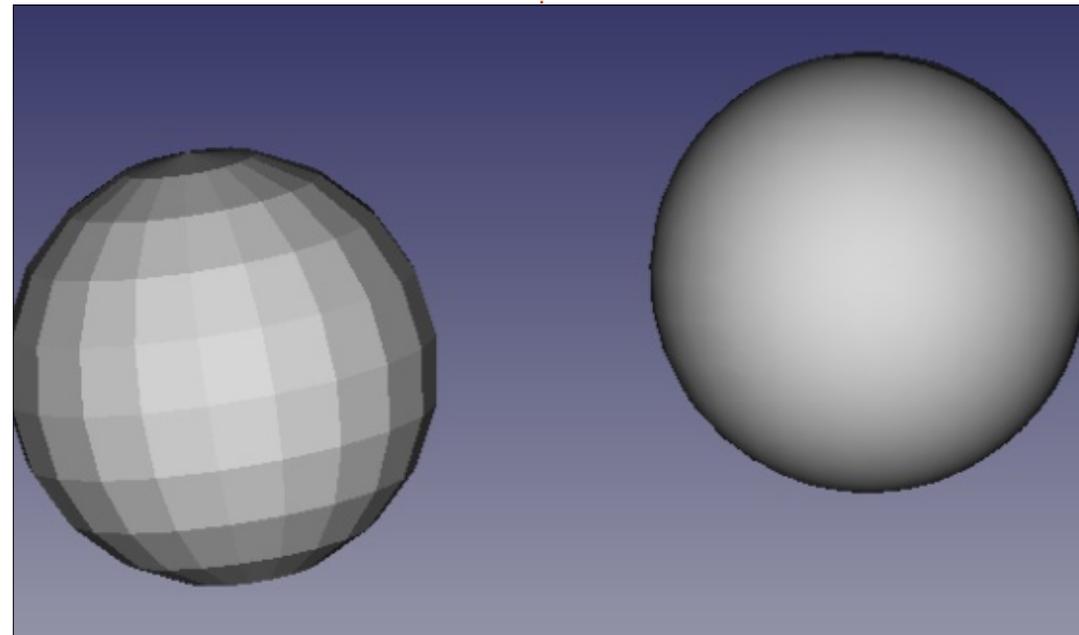
However, some care needs to be exercised when working on models with very many triangles. The angel sample mesh used above is already quite capable of exhausting FreeCAD's memory management, so it may be judicious to save our work every few steps.

CREATING OUR OWN MESHES

The STL file format is basically just a text file with a very simple internal structure. For instance, to create a mesh that contains just one single square facet, we could use the following code:

```
solid Square (Meshed)
  facet normal 0.0 0.0 1.0
    outer loop
      vertex 1.0 1.0 0.0
      vertex -1.0 1.0 0.0
      vertex -1.0 -1.0 0.0
      vertex 1.0 -1.0 0.0
    endloop
  endfacet
endsolid Mesh
```

Most indications should be self-explanatory. The “normal” keyword gives the facet's normal vector, basically telling us which side of our facet is to be considered “outward” or “inward” in respect to the complete object. If a triangular facet is required, just use three vertices to define it. If several facets are needed, iterate the facet...endfacet sequence.



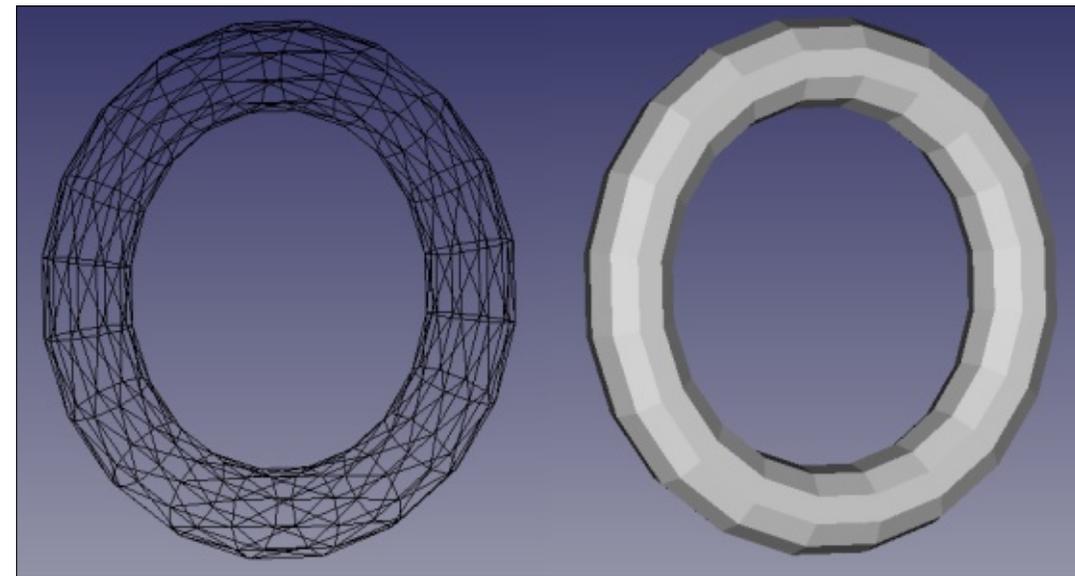
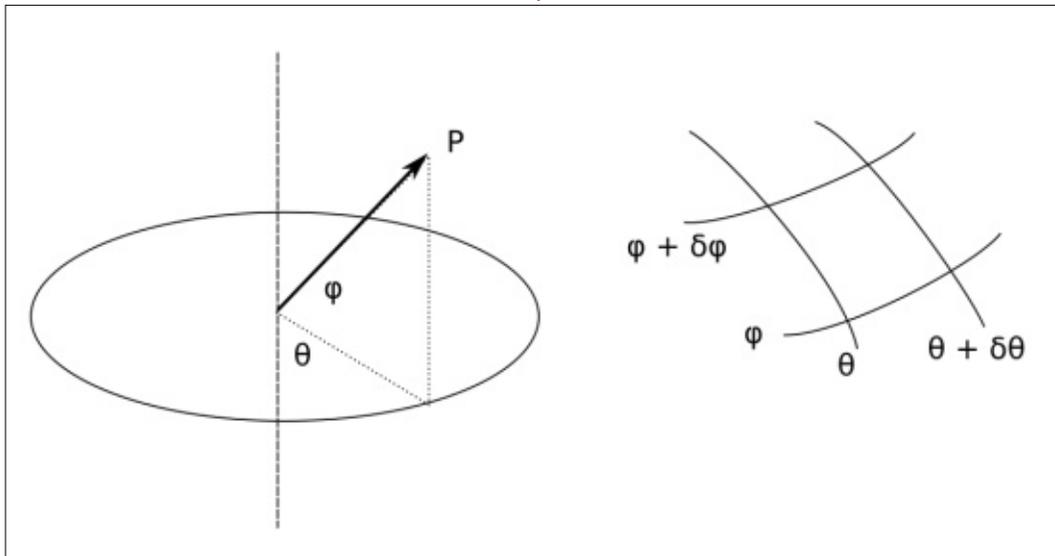
This very simple structure makes writing our own programs to create a mesh file automatically an easy proposition. It could be done in just about any programming language such as Pascal, C, Java, JavaScript with Node.js, and many others, but my personal preference will go to Python - in keeping with the fact that FreeCAD is written in this language. Let us start with a simple sphere. In the following screenshot, the object to the right - seen from within FreeCAD - is an instance of the application's inbuilt Sphere object. The object to the left, however, is a mesh that has been generated with a simple Python script.

Any point P on the surface of a sphere can be defined using horizontal angle theta (θ) within the equatorial plane, and then vertical angle phi (ϕ) to give its height above the plane. In essence, this is what we do when using latitudes and longitudes to give the position of an object or place on the Earth's surface. So our program simply needs to calculate a series of coordinates, while varying θ from zero to 2π radians, and ϕ from $-\pi/2$ to $\pi/2$. Radians are

our angular measurement unit of choice, since this is what computer programs use to calculate sines and cosines.

Once we have our double for loop set-up, we need to transform the more or less rectangular shapes we obtain between θ and $\theta + \delta\theta$ horizontally, and between ϕ and $\phi + \delta\phi$ vertically - where the deltas are the difference between successive values of each respective angle. The easiest course is to cover this area with two triangles. The complete Python program is simple, but a tad longer than could be acceptable for this publication. For this reason I put it up on Pastebin at the following address:

<https://pastebin.com/jvv35AgZ>.

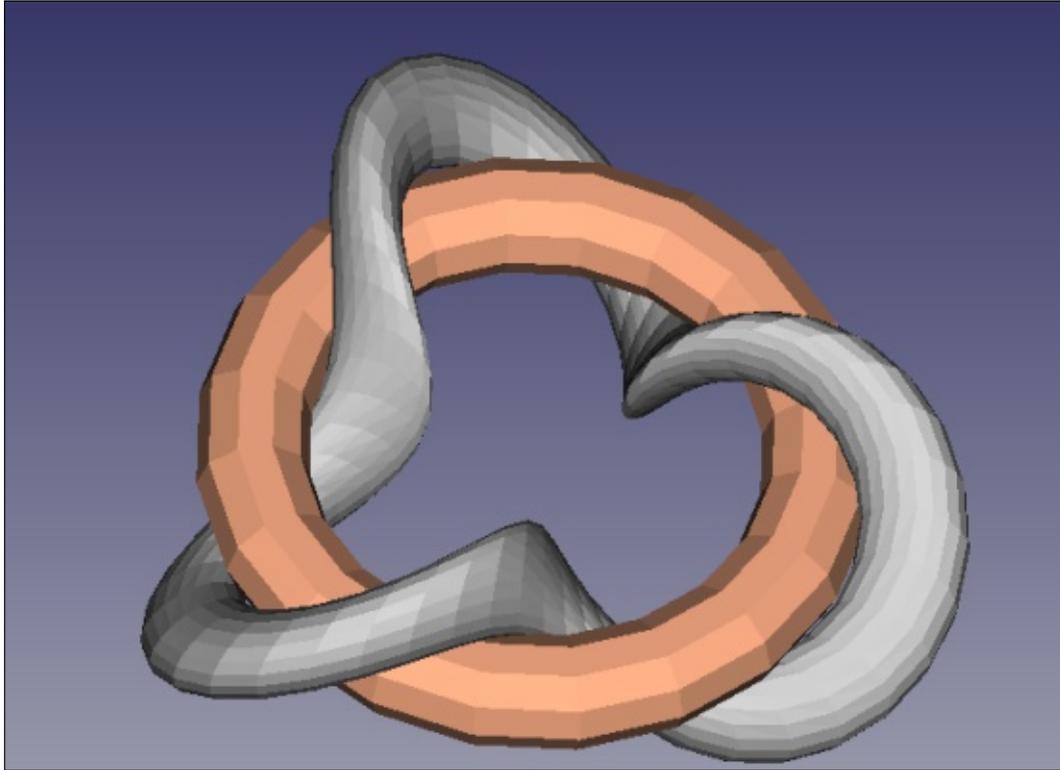


Please do not hesitate to use it - and to experiment.

Going on to more complex objects, a ring - or, in mathematical terms, a torus - is an object that has two radii: the main ring radius in

one place, and a secondary radius that defines the thickness of the object, in a plane set off at right angles to the main plane. In the following capture, we can see two copies of the mesh as imported into FreeCAD, one on the left with mesh edges apparent, and the second on the right all built up. In this way, we can see that what seem to be flat four-sided facets are in fact each a combination of two triangles.

The Python program to create this mesh file is actually rather similar to the previous code. However, in this case ϕ needs to iterate over a full circumference (from $-\pi$ to π) to complete the ring's tube shape along the smaller



circles. As before, θ iterates over the ring's main circle. The code can be found at:

<https://pastebin.com/BNxPztFP> .

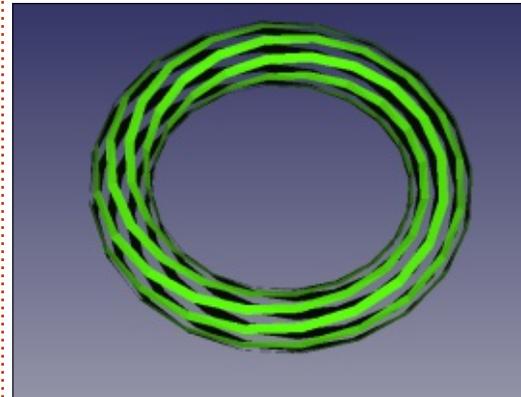
Please note the use of r_1 , the outer radius, here set at 5 units, and r_2 , the smaller radius, here set at 1 unit.

Once we have the basic code setup, we can have some mathematical fun with it. For instance, we can have our ring material twist about the main ring, by giving it a further (third) radius to offset it from its "normal"

position and have that turn around a number of times while we iterate over θ . We could, for instance, use $\cos(3\theta)$ and $\sin(3\theta)$ to calculate its radial and vertical coordinates to have the ring "wobble" three times along the main circumference. If our resulting object is quite flat, and the number of turns is odd, it can even resemble a Moebius strip. In the next screenshot, we can see our original ring in copper, combined with the new twisted shape in grey. The Python code to create this mesh file is, as always, on Pastebin:

<https://pastebin.com/ZvnDdLTX> .

One advantage of writing our own programs is that we can then go on to modify our objects as desired. A simple alteration in the value of $\delta\phi$ can make our triangles cover only half the surface of our object. If, at the same time, we give it a single twist while iterating along θ , the final appearance can resemble not a single shape, but a collection of interwoven rings. In the following screenshot, note how each ring twists once around ϕ while making its circuit of the main ring.



WHAT NEXT?

In this article on using FreeCAD, we concentrated on a more complex primitive object that allows us to create forms and

volumes with less regularity, the mesh. Using the widely accepted STL file format, a mesh or collection of simple triangular or four-sided facets can be retrieved either from a physical 3D scanning device, from other people's work, or created using ad hoc programs. With a bit of mathematical expertise, the objects created can vary from the very simple to rather more complex objects.

In the next 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.



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).



In the previous article, we have learnt what is tmux, and how to install and start it. Now it is time to begin the real usage of this amazing tool. We are going to learn how to send commands to the program, how to manage different sessions, and how to organize our workspace with windows and panes.

COMMAND TMUX

The tmux is an application framework that can run several virtual terminals inside. As users, we can run several command-line programs inside these virtual terminals. Therefore it is an essential need to be able to send any commands directly to tmux without disturbing the running virtual terminals and programs.

In order to achieve this goal, tmux uses the so-called "command prefix". Its default value is <Ctrl-b>. Every command that is intended to be sent to tmux, has to be started with this key combination.

The exact usage is:

- type the prefix combination
- release the keys
- immediately press the command key.

Let's try it with an example. Start tmux and type the following: <Ctrl-b t> (press "Ctrl-b" then press "t"). You have to see a blue digital clock in the middle of the screen. Pressing "Esc" or "Enter" will eliminate the clock.

From now on, we will use the "Prefix" word instead of "Ctrl-b". The benefit of this is to avoid any misunderstanding caused by a further reconfiguration of the Prefix key combination.

SESSION HANDLING

The most powerful feature of tmux is the session handling. In a normal terminal environment, if you start an application, then you exit from the terminal, the already started job will also be terminated. In tmux, if you start a job, and leave the tmux instead of quit (it is called "detach"), the job will still be

running in the background (exactly on the tmux server). Later on, you can join again (this is called "attach") to this session, and you will find the previously started job running.

For session handling, tmux has to be started with the following commands:

```
$ tmux new-session -s Temp
```

or

```
$ tmux new -s Temp
```

This will create a new session called Temp, and it will automatically attach to it. Almost everything will be the same as in a normal starting of tmux without session handling, except that the name of the session can be read on the first place of the status bar. The picture shows the previously mentioned digital clock in a named session. If -d is used at the end of the new session command, then the session will be created but it will not attach to it automatically.



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First of all, run again the clock command <Prefix b>. Now we have an opened session inside tmux. If we were to type the command "exit", then tmux would terminate this session and we would not be able to attach again. Therefore we have to use the detach command: <Prefix d>. We can see the terminal output:

```
[detached (from session Temp)]
```

This message means that we have an opened session. In order to list all of the available sessions, just type the following command:

```
$ tmux list-session
```

```
Temp: 1 windows (created Sat Jun 10 21:38:16 2017) [80x23]
```

The shortened version can also be used (ls). The result indicates that we have one opened session, named "Temp", with one window (some additional information can be read as well). Now let's try to attach to this session again:

```
$ tmux attach -t Temp
```

Now we get the same session "Temp" with the already running clock.

We can use more sessions as well. Detach from the currently running "Temp" session, start a new one with name "Pmet", detach from it, and finally get the list of the sessions again:

```
[detached (from session Temp)]
$ tmux new -s Pmet
[detached (from session Pmet)]
$ tmux ls
Temp: 1 windows (created Sat Jun 10 21:38:16 2017) [80x23]
Pmet: 1 windows (created Sat Jun 10 21:40:42 2017) [80x23]
```

If a session is not needed any more, there are two ways to terminate it. Method (1) can be performed inside tmux, just attach to the required session and type the exit command. Method (2) can be used outside of tmux:

```
$ tmux kill-session -t Temp
```

After killing all of the sessions, we will get the following output of the list-session command:

```
no server running on /tmp/tmux-1000/default
```

That was all about the session handling. Let's jump to the window handling.

WINDOW HANDLING

Windows inside a session are very similar to the tabs of a text editor or a web browser. Each and every windows are able to run different (or the same) commands. After detaching from a running session, all of the opened windows will keep running the started application in the background.

When we start a new tmux session, the name of the window (the word after the number of the window) will be the currently running application by default, and it is changed every time when we start a new command. Right after

starting tmux, it will be the name of our bash. If we start the top application, the window name will be top.

In order to avoid the continuous name change, the window name has to be defined explicitly. This can be done in two ways: (a) at the same time when we start the tmux, (b) inside tmux by a command.

The method (a) is:

```
$ tmux new -s temp_w -n first
```

This terminal command starts tmux with a session (-s) named temp_w, and with a window (-n) named first. Now, if we run the top



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command, the name of the window will remain temp_w.

The method (b) is to run the following command inside tmux: <Prefix ,> (comma). By performing the command, the status bar will be active and the name of the window can be modified.

A brand new window can be created inside tmux with the command <Prefix c>. It has no defined name, but this can be changed by the command mentioned previously.

There is no limitation on the amount of windows in tmux. In the picture, three windows have been created inside session temp_w:

There are several ways to change between the windows. The active window is always marked with * character after the name of the window in the status bar. The - character signs the previously used window. Method (1) is to use the <Prefix n> command to go to the next window. The command will go through the open windows as a circle, so, after the last one, the first one will be the next. Obviously the <Prefix p> command will go to the previous window.

All of the windows have a unique identifier - starting with 0. Method (2) is to use the <Prefix w_number> command, where the w_number is the number of the window. Zero-based indexing is familiar to programmers - like array numbering, but later on we will learn how to change it to a one-based index for better usage.

Finally, method (3) is to use the <Prefix w> command. This will list all of the available windows as a visual menu, and the desired one can be chosen with the arrow keys.

In order to close one window, the exit command can be used. This will terminate the active

window without any questions. The safer method is to use the <Prefix &> command. This will request a confirmation in the status bar before killing the active window. Terminating the last window will also close the session.

PANE HANDLING

The usage of multiple windows is quite useful, but still not the best way to manage different tasks at the same time. If parallel monitoring of the tasks is important, then panes will be our best friend. Let's start a new session named temp_p. Any window can be split vertically

and/or horizontally. For vertical split, use the <Prefix %> command. For horizontal split, use the <Prefix "> (double quote) command. The window looks like in the picture:

Now, it is easy to open a vim editor in the left pane to edit a source file of an embedded application, and run the compiler in the right top pane, while flashing of the binary can be monitored in the right bottom pane.

Moving between the panes can be performed with two methods. Method (1) is to use the <Prefix o> command, this will go through the panes continuously. Method (2) is to use the <Prefix arrow_keys> command where the arrow_keys can be the Up, Down, Left or Right key.

In order to close one pane, the exit command can be used. This will terminate the pane without any questions. The safer method is to use the <Prefix x> command. This will request a confirmation in the status bar before killing the active pane. Terminating the last pane will also close the active window, and, if it is the last window, then the entire session



will be closed as well.

CONCLUSION

This article covers the most important topics regarding tmux. Now we can use it as our main development environment as programmers, or as the main monitoring environment as server administrators. In the next article, we will learn how to configure tmux via its configuration file. We will change some commands for better usage, and also the visual styling can be modified for pleasant usage. Get Productive! Get tmux!

COMMAND REFERENCE

`tmux new-session -s <name>`

Start a new session with a defined name

`tmux new -s <name>`

(Shorter) Start a new session with a defined name

`tmux new -s <name> -n <name>`

(Shorter) Start a new session and window with a defined name

`tmux attach -t <name>`

Join to an already opened session with a defined name

`tmux list-session`

List all of the opened sessions

`tmux ls`

(Shorter) List all of the opened sessions

`tmux kill-session -t <name>`

Terminate (destroy) an already opened session

CTRL-B & COMMAND PREFIX

Prefix t

Show the digital clock in the middle of the screen

Prefix c

Create a new window

Prefix ,

Rename a window in the status bar

Prefix n

Go to the next window

Prefix p

Go to the previous window

Prefix w_number

Go to the w_number window

Prefix w

List the opened windows as a visual menu

Prefix &

Close the active window with confirmation

Prefix %

Split the active window vertically

Prefix “

Split the active window horizontally

Prefix o

Go to the next pane

Prefix arrow_key

Go to the desired pane

Prefix x

Close the active pane with confirmation



Gabor is an electrical engineer who likes developing home-made embedded projects, and he is an enthusiastic user of GNU/Linux.

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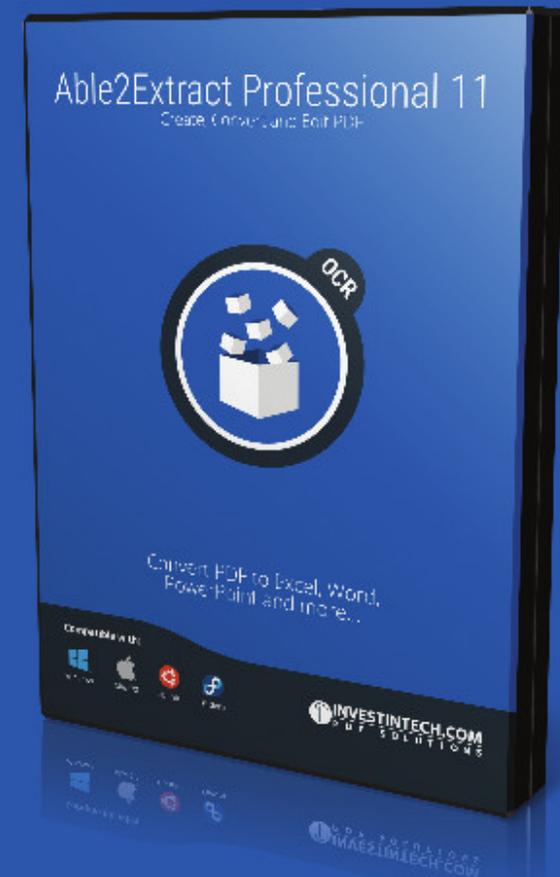
Works on:



Ubuntu



Fedora



@able2extract



www.investintech.com



HOW-TO

Written by Mark Crutch

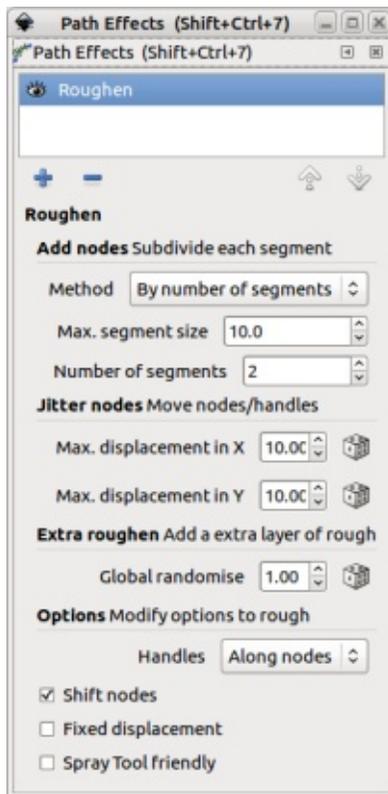
Inkscape - Part 66

Last month's look at the Live Path Effects added in 0.92 included a section on the Simplify effect. This adds a "live" version of one of Inkscape's existing tools (Path > Simplify), whereas the older tool modifies the original path. The next LPE we'll look at fills a similar niche – it's another live version of an existing feature. It's the "Roughen" LPE.

The go-to tool for adding some randomness to the shape of a path is the Tweak tool, described in detail in parts 22 and 23. The latter article describes using the tool to modify the nodes of an existing path, including the ability to roughen the path by adding new nodes and slightly randomizing their positions. As with Path > Simplify, the procedure modifies the original path, so there's no way to subsequently tweak the settings to retrospectively alter the result. The Roughen LPE does the same job, but, being a Live Path Effect, allows you the flexibility to go back and change its parameters after the fact. One trade-off for this capability is that

the effect applies to the whole of the path, whereas the Tweak tool is interactively "sprayed" onto the path, allowing you to confine its effects to a particular area, should you need to. But, if you need to work on an entire path, it's well worth further investigation.

To demonstrate this LPE, I've created a simple five-pointed star using the Stars and Polygons tool,



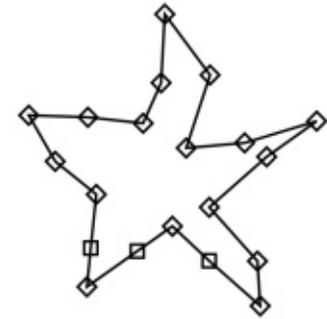
then added the effect via the Path > Path Effects dialog. As you might expect, the dialog gains a number of parameters that can be adjusted to alter the result.

With the settings shown in the screenshot, my simple star was immediately distorted into something more random.



To get a better idea of what's happening, I'm going to add another new LPE to the chain: Show Handles. This draws representations of the path's nodes and handles, which can be invaluable when trying to gain an understanding of exactly how your input path has been changed by the applied LPEs (more on this later). The first thing to notice is that our five-pointed star (which, if

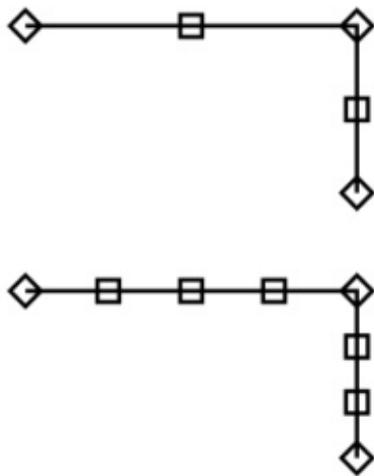
converted to a path, would have had 10 nodes) now has 20 nodes:



This is due to the top section of the Roughen effect's controls which adds extra nodes. More specifically, it adds nodes to each segment of your path, spacing them evenly along it. The number of nodes added is either determined directly by choosing the "By number of segments" option and setting a value in the "Number of segments" field; or indirectly by choosing the "By max segment size" option, and filling a value in the "Max segment size" field. The difference is clearer when you have a path with different segment lengths; consider this example of a right-angled path where the horizontal arm is about twice as long as the



vertical one.



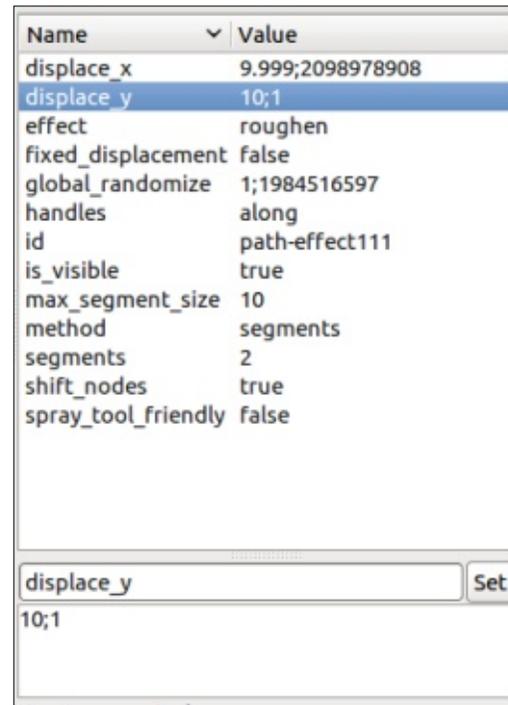
The top image shows the effect of using “By number of segments” to divide each path segment into two. The bottom picture uses “By max segment size”, resulting in two new nodes on the vertical arm, but three new ones on the longer horizontal arm. Returning to our star, therefore, the default settings split each segment into two, doubling the number of nodes.

Once you’ve created more nodes to work with, it’s time to jiggle their positions a bit. The “Jitter nodes” section lets you define the maximum amount that each node will be displaced – although the precise value for each

is random. You can set different values for the X and Y directions, and the dice buttons will re-seed the random number generator, adjusting the node positions in either the X or Y directions accordingly. The “Extra roughen” section provides an additional displacement factor. This value acts as a multiplier – setting it to zero will cancel any displacement, regardless of how large the X and Y values are, whilst larger numbers increase the amount of displacement that takes place. This time, the die button re-randomizes the nodes’ positions in both the X and Y directions at once.

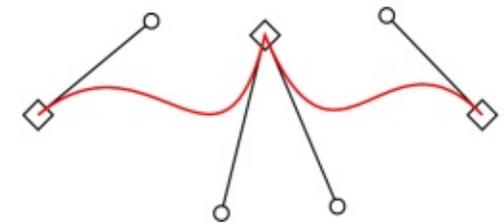
It’s worth noting that the random seed for each of these controls defaults to 1 when the LPE is first added to a path. If you have several similar paths that you wish to roughen differently, therefore, it’s worth clicking each of these buttons a few times. The actual seed isn’t visible in the UI, but can be found via the XML editor. The settings for LPEs are stored in the <defs> section near the top of the file, and if you’ve applied several to your page, you might need a little trial-and-error to find the relevant entry (tip: put an easy to spot value, such as 9.999

into one of the fields so that it stands out more in the XML dialog). Here you can see that I’ve clicked the randomize buttons for the X displacement and the global randomization, but left the highlighted Y displacement with its default value. The seed in each case is the part after the semicolon, which you can copy and paste if you wish to use the same non-default seed across multiple objects.



To roughen a path, inserting new nodes and randomizing their positions may be sufficient. But this effect also provides a few

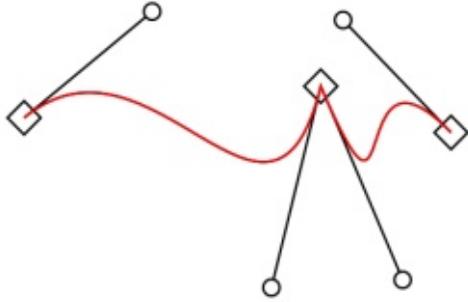
options about what to do with the node handles. Our pointed star, with its straight line segments, offers little of interest when it comes to node handles, so, to demonstrate the possibilities, I’ll switch to a curved shape with a sharp transition in the middle. Once again, I’ve applied the Show Handles LPE, but I’ve put a duplicate of the original path on top (in red) for clarity. Here’s how it looks before the Roughen LPE is applied.



To isolate the effects on the handles, without adding extra nodes to complicate matters, I’ve used the “By number of segments” mode, with that number reduced to 1. This effectively neuters the top part of the dialog, and no new nodes are added, though the existing ones will still be moved. The “Handles” pop-up towards the bottom of the dialog determines what will happen to the nodes’ handles. With the default setting

HOWTO - INKSCAPE

of “Along nodes”, the handles simply move along [with the] nodes, maintaining their relative sizes and positions.



The “Rand” option randomises the position of the handles. Unfortunately, there’s no button to set a random seed, and no seed value appears in the XML file, so I guess you’re stuck with whatever random positions the LPE gives you.



“Retract”, as its name suggests, retracts the handles completely, converting your path segments into straight lines, whilst “Smooth” ensures that the handles on either side of each node form a straight line, with the result that the path transitions smoothly from one

segment to the next, even if doing so drastically changes the shape of your path. Adding extra nodes using the top section can help to reduce the amount of distortion that takes place.

At the bottom of the dialog are three checkboxes, starting with “Shift Nodes”. With this unchecked, the nodes won’t move, regardless of the X, Y and Global settings. At first, this seems to rather defeat the point of the dialog, but it opens up a couple of possibilities that aren’t immediately obvious. With this unchecked, you can use the top section of this LPE as a means to subdivide your path into smaller sections without affecting its shape. This might be handy as a “pre-processing” step before sending the result to another effect. Another option is to uncheck this but to change the “Handles” pop-up, so that the nodes don’t move but the handles are still randomised, retracted or smoothed.

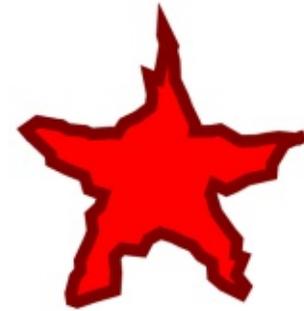
The second checkbox seems less useful to me. It fixes the amount of allowed displacement to 1/3 of the length of the line segment, regardless of the X, Y and Global values. Why this should

be a particularly good idea escapes me. I can understand that there might sometimes be a benefit to having the amount of displacement related to the length of the path segment, but, in that case, I would prefer to have a control to set that factor, rather than have it hard-coded as 1/3 of the segment size.

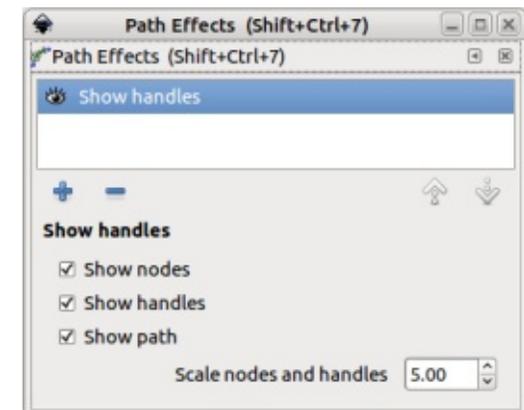
The last checkbox, “Spray Tool friendly”, is a mystery to me. The tooltip suggests it’s “for use with the spray tool in copy mode”, but my own experimentation of using the Spray tool on roughened shapes suggests that it has no obviously useful effect on the result. With this checked, some of my “copies” were slightly distorted compared to their peers, but not by enough to recommend this as a way of producing randomized copies.

So far, I’ve concentrated on using this effect to produce small changes to a path. In practice, an LPE called “Roughen” might be expected to have more dramatic effects in most situations. Returning to my original star shape, increasing the number of path segments, adjusting the X, Y and Global values, and randomizing

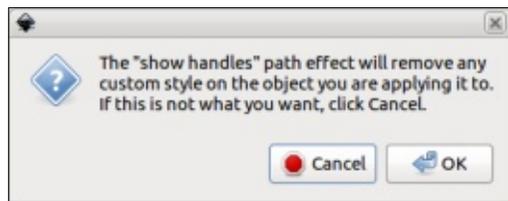
the handles, produces arguably the output most people would expect from this effect.



Having briefly introduced the Show Handles LPE earlier on, I’ll finish this month by delving into a little more detail. The UI for this effect is so straightforward that it barely warrants a mention: the three checkboxes toggle the visibility of nodes, handles, and the path itself, whilst the spinbox lets you set the size of the rendered nodes and handles.



Compared with many LPEs, this UI is a model of simplicity. But what the UI doesn't reveal is that there is a major problem with this effect which you really need to be aware of before using it: it completely wipes out any fill or stroke styles you might have applied to the original path. If your final aim is to render the nodes and handles – as in the images in this article – that's perhaps not so much of a concern. But if you merely want to temporarily see what your chain of effects has done to the path, be aware that turning this LPE off, or even removing it entirely, won't reinstate your original style settings. To be fair, the first time you try to add this effect in each session you are presented with the chance to back-out:



If you press ahead, you'll find that your path is reduced to a thin, black stroke, with no fill. You can subsequently set a fill or change the stroke, but remember that the

output from any LPE is itself a single path (albeit one with sub-paths, in this case), so you can apply only one set of styles to the entire output. In other words, you can't color the path differently to the handles or nodes – not without using multiple copies or clones of the path, at least.

What to do, then, if you do want to use this effect without altering the style of your original path? If you just want to view the results temporarily, perhaps duplicating the original and applying the LPE to the new copy would be sufficient. But if you want the results to hang around a little longer, and therefore stay in sync with any changes to the original, you will have to work on a clone. That might sound simple, but making clones work with LPEs isn't without its problems.

The obvious approach is just to clone the original (select it and press Alt-D). With the clone selected, opening the Live Path Effects dialog will show a message at the bottom saying "Click add button to convert clone" or similar. As soon as you click the "+" button in the dialog to add a new LPE, you'll find that a "Fill between

many" effect is automatically added, and your clone's fill and stroke become unset. I won't go into the details of this effect now (but its appearance in this role has promoted it to the subject of next month's column), but suffice to say that it offers one way to link an existing path into a new LPE chain. You can go ahead and add other effects if you wish – including "Show handles" – but as soon as you try to move the clone to another location, you'll have problems. It tends to jump back to the position of the original path and although there are ways to persuade it to sit elsewhere, the slightest nudge will send it scurrying back to its parent again. I note in a related bug report that the main developer of LPEs has recently committed some improvements to this effect into the Inkscape trunk, so hopefully we'll see this addressed in the next release.

In the meantime, you can use the "Clone original path" LPE that was described in Part 47. In short, the steps you need to perform are:

- Select your original path and copy it to the clipboard.
- Create a sacrificial path to attach the new LPE to. A simple two-node

line will do.

- Add the "Clone original path" LPE to the sacrificial path.
- Click the "Link to path" button in the LPE dialog (the first of the two buttons in the effect's UI).
- You can freely drag this clone wherever you need to on the page.
- Add the "Show handles" LPE to the chain (or, indeed, other LPEs if you wish).

Part 47 also describes a shortcut, using Edit > Clone > Clone Original Path (LPE), but that now also applies the "Fill between many" effect, so, until the issues with it are ironed out, it's probably best to stick with the steps above.

Next month, I'll continue looking at the new LPEs in 0.92, including a closer look at the "Fill between many" effect, and what it can more usefully be used for.



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

Last month, I briefly touched on the macro recorder and using batch files to improve my job efficiency. For the past five years, I collected vertebral motion data using motion capture and pressure pads. Vertebral motion testing is an osteopathic technique for lumbar spine testing. The purpose of this testing is to discern lumbar problems. The lumbar spine is the last 5 segments above your pelvis. If I have low back pain, then one of these segments will be “stuck in an unnatural position.” Working with my primary investigator, I finished processing this data set to create a data warehouse. The warehouse’s sole purpose is to answer research questions related to vertebral motion testing

Luckily for me, I collected the vertebral motion in the same protocol procedures over the past 5 years. The data was collected in a yearly class elective, thus we had multiple student examiners, research participants, and unique findings. However, the data files needed to be renamed to a standardized naming convention. I could use the terminal to rename the files, but I wanted the GUI option. I did not want to blindly rename a file data set via the terminal.

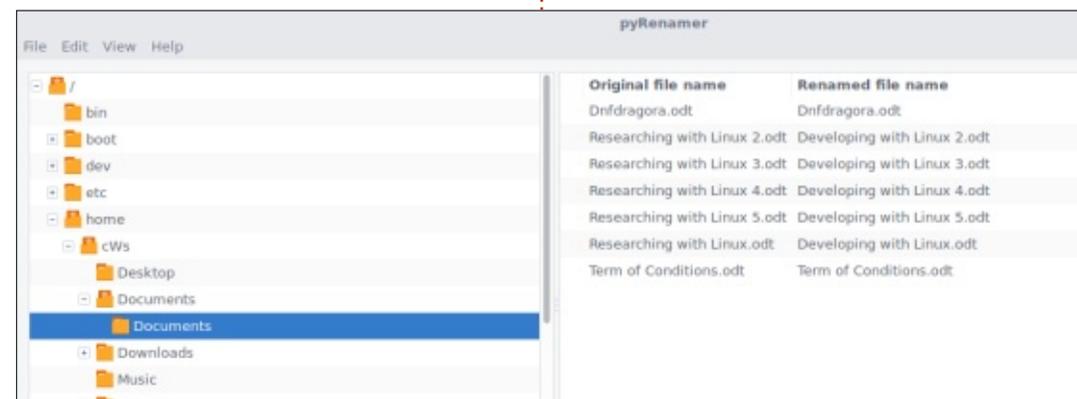
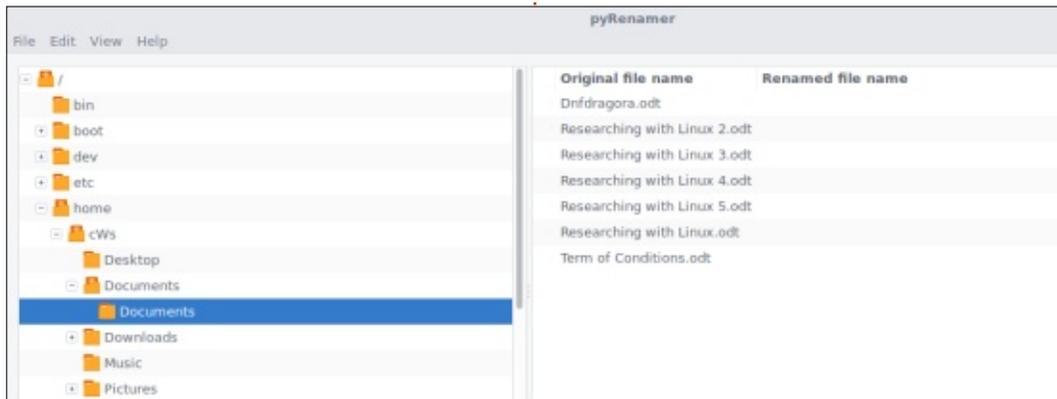
A simple search in the software center offered Krename and pyRenamer. Krename is a KDE desktop app. This app has documentation, but it was not an easy interface. I chose pyRenamer

due to an easier interface for a new user. It worked well and offered a preview pane to ensure quality control.

When you open pyRenamer, a simple interface opens. The first step is to find the folder pathway to the file batch that needs to be renamed. This is the upper left third of the interface. The upper third pane is the preview of what the files will be changed too. The bottom portion is the program command options. The Patterns tab will identify a naming scheme and will automatically change the filenames. If there is one file there you want to name, you can do a manual rename. I did not have images to name, so I am unsure of this tab. I found the easiest and

most useful tabs were the insert/delete and substitutions. I can easily insert or delete words or characters to make a standardized filename.

These are the steps that I applied. I choose the folder pathway first. I then clicked the substitution tab and clicked the replace function. In the example above, I replaced Research with Develop. The preview pane shows the new filenames. If the new filename was off, I could easily change it. By clicking the Rename button, the files assume the new desired names. This app allowed me to safely rename one third of the mismatched data set within 4 hours. This would be approximately 500 files.





As a teacher and author, I get to produce quite a lot of text over the year. Some of it could be considered creative writing (of sorts), and a large chunk is either teaching material, or in the technical realm. In any case, I do consider myself something of an advanced user on this topic.

Writing has long been one of the most direct applications of personal computing, as anybody who has had experience with using a manual typewriter -and correcting his or her typing errors- can relate to. In this article, I would like to review some of the various possibilities for the serious writer on Ubuntu or a similar system, in cases ranging from simple texts to larger documents and more complex technical publications. We will start out by reviewing the online editors, then going on to complete software suites and finally simple text editors.

ONLINE OFFICE SOLUTIONS

One may appreciate online

office packages that are accessed through a browser to a greater or lesser extent, but the fact is that in this 21st century they are here to stay. The main, oft-cited advantages include ease of installation -i.e., no software installation at all-, and having your documents directly accessible from various platforms. This can be a point when the edition of file formats such as Open Document Text format (ODT extension files) is not always as well supported as they should on mobile operating systems. In addition, document sharing with other users is greatly facilitated, and since documents are usually updated continuously over the network, there is not much cause for worry if the lights go out or the computer suddenly decides to die. Most work done up to the last few words should have made it up to the great hard drive in the cloud.

However, on the flip side there are also several drawbacks. If security is a concern, then using such online services or not boils down to a decision on whether or

not to trust the organization behind them. There are also more technical questions that can arise. Since these products are based on a relatively weighty JavaScript application being interpreted inside your web browser, working with long documents or documents with complex formatting and structures, is not an option. Even shorter documents, up to say 10-12 pages in length, can tax the available memory on many computers. Version control may become an issue, especially when various people collaborate on the same document without thinking of making a point backup copy from time to time.

In my personal experience, the use of such platforms is limited to relatively short documents that will ultimately be shared with others. Since most platforms, such as Apple iCloud, Google Drive and Microsoft Office 365 offer a similar basic functionality, the specific criteria I use to choose between them is the preference of the intended recipient. For instance, I am typing this article in Google

Drive (<https://drive.google.com>), because this works for our esteemed Editor, Ronnie. When working with users of Apple hardware, iCloud (<https://www.icloud.com/>) can be used to make shared documents appear directly in their applications both on computers and handheld devices. Both of these services work in full-featured browsers such as Firefox or Chromium, though your results may vary with lighter browsers or systems with little RAM.

For business applications, there are solutions such as OnlyOffice that give the possibility to have the documents on a company's own server. Retaining physical ownership of the documents could be seen as preferable to online services hosted by others.

For more hardcore keyboard bashing, I will avoid online solutions altogether, preferring to have a local copy of my files that I can edit on my computer, and then perhaps make a copy of in some cloud-based storage.



OFFICE SUITES

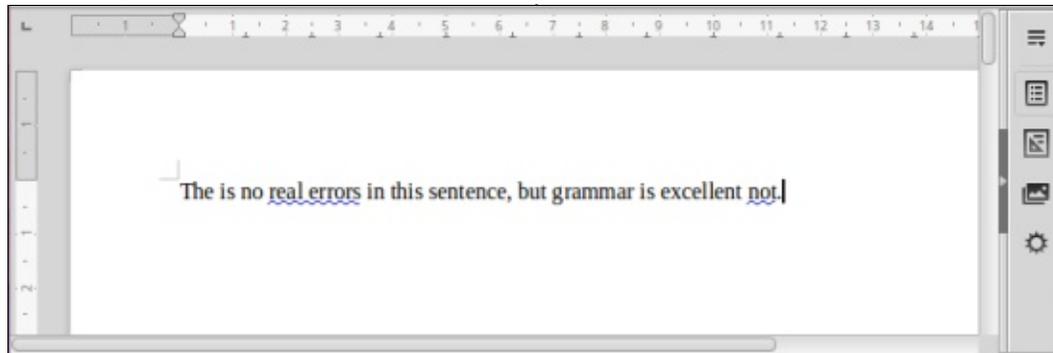
LibreOffice, and before it, OpenOffice or even Star Office, have long been the go-to office suites for users of GNU/Linux.

There are some points in favour of these applications. One is the ease of conversion to other formats, such as Microsoft's DOC and DOCX. In general, one must admit that text documents are rather well converted to and fro, with perhaps a bit of a caveat regarding DOCX. However, users of Microsoft Office seem to be happy when receiving files in the DOC format, so all is well there. Another is the relative lightweight nature of OpenOffice, when considering it in its due perspective as a full-featured office suite. For many applications, and even editing long 100+ page documents, one can get by with only 2 GBytes of RAM and a rather wimpy CPU, which would be close to impossible if using an online writing solution. Naturally, having more RAM and processor power under the hood always helps, especially when using plugins.

Regarding plugins, one of my

favourites is the LanguageTool grammar checker (<https://www.language-tool.org/>). Available both as an online service and as a plugin for several Office suites, it comes in the form of an OXT (OpenOffice software extension) file that can simply be opened to install the plugin into either Open- or LibreOffice. It does need to have a Java runtime available though, and can slow down document editing slightly on older computers. Spelling errors are marked as usual, with a wavy underline in red, while grammatical errors such as agreement or word order are underlined in blue.

At the time of writing, the default version of LibreOffice in Ubuntu 16.04 LTS and Linux Mint 18.2 is 5.1.6, which works well but only has the default toolbar layout. More recent versions of LibreOffice, such as version 5.4.0, are currently available from the



project's website (<https://www.libreoffice.org>), and have an option to choose a "ribbon toolbar" that may be more familiar to users of Microsoft's current offerings. To install the most recent version, one begins with a 267 MByte download in the compressed .TAR.GZ format. Once downloaded, it can be installed alongside any existing versions of LibreOffice, acting as administrator:

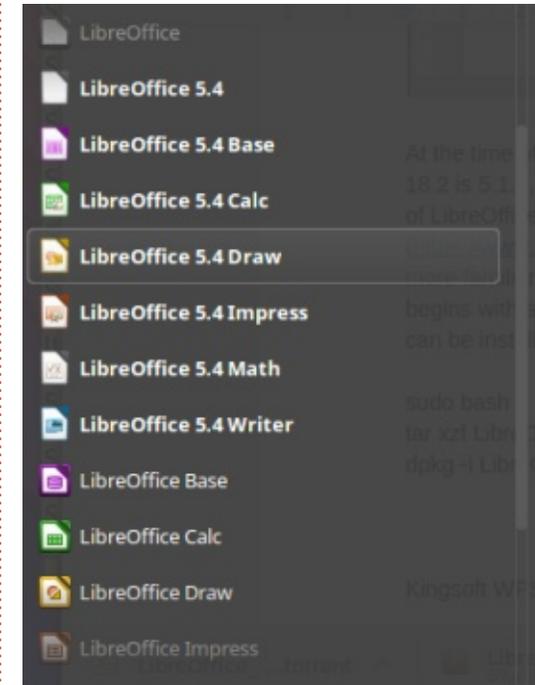
```
sudo bash
tar xzf
LibreOffice_5.4.0_Linux_x86-
64_deb.tar.gz

dpkg -i
LibreOffice_5.4.0.3_Linux_x86
-64_deb/DEBS/*

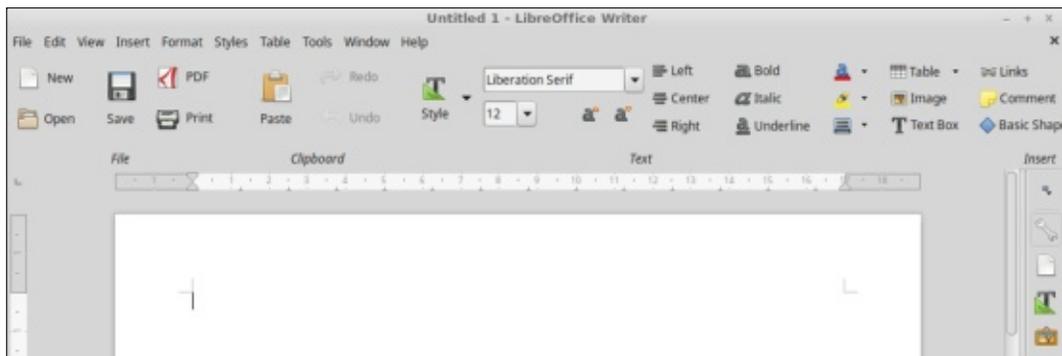
rm -r
LibreOffice_5.4.0.3_Linux_x86
-64_deb
```

Naturally, these commands would be for version 5.4.0.3, and

would need to be tailored to suit the version actually downloaded. Once installed, new icons for the suite's different applications appear in the system menus marked as version "5.4", alongside the existing ones with no marking.



Once installed, to activate the "Notebook toolbar", one navigates to Tools > LibreOffice > Advanced, and enables "Enable experimental features". LibreOffice then needs to be restarted, upon which there are several options available under View > Notebookbar. "Contextual groups" and "Tabbed" are the options that seem to work best,

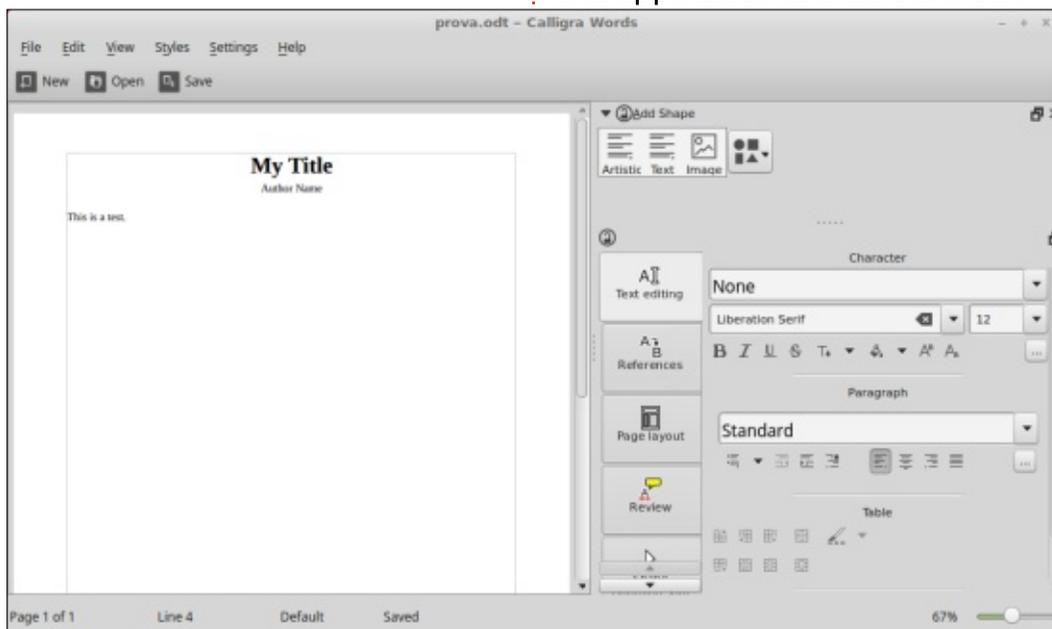


with the first being the most similar to Microsoft's offering.

However, one should bear in mind that this is exactly what is said on the label: an experimental feature. Some options, such as regaining visibility of the menu bar, can become quite challenging if one is not accustomed to entering the advanced configuration and editing LibreOffice configuration strings directly. For a more polished office suite, that is uncannily similar to Microsoft's own and handles document formats very well indeed, the Kingsoft WPS Office can be downloaded from <http://wps-community.org/download.html>. However, there have been some concerns about the project's continuity arising from conflicting messages seen on the Web, the fact that licensing is not open-source, and the lack of support for

the open ODT format. So it may not be for everyone.

The predominance of LibreOffice and OpenOffice in the GNU/Linux distributions' default application sets can make one lose track of other, less known, options. One text editor that is often unjustly overlooked is that of the Calligra office suite, linked to the



Qt libraries and that used to be distributed by default in Kubuntu. It can be installed as a complete suite, or individually as separate applications. Installing just the text editor can be done via:

```
sudo apt install  
calligrawords
```

The interface is very simple, with your text to the left and the toolbars to the right. All the most used options are immediately available, and many small modifications can be performed just by using the mouse wheel. Files can be written in the ODT format, and shared with users of LibreOffice. The general feel of this application is that it is much

more reasonable in terms of memory and processor usage than a complete office suite. The latter would need to load a large library of shared objects each time the suite is launched, while a smaller, more focused application such as Calligra Words can dispense with some of this overhead.

On the flip side of the coin, Calligra's offering does seem to have some trouble with text antialiasing, and some fonts may appear less well drawn on screen with Words than with another office. This may be less of an issue for users of KDE's Plasma desktop, once font antialiasing is turned on inside the desktop manager.

WRITING WITHOUT A COMPLETE SUITE

In some cases, it may make sense to write text on an Ubuntu computer without using a complete office suite. Specifically, computers that will be used mainly for writing, and writing text without any special needs in regards to formatting, are good candidates for implementing simpler solutions.

MY OPINION

In the first place, one could ask if a complete word processing application is really necessary. Depending on the work to be done, a simple text editor such as gedit, xed or kate (the default text editors that come with Ubuntu Gnome, Linux Mint and Kubuntu) could very well be sufficient to bang out even a rather long text, saving it as a pure text file with extension TXT which can then be read by just about any possible destinee. Modern text editors have spell checking if the hunspell or myspell language packages are installed. They also use up very few resources, both in terms of processor power and memory, and text files are positively minute compared to rich files such as ODT or DOCX.

This would, in fact, be the solution I would recommend to someone who is trying to focus on creating a long text: just open up a text editor with no frills and possible distractions, put the computer into airplane mode, and

start writing. A similar approach is advanced by several “distraction-free” text editors that have some options for text format such as bold text and the likes, but also go full-screen filling in the unused areas with a neutral color. The end result is that we see just text, and can therefore concentrate more easily on what we are doing. One of these is focuswriter, which has all the basic options, can save files in the ODT format, and is easily installed from the repositories:

```
sudo apt install focuswriter
```

Moving the mouse pointer up into the top border of the screen has a standard menu system drop-down, that can be used to save files, exit the application, or apply text formatting.

Without going to the length of installing a specific application, many of the Ubuntu derivative distributions with an aim to lightweight computing -such as Lubuntu- come with the abiword

text editor and lightweight word processor. Here, we also have basic text formatting and the possibility to save in ODT file format in a rather lightweight application, that integrates nicely into a Gnome or Cinnamon desktop. Spelling correction is also available, with the same packages as a simple text editor. However, it should be noted that abiword works well basically with pure text. I have seen problems arise in the past from advanced text positioning or the inclusion of graphical elements, so if interested in such an application, a few simple tests to make sure it has precisely what you need would probably be a good idea. Even if abiword is not installed by default on your system, it is quick to install either using a graphical software

manager, or through the command-line:

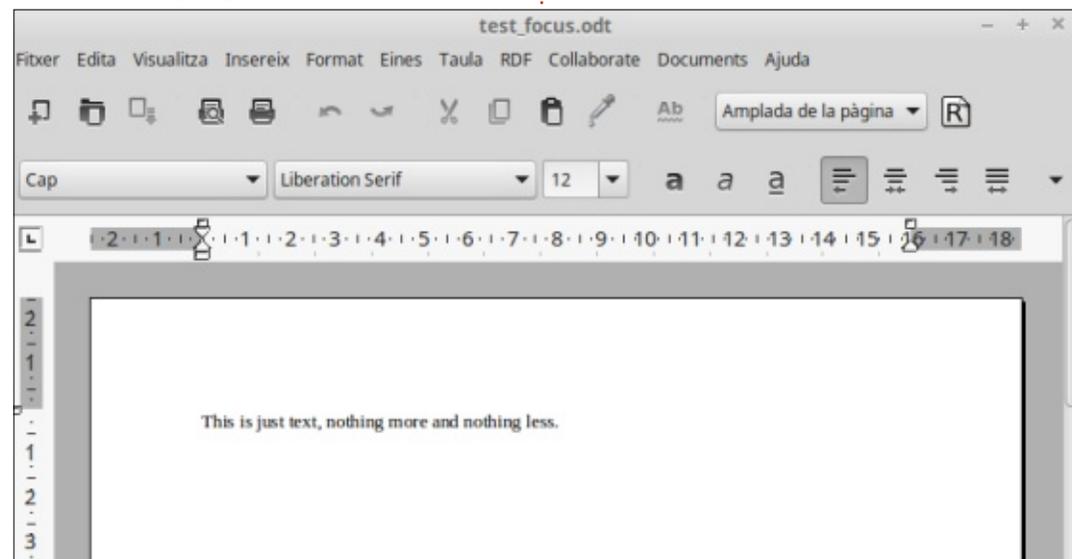
```
sudo apt install abiword
```

In an entirely different order of ideas, simple text editors can also come in handy when formatting very complex documents containing mathematical equations or other scientific visual elements. In such cases, the goto way of doing things is by using the LaTeX text formatting language, available in Ubuntu with the texlive series of software packages. This would allow one to input

```
$ CH_4 + 2 \cdot O_2  
\rightarrow CO_2 + 2 \cdot  
H_2 O $
```

in order to obtain

This is just text, nothing more and nothing less.





This can be quite a time-saver, especially with more complex equations.

Referencing bibliography and making footnotes is also greatly facilitated. Graphical LaTeX editors are also easily available to assist the newcomer who is still struggling a tad with the syntax, such as `texstudio` or `kile`. However, I will not insist on this point since readers who really have this specific need will probably already be equipped with what they require.

As a final note, the reader may have noticed the examples presented in this article have been mostly in English. Most of these writing environments have worked well for me in other languages and writing systems, especially `OpenOffice` and `LibreOffice`, which seem to make a point of catering to the needs of the languages of

Asia and right-left writing systems, among others. Once the appropriate text input manager -ibus, or the more recent `fcitx` is set up correctly, any locally-installed editor should handle languages.

Things may be a little more complicated in online web-based editors. I have run into problems with such in the past, even with technically less complex niggles such as being unable to input accentuated characters. Quitting and restarting the web browser has often been a solution in such cases. A second point in favour of locally installed applications is when editing complex documents that contain more than one writing system. In such cases, online editors tend to show their limits since quickly switching between languages is not as well supported as inside the operating system and desktop manager.

With this short, and very possibly incomplete, review of the

options for text editing and general writing with Ubuntu and its derivatives, we can see that there is quite a mature ecosystem of applications in place that can be used for the purpose of writing. Creative writing and even the basic needs of technical writing are actually well catered for. Nowadays, more specific needs such as dictionaries and thesaurus can probably be better served through online sources than through specialized software. Thus, all that we really need is a web browser in addition to the basic writing software.

Several users I know have been convinced to switch to GNU/Linux by the fact that a default installation of Ubuntu or Linux Mint contains basically all they need to become immediately productive in a writing environment: a browser such as `Firefox`, an email client such as `Thunderbird`, and an office suite such as `LibreOffice` is really all such a “normal” user could need.

Perhaps the main argument that has convinced them to switch to GNU/Linux in general, and a derivative of Ubuntu in particular, is the ease of use. Most writers tend to want to focus on their own work, naturally enough. They have little time for what, for them, is a bit of a nuisance: needing to procure a (rather expensive) office suite in addition to their main operating system, installing an antivirus software or needing to become aware of multiple alarms and what are in essence commercial advertisements built into an operating system all become something of a hassle they really do not wish to have to handle. The strength of the Ubuntu ecosystem is to help them simplify their lives, which is always nice.



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).

$$\rho \frac{d}{dt}(\vec{u}) + \rho \Delta(\vec{u} \otimes \vec{u}) = -\nabla p + \Delta(2\mu D - \frac{2}{3}\mu \delta_{i,j} \Delta \vec{u}) - \rho \cdot g$$



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.





About a year ago, our KODI server ran out of space on the 3TB hard drive we use to store Blu-ray media. I agonized a month or two over what to do, before breaking out and buying another 3TB drive. With the additional 3TB drive, our server now had:

- 3TB - boot drive, blu-ray TV and movie storage (filling quickly)
- 2TB - DVD movie, DVD TV, music, and picture storage
- 3TB - blu-ray movie storage (98% full)

At the time, the additional 3TB drive seemed like a good idea, but I really didn't like the idea of having the same media (Blu-ray) on two separate drives. I've split media before in the form of photographs. Organizing 10 years of photographs stored on 20 DVDs is a nightmare I didn't want to repeat.

Last month, I celebrated getting closer to the big '50', and, as part of that celebration, got an 8TB Seagate ST8000VN0022-2EL drive. When looking at drives, I

seriously considered a 6TB drive since the 8TB was significantly more money, but I'm happy I chose the 8TB since there's a bit of room to spare.

I had an LGA 1156 motherboard and i3 processor that were a bit newer than the LGA 775 and Core 2 Quad processor our media server has been running for the past couple of years. Although the LGA 1156 isn't capable of the SATA 6Mb/s speed of the new 8TB drive,



I figured the board and CPU would be an improvement over the current setup. Before swapping parts, I needed a CPU fan and a mount for the solid-state drive I intended to use as a boot drive. I picked up a Deep Cool GAMMAXX 300 cooler and generic SSD mount.

When I went to mount the 8TB hard drive, I ran into a problem. Most hard drives have 3 mounting holes on each side, two at each end and one in the center. If I used the

home theatre case I wanted to use, it would have meant mounting the 8TB drive using only 2 screws. I removed the old motherboard from the HTPC case and put the LGA 1156 board and i3 CPU in (I installed the Deep Cool CPU cooler first), added 4GB of RAM and the SSD. First POST (Power On Self Test) was successful, and I was able to boot to the multiboot USB key I created to install Linux.

Unfortunately, no matter which distribution I tried to install, the system rebooted a few seconds after the distribution started to load. I'd previously used the DDR3 RAM in another system, same for the power supply (I checked it anyway and it had steady voltage). I checked the CMOS battery and it registered over 3 volts. It seemed like the problem was either the CPU or motherboard. This is one of the problems of buying used components, damage isn't always visible and testing isn't always possible.

Luckily, I still had the LGA 775 board and Core 2 Quad. The HTPC

case was a bit of a pain so I put everything in the Corsair SPEC-01 case our KODI server had previously lived in. Mounting the 8TB drive was still a bit of a challenge. The SPEC-01 case has a plastic caddy for drives. That caddy has 6 plastic bits that hold the drive in place (3 on each side). I had to file the middle bits down to mount the 8TB drive, but, once it was in the caddy, it was a lot more solid than it was in the HTPC case.

I chose to install Linux Mint 18.2 XFCE because I've been using it on a couple of machines lately, and I really like it. Installation went a lot smoother on the Core 2 Quad-based system. After the installation, I updated the system and installed the proprietary NVidia drivers for the fanless 1GB PCIe video card I'd previously been using. On reboot, I ran into a bit of an issue, the NVidia card seemed to think our 40" LCD TV was a 72" variation of the same TV -- as a result I couldn't even read the text "home" below the home icon. I rolled back to the nouveau driver and things looked fine. I tried one more time with the NVidia driver, and this time it seemed to display text fine.

Next, I disabled the screensaver, installed KODI, and set KODI to start on first boot. Although I could use the server to rip our DVD media, I prefer to rip media on my main desktop system (which has a faster processor and a Blu-ray drive). I normally use Filezilla (via SSH) to transfer media over. Because I'm often only transferring a few DVDs or one Blu-ray, it usually doesn't take too long, but I knew that I was facing the monumental task of transferring over 5TB of data on the 3 drives to the single 8TB drive, transferring from another system wasn't going to cut it.

With the Linux installation done, and KODI installed, I shut down the system and attached the 8TB hard drive. On the next boot I made a folder to mount the drive:

```
sudo mkdir /mnt/media
```

I used blkid to determine the UUID of the 8TB drive, and used that information to add the mount point to /etc/fstab:

```
UUID=8b353bdf-9481-4779-a2c9-59e430ef0596 /mnt/media
ext4
defaults,errors=remount-@o
1
```

On reboot, I discovered I couldn't write to the drive because the mount point is owned by root:root. I really didn't want linuxuser:linuxuser to have permission for the whole mount point, so I made some sub-directories off the mount point:

```
sudo mkdir /mnt/media/Movies
```

```
sudo mkdir
/mnt/media/Movies/DVD
```

```
sudo mkdir
/mnt/media/Movies/Blu-ray
```

```
sudo mkdir /mnt/media/Music
```

```
sudo mkdir
/mnt/media/Music_Videos
```

```
sudo mkdir
/mnt/media/Pictures
```

```
sudo mkdir /mnt/media/TV
```

```
sudo mkdir /mnt/media/TV/DVD
```

```
sudo mkdir /mnt/media/TV/Blu-
ray
```

At the top level, there are 5 directories: Movies, Music, Music Videos, Pictures and TV. I created sub-directories under the Movies and TV to separate lower quality DVD video from Blu-ray video. I then changed the ownership at the top level of each directory, making sure to include the -R (recursive)

switch so all the sub-directories were owned by linuxuser:linuxuser:

```
sudo chown -R
linuxuser:linuxuser
/mnt/media/Movies
```

```
sudo chown -R
linuxuser:linuxuser
/mnt/media/Music
```

```
sudo chown -R
linuxuser:linuxuser
/mnt/media/Music_Videos
```

```
sudo chown -R
linuxuser:linuxuser
/mnt/media/Pictures
```

```
sudo chown -R
linuxuser:linuxuser
/mnt/media/TV
```

SSHing into the server, I was able to write (copy files) to each of the directories off the media directory, but not the /mnt/media parent directory.

Now, it was finally time to start copying media over. I have a hard drive "toaster" connected to my main workstation. My first thought was to copy the smaller media by putting the 2TB drive in the toaster and sending the files via SSH/Filezilla. The first DVD was going to take in excess of 8 minutes to copy. Thinking about the Blu-ray media, I knew this just wasn't going to work, so I tried

hooking the toaster up to the server itself and copying the files via USB. This really didn't work much better, so I ended up installing each drive in the server and copying directly drive to drive - which resulted in about a 3x to 6x performance improvement (peaking at 190 MB/s at one point). It still took the better part of 2 days to copy all of the media over, though some of this had to do more with the media being spread out over the drives than anything else.

When I got the 8TB drive, I wasn't sure it would work at all with the ancient LGA 775 motherboard. Before installing the drive in the Core 2 Quad, I tested and partitioned the drive on my newer FM2-based system (which has an A8-5600K APU). In fact, the first 8TB drive wouldn't show at all in the FM2 system's BIOS, nor in Windows or Linux, though when I took it back to the retailer they claimed it worked in their system. Since I was well within the warranty period, they gave me a credit for the store. I picked up an identical drive (which had dropped in price those few days), and ended up with a bit of credit left over. That credit ended up going

towards the CPU cooler (which is still in the HTPC) and SSD mount (which is also in the HTPC since the SPEC-01 can mount an SSD in any of the trays). The second drive was recognized by all systems I plugged it into - odd because it was identical to the other 8TB drive.

I'd still like to upgrade our KODI server to take advantage of the SATA 6Mb/s speed that the 8TB drive is capable of. At this point, I'm thinking of an AM4 board and a low-end CPU like the Ryzen 3 1300X. With 4GB DDR4 RAM, it would come to approximately \$320-\$380 CDN depending on the motherboard and RAM. Christmas is only 2 months away, so those plans will probably wait until some time in the new year.

Next month, back to more KODI add-ons, tips and tricks.



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/>.



In October, System76 plans to release (at the time of writing) their Pop!_OS distribution. I've recently installed and tested the beta in VirtualBox. What follows are my opinions as to their execution, and possible reasons why you would choose Pop!_OS over Ubuntu or some other distribution.

QUICK SUMMARY

Pop!_OS is a distribution built upon Ubuntu, with an emphasis on creative endeavors. It offers access to the Pop Store, which includes a variety of creative software for creating and editing photos, websites, designs, or CAD tasks.

WHAT IT DOES WELL

The installation was just as smooth as Ubuntu, and it seems to have less software pre-installed than Ubuntu (though I haven't recently checked the current Ubuntu LiveCD environments). In my case, this is a positive thing, as I prefer to install only my own

software, and avoid as much extra bloat as possible.

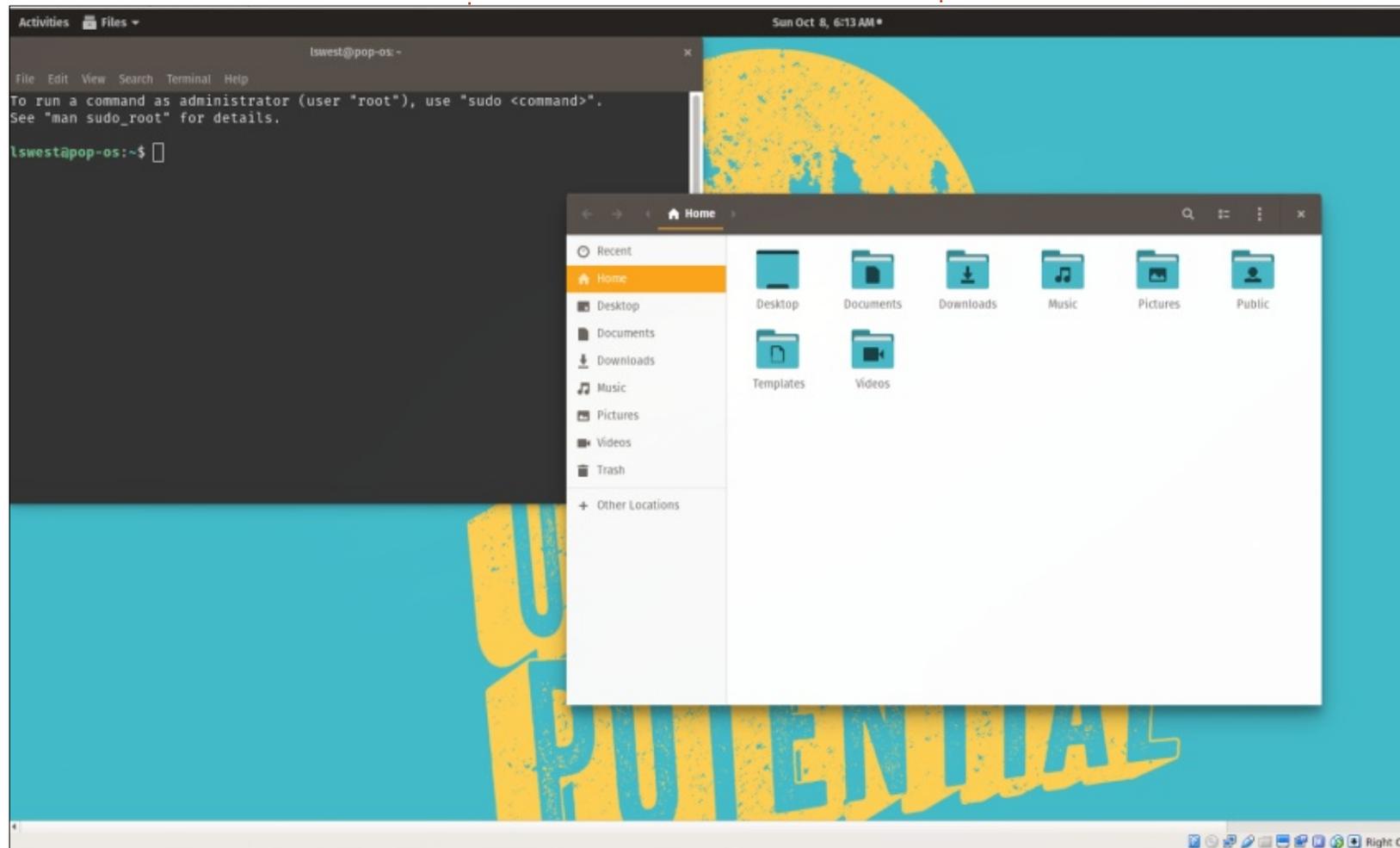
I also find the theme they use for Gnome Shell to be easily legible, and sufficiently different that you could recognize it at a

glance.

THE DOWNSIDES

It's still based on Ubuntu. So if you prefer a different distribution (Fedora, Arch Linux, etc) over

Ubuntu, you'll probably still not be sold on Pop!_OS I also noticed a few bugs that I would imagine will be fixed in the final release - such as the installer icon being partially covered by the menu bar at the top of the screen.



REVIEW

Besides the creative software in the Pop Store, I don't see many additions to the repositories in general - such as the Firefox Developer Edition. This is particularly odd - considering they list web design as a creative pursuit. While not terribly surprising, it does seem like a missed opportunity.

SHOULD I SWITCH?

I don't see it bringing anything

terribly new to the table. You can replace the Pop Store with extra PPAs, or by using a distribution with more expansive repositories (such as Arch Linux with the Arch User Repository). And the theme could easily be replicated in any existing installation. Last I checked, compatibility on devices was pretty good for almost all distributions, so it's also not bringing new drivers with it. That being said, if you like Ubuntu but want more creative software accessible in the official repositories, you may like Pop!_OS.

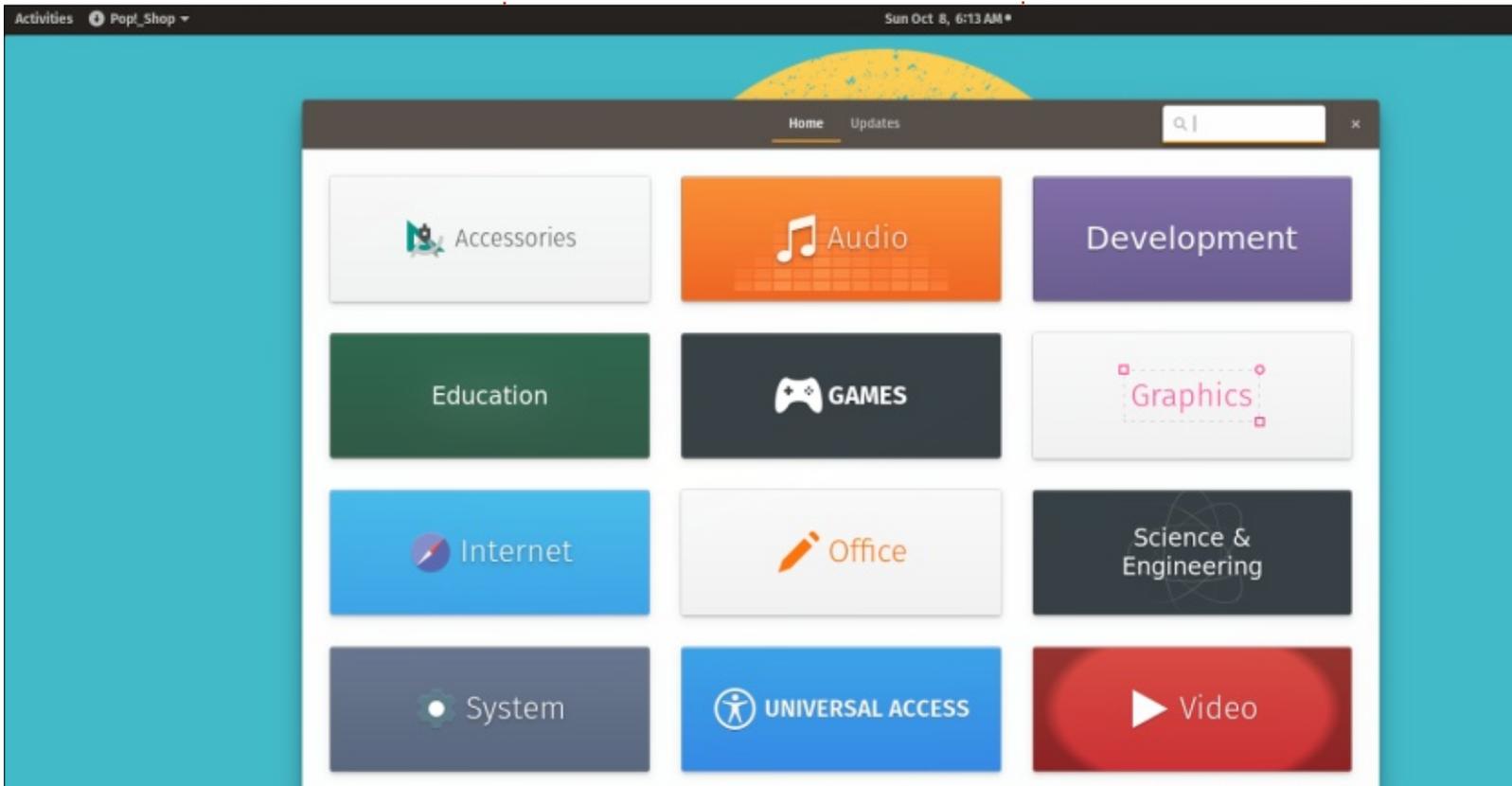
I'd highly recommend seeing if you can find a thorough listing, or checking the store on a liveCD, before taking the plunge to install it.

MY VERDICT

If you're a happy user of some other form of Linux, I don't see any benefits from this distribution that would outweigh the customization and work that's gone into building your existing system. Personally, I prefer the flexibility and current

versions of software afforded to me by a rolling release distribution (specifically, Arch Linux or its derivatives). If you don't mind giving up the ease of access to new software for more extensive testing and stability, then you may want to consider this distribution if you do creative work.

As with many things in the Linux ecosystem - it's about personal preference. If you see something you like about Pop!_OS that will make your life easier (in the event of a re-install, for example), then definitely consider it. If you prefer something else, stick with what you like. The very nature of Linux allows you to typically replicate anything you may find in one distribution - so feel free to be inspired!



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.



Last spring, I decided that faster Internet would be worthwhile. DSL2 provides up to four times the speed of regular DSL, so it was the obvious choice.

My household has only four people, but we use 15 devices, and all of us enjoy watching videos at various times. Stepping up to DSL2 would only add \$10 (Canadian, including tax) to the bill, and Internet access would still cost less than our land-line telephone.

A guy from the phone company had to make some changes, and once he did that, our old DSL modem didn't work at all. Luckily, my ISP sent us a new modem/router pronto. It worked, and Speedtest showed that our download and upload speeds were actually faster than the 25/10 mb/s the ISP advertised.

The faster upload speed is actually relevant to me. I sometimes run a remote desktop into my home PC from a remote site, and the 1 mb/s of DSL meant that it was not very smooth. Ten

mb/s fixed that in a big way!

Then the problems started. After anywhere from 6 to 48 hours, the router would completely crash. The only solution was to cycle the power, and re-establishing the connection took from three to five minutes. That's not something you want to happen in the middle of an online banking session. As well, some computers (running Mint Mate) did not automatically reconnect, so they had to be rebooted.

The problem got worse, until it was happening six or seven times a day. I called my ISP, Velcom, a small regional ISP near Toronto: "this is intolerable."

That got a welcome response: "yes, we understand. We have changed brands, we'll send you a new modem/router, then you return the old one to us." They sent it by Canada Post, which took five days to move the package about 60 km.

It was worth the wait. The

Technicolor TG588v required the expected amount of setup, and then worked flawlessly. One quirk was that the setup page is at 192.168.1.254. I'm used to 192.168.1.1.

It's a few percent slower than the other unit, but still well within the range. We can all watch videos at the same time, with no stuttering, and web pages appear immediately. System updates download faster than ever. I haven't downloaded a new Linux ISO yet, but I'm confident that it will take just minutes.

DSL2 via Technicolor TG588v:



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





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.



UBUNTU ABANDONS SOME USERS WITH SWITCH TO 64-BIT SYSTEMS ONLY

I was disheartened to read and hear that Canonical is dropping support for 32-bit systems. I have a perfectly good HP Touchsmart PC, and it's running quite fine, thank you, on Ubuntu 16.04. I am not planning to buy a new PC unless it either breaks down or I happen to get a bonus to buy a new 64-bit machine. I am a computer tech and 'inherited' this PC by doing some work on a friend's new one. I popped in a new hard drive and voila! Works smooth and fast. At this point, there is no reason to buy a new one. (I don't play fancy games on it). The problem with dropping support for 32-bit systems goes far further than Canonical. It won't be long before new software folks will also drop 32-bit support. I'm most worried about security updates. Perhaps things will change by 2021. I am pretty sure this current PC I have will still be running 16.04 even after that date. I mean why fix if

it's not broken? I am thinking this is a case where the majority decides for the minority, and the minority has no voice. It will be a shame if I have to leave Ubuntu for either another flavour, or perhaps another version of Linux altogether. Ubuntu introduced me to Linux, weaned me from Windows... I thank Canonical for that. Just sad to see them leave some users behind and, for some of us, it feels like we are being kicked out of the community.

Brian Bogdan,
Saskatoon, SK

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ubuntuforums.org/forumdisplay.php?f=270

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

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

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



Q&A

Compiled by Gord Campbell

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

Q How can I identify duplicate files?

A (Thanks to **ajgreeny** in the Ubuntu Forums) Try fdupes. After installing it, view the man pages.

Q I plan to build a high-performance PC. Here are the specs.... (Including only a rotating drive for storage.)

A Add a small SSD for the OS, programs, and config files! There are a few easy ways to have media files on the rotating drive.

Q Occasionally I need to send a fax. All I've been able to find have been "winmodems" requiring elements of the the Windows GDI to work.

A These days, some winmodems should work just fine in Linux. Might tax your Google skills....

There are also websites which will send a fax, so you don't need fax hardware at all.

Q Will there be a 32-bit 17.10?

A There will not be a 32-bit Ubuntu 17.10 iso, so you will not be able to do a fresh install of 32-bit Ubuntu 17.10

However, if you have an older 32-bit install, you will be able to upgrade it to 17.10, and to 18.04 when it becomes available.

Also, the other flavors (Lubuntu, Xubuntu, Ubuntu Mate, Kubuntu) are not affected by this decision. For each of them, the team behind the distro will make its own decision. Most people with 32-bit computers are already using Lubuntu, Xubuntu or Ubuntu Mate.

TOP QUESTIONS AT ASKUBUNTU

* Does sudo su create a child terminal?

<https://goo.gl/mvJpWs>

* If I want 8GB swap, am I supposed to select 8000MB or 8192MB when selecting size?

<https://goo.gl/BU2QTV>

* How to use `cat` to see the top of a very long file?

<https://goo.gl/r5hSC7>

* Pacman's equivalent in Ubuntu

<https://goo.gl/UK9K86>

* What's the difference between the different rename commands?

<https://goo.gl/m3Ze6t>

* How do I exit the systemctl status command's output?

<https://goo.gl/jNQPdP>

* Why is there a /bin/echo and why would I want to use it?

<https://goo.gl/FSEPQE>

* Can't type "|" (vertical pipe)
<https://goo.gl/xn5ezR>

* Get UUID of / filesystem from script

<https://goo.gl/JFUP82>

TIPS AND TECHNIQUES

RSYNC AT LAST

As promised, here is how I set up rsync to back-up my system. I based my approach on the tutorial at howtogeek.com.

I have a small file server on my network, which has lots of space to back up the home folder of my daily driver. (I boot from an SSD, and all my media files are on a magnetic drive. I'm really just backing up configuration files and a few local files.)

Reading ahead, it looks like my eventual setup will benefit from using SSH with keys rather than a password, and that in turn will be



easier if the server has a static IP address. Fortunately, I had previously configured my server with a static IP address.

If I had needed to set up a static IP address, I would have set up a DHCP rule on my router, "if this MAC address appears, give it the IP address 192.168.1.9." The MAC address can be obtained using the `ifconfig` command, and looks like this: 00:24:1d:84:34:c1

I found a tutorial on setting up SSH with keys at [digitalocean.com](#). I was astonished to learn that all it took was two commands, then I had ssh access to the server -- without ever touching the server's keyboard.

The two commands:

```
ssh-keygen -t rsa
```

```
ssh-copy-id gord@192.168.1.9
```

I had to answer a few questions, mostly taking defaults or saying "yes".

Back to [howtogeek](#). My first deviation from [howtogeek](#) is use of `rsync`'s `--delete` switch. If I accidentally delete a file, I want to

preserve the backup copy, so no --delete for me. I had previously created a folder called `Public`, so the backup command became:

```
rsync -av -e ssh /home/gord  
gord@192.168.1.9:Public
```

The final step was to automate the backups. I had never set up a cron job before; [howtogeek](#) spelled it out. The line I put in crontab is:

```
30 3 * * * rsync -av -e ssh  
/home/gord  
gord@192.168.1.9:Public  
>backup.txt
```

`Rsync` automatically does incremental backups. Perhaps once a month, I would prefer to do a full backup. My plan is to set up a `Public2` folder, and switch to it in the crontab. Once I have a full backup in `Public2`, I can clean out `Public`, and switch back to it next month. There may be a more elegant way to do it using an `rsync` parameter, but I know this will work.

You may notice that I directed the output from `rsync` to a text file. My first full backup took 44 minutes to back up 3.3 GB of data. (My file server uses a slow Wi-Fi

connection.) It turns out that I don't need backup for most of it, files in the browser caches and the like. So how do you exclude folders? [Thegeekstuff](#) had a tutorial. For the greatest flexibility, I wanted to have a file listing the folders to exclude. The `rsync` parameter is:

```
--exclude-from 'exlist.txt'
```

Where `exlist.txt` is a file listing the folders (or individual files) to exclude. For example, the line:

```
.cache
```

excludes that folder and all folders below it.

In summary, this job took a lot less effort than I had expected -- and a lot fewer commands. I not only learned about `rsync`, but also `ssh` and `cron`. Not bad for a couple of hours of work!



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



Many games we tend to play require lots & lots of hours and dedication, but sometimes you need to play a game just for a few minutes – to kill time, or maybe to relax & take your mind off whatever is causing you stress.

That's how I found Pac-Man 256, by looking for a game that I can play for 5-10 minutes at a time, and then get back to whatever else I've been doing. However, I was delighted to find that although Pac-Man 256 is such a game, it's also the type of game that can suck you in for a couple of hours at a time.

Anyone who's played any of the games from the Pac-Man series will have an easy time playing this game. However, this isn't your father's Pac-Man but rather more like Pac-Man on steroids. Pac-Man 256 was co-developed by 3 Sprockets & Hipster Whale, and published by Bandai Namco Entertainment. Pac-Man 256 was originally released as free-to-play for Android & iOS on August 2015, but was later released for a small

price & with additional features for most other platforms, including Linux, on June 2016.

Pac-Man 256 is an endless running video game which apparently was inspired by the original Pac-Man's Level 256 glitch, which was a bug in the internal level counter when you reached level 255 that made it impossible to progress to level 256. When this happened in the original game, the bug would cause the right hand part of the screen to corrupt with random symbols & tiles thus rendering half of the screen

unplayable. This glitch has been very creatively incorporated into Pac-Man 256 by making the same thing happen to the bottom of the screen whenever the player gets stuck at the bottom. This has been a very fun game to play, and, for the low price of \$4.99 on Steam, it is highly recommended.

The point of the game is simply to stay alive while you travel through an endless maze, while you ditch the ghosts trying to kill you, and while, at the same time, you try to not get caught up in the bottom of the screen 256 glitch.



You can use either a keyboard to play the game or a game-pad's joystick to navigate your way through the maze. Rather than go through the similarities between this game and the original one, let's look at what makes this game different, and, in many ways, more entertaining, than the original game. For starters, there's the glitch.

The way the game is played makes it so that, in a way, you're supposed to continually keep going up as the maze itself is slowly rolling upward. Although you're really free to go anywhere, if you go toward the bottom of the screen and stay there for a considerable amount of time, the bottom of the screen begins to corrupt much like the original 256 glitch, except that this is no glitch but rather more of an obstacle that needs to be avoided. The thing to do is simply to try and keep moving upward at all times, but, due to the ghosts chasing you around, that's not always ideal.

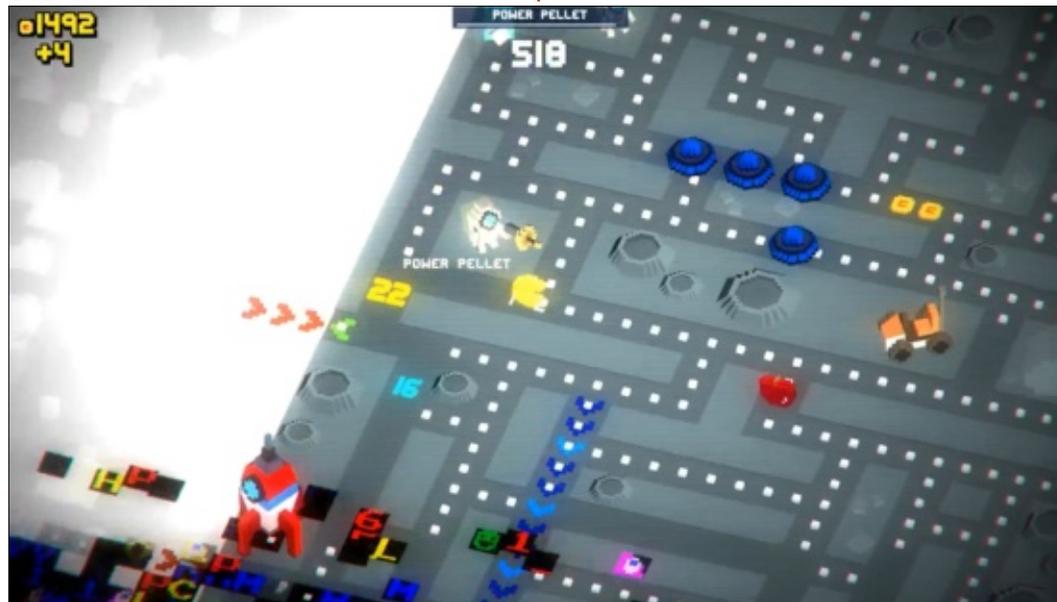
Another difference is that there

are several power-ups available to eat in the game. In the original Pac-Man, when you eat a power-up, the ghosts all turn blue and Pac-Man is then able to eat them instead of having to run away from them. This power-up is still available in this game, but it is not the only power-up at your disposal. There are many other power-ups available, and pretty much all of them are entertaining to use. Some of these power-ups include a bomb which makes ghosts blow up when they come into contact with Pac-Man, a tornado which chases ghosts down until it blows them away, a fireball which, when eaten, makes everything that comes into contact with Pac-Man burn and leaves a trail of fire behind Pac-Man for a few seconds, and many others. There are a total of 21 power-ups available as far as I know.

Another cool part of this new feature is that these power-ups are not available when you first begin playing the game but instead need to be unlocked by playing the game and accumulating points. Then, once these power-ups are unlocked, you can build them up in a manner much like a role-playing game where you choose which power-up to upgrade and how

many points to spend on such an upgrade.

Yet another new feature that sets this game apart from the original is that you can change the way the maze looks. For starters you can make the game look like a lunar base in which there are no ghosts but instead there are UFOs which follow you around trying to kill you. Another alternate theme is that of an office, in which you see desks, chairs, computers & other items that are commonly found in an office. There's also a Crossy Road theme, one called The Grid, an arcade theme, and many, many more. These alternate themes are freely available right from the start.



This game is very fun to play, affordable, and so far I've found no glitches nor anything to complain about. I strongly recommend it to anyone, literally anyone.



MINIMUM REQUIREMENTS

OS: Ubuntu (anything similar will do)
CPU: Intel i3 or equivalent
RAM: 1 GB RAM
GPU: Nvidia or ATI with latest drivers
Hard Drive: 100 MB available space

MY GAMING BOX

AMD FX-6100 3.3GHz CPU
(overclocked to 3.5GHz)
Nvidia GeForce GTX 960 graphics card with Nvidia 381 driver
16GB of Kingston Hyper X RAM
Ubuntu 16.04 LTS (64-bit) with Unity desktop



Oscar graduated with a music degree from CSUN, is a Music Director/Teacher, software/hardware beta tester, Wikipedia editor, and active member of the Ubuntu community. You can email him at: 7bluehand@gmail.com



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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

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