



Full Circle

THE INDEPENDENT MAGAZINE FOR THE UBUNTU LINUX COMMUNITY

ISSUE #136 - August 2018



```
...pt demonstrates some of the properties of  
...y assignments.
```

```
1 my @a = ("Small", "Medium", "Large");  
2  
3  
4  
5  
6  
7  
8 print `@a = ` . "@a\n";  
9  
10  
11 my ($smith, $jones, $johnson) = @a;  
12 print "$smith $jones $johnson\n";  
13  
14  
15  
16 my ($here, $there) = @a;  
17 print "$here $there\n";  
18  
19  
20 my ($this) = @a;  
21 print "$this\n";  
22  
23  
24 my $this = @a;  
25 print "$this\n";  
26  
27  
28 my ($p, $q, $r, $s, $t) = ("p", "q", "r", "s", "t");  
29 print "[ $p ] [ $q ] [ $r ] [ $s ] [ $t ]\n";  
30 ($p, $q, $r, $s, $t) = @a;  
31 print "[ $p ] [ $q ] [ $r ] [ $s ] [ $t ]\n";
```

REVIEW OF CUDATEXT CROSS-PLATFORM TEXT EDITOR AND IDE



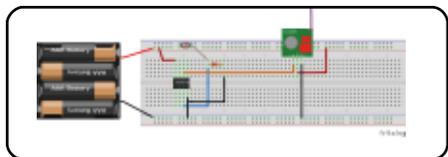
HowTo



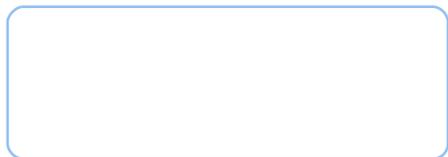
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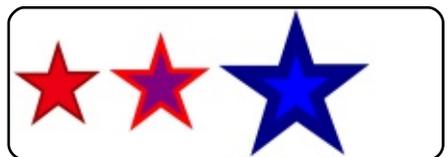
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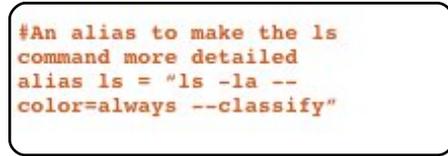


Graphics



Full Circle

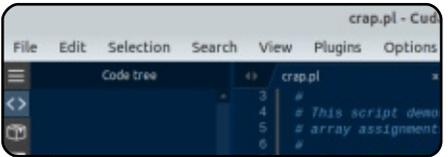
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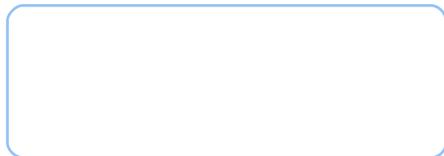
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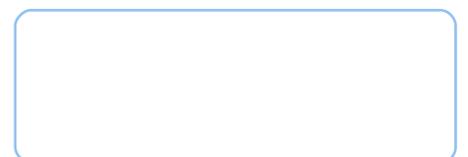
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WELCOME TO THE LATEST ISSUE OF FULL CIRCLE.

While we have Python, Freeplane, Inkscape, and Great Cow Basic for you this month. We have several regular writers who couldn't submit this month. So, this is probably the shortest issue in many a year. See? This is what happens when you (the readers) don't submit articles. It means I have nothing in reserve should someone need to take a month off. **Please** consider writing something. A review (hardware/software), your Ubuntu/Linux story, the basics on how to use a piece of software. Anything. It will come in handy. Email it to ronnie@fullcirclemagazine.org.

If any of you out there use **Mastodon** (the Twitter alternative) I've opened an account there for Full Circle Magazine (<https://mastodon.social/@fullcirclemagazine>). If you're curious about it, but not sure what to do: sign up at <https://mastodon.social>, and follow the FCM account.

Well, that's about it for this month. Short and sweet

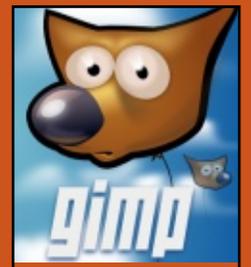
All the best, and keep in touch!

Ronnie

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



<http://www.stitcher.com/s?fid=85347&refid=stpr>



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

FULL CIRCLE 2018 SURVEY

It's that time of the year again where we ask what you think of FCM, Ubuntu, and Linux.

Some questions are a requirement, some you can skip over if not applicable.

Your answers will help shape Full Circle, so please use your constructive criticism. If you don't tell us what you think, or what we're doing wrong, then we won't know.

Survey URL:
<http://bit.ly/fcm2018>

UBUNTU LINUX 18.04.1 LTS BIONIC BEAVER AVAILABLE FOR DOWNLOAD

Ubuntu is one of the most popular desktop Linux-based operating systems in the world, and rightfully so. It's stable, fast, and offers a very polished user experience. Ubuntu has gotten even better recently too, since Canonical -- the company that develops the distribution -- switched to GNOME from the much-maligned Unity. Quite frankly, GNOME is the best overall desktop environment, but I digress.

Ubuntu 18.04.1 becomes available. This is the first "point" release of 18.04 LTS Bionic Beaver. It is chock full of fixes and optimizations, which some individuals and organizations have been waiting for before upgrading. You see, while some enthusiasts will install the latest and greatest immediately, others value stability -- especially for business -- and opt to hold off until many of the bugs are worked out. If you are a

longtime Windows user, think of it like waiting for Microsoft to release a service pack before upgrading -- sort of.

Source:

<https://betanews.com/2018/07/26/ubuntu-linux-bionic-beaver-point/>

FUTURE LUBUNTU RELEASES WON'T FOCUS ON OLD PCs, WILL OFFER A MODULAR LINUX OS

From the moment it was created eight years ago, Lubuntu was always known as the official Ubuntu flavor targeted at users of "old computers from 10 years ago," mainly because it shipped with the very lightweight and less resource-hungry LXDE (Lightweight X11 Desktop Environment) as default user interface a.k.a desktop environment, and corresponding apps.

It never was a bloated operating system and will never be, but since

32-bit computers are going away and are very hard to find these days, the development team decided that it's time to shift the main target of Lubuntu from old PCs to a modern, yet functional and modular GNU/Linux distribution that won't stand in your way.

With that in mind, future Lubuntu releases will provide newcomers with all the support they need to get started with using a Linux-based operating system, leverage modern, Qt-based apps to offer users a functional and modular Linux experience, maintain a light experience by default, and support any language across the globe.

Lubuntu releases will ship with the LXQt desktop environment by default instead of LXDE, which is old and based on open-source technologies that will soon go away. LXQt is the modern version of LXDE based on Qt technologies, so you'll be able to use a lot of Qt apps too.

The first Lubuntu release to

feature LXQt by default will be Ubuntu 18.10 (Cosmic Cuttlefish), due for release on October 18, 2018. It also looks like Ubuntu 18.10 might not support 32-bit installations, though users who can't afford a 64-bit machine can still use the long-term supported Ubuntu 18.04 LTS release until April 2021.

Source:

<https://news.softpedia.com/news/future-ubuntu-releases-won-t-focus-on-old-pcs-will-offer-a-modular-linux-os-522141.shtml>

LINUX BOOTS ON “SHAKTI” — INDIA’S FIRST EVER RISC-V BASED SILICON PROCESSOR

RISC-V Workshop in Chennai, India, hosted by The Indian Institute of Technology Madras (IIT Madras), achieved a significant milestone by booting Linux on its first ever RISC-V based silicon chip processor named Shakti . The team, which is sponsored by Western Digital, aims to create a critical mass of CPU architects in India, according to the project

lead. Open-Source, patent-free domestic CPU production is on the cards, according to experts.

For those of you who are not familiar, RISC-V is an open ISA (Instruction Set Architecture) developed as a project in 2010 by the University of California, Berkeley. First of all, an instruction set is merely the set of commands given to a CPU in machine language. Basically, it tells the CPU what it needs to do like, for example, add or compare.

Due to their lower power consumption, ARM (Advanced RISC Machine) instruction set-based chips have dominated smartphones, tablets and other small devices. Shakti is The RISC-V based processor that has been designed with small, speed and low-power consumption in mind.

Source:

<https://fossbytes.com/linux-on-shakti-india-risc-v-processor-iitm/>

IPFIRE HARDENED LINUX FIREWALL DISTRIBUTION GETS MAJOR UPDATE

IPFire 2.21 Core Update 122 is now available to download as a drop-in replacement to the three-months-old IPFire 2.19 Core Update 120 and finally bumps the version number from 2.19 to 2.21. However, this being a major update, it was split into two parts, so you'll have first to install the IPFire 2.19 Core Update 121 to be able to run the IPFire 2.21 Core Update 122 release.

The most prominent new feature in IPFire 2.21 Core Update 122 is the Linux 4.14.50 kernel, which contains mitigations for both the Meltdown and Spectre security vulnerabilities on various hardware architectures, along with a microcode firmware update for Intel processors. However, the grsecurity patches for the Linux kernel were removed due to them being incompatible with this kernel.

The developers noted the fact that IPFire remains hardened and secure despite the grsecurity security enhancement patches being removed, as many of their features were backported. The new kernel version also renders IPFire incompatible with ARM

systems. Other noteworthy changes include an updated list of trusted Certificate Authorities (CA), updated firmware for several baseboards and drivers, and an improved web-based UI that's now capable of displaying logged in users on the console. IPFire 2.21 Core Update 122 also comes with the ClamAV 0.100.0 and nagios-nrpe 3.2.1 add-ons.

Source:

<https://news.softpedia.com/news/ipfire-hardened-linux-firewall-distribution-gets-major-update-here-s-what-s-new-522159.shtml>

LINUX MINT DEBIAN EDITION (LMDE) 3 'CINDY' BETA AVAILABLE FOR DOWNLOAD

Back in June, we reported that Linux Mint Debian Edition 3 BETA would be released in July. Well, LMDE 3 did make the deadline, albeit barely. Yes, on the final day of the month, the BETA version of the rolling release operating system became available.

Unlike the traditional Linux Mint operating system which is based on Ubuntu, LMDE is based on Debian. To be more precise, LMDE 3 BETA is based on Debian Stretch. While this Debian version of Mint is perfectly usable as a daily driver, its real focus is as a contingency plan in case development of Ubuntu ever ceases in the future.

Speaking on Linux Mint Debian Edition, project leader Clement Lefebvre says the following:

There are no point releases in LMDE. Other than bug fixes and security fixes Debian base packages stay the same, but Mint and desktop components are updated continuously. When ready, newly developed features get directly into LMDE, whereas they are staged for inclusion on the next upcoming Linux Mint point release. There are 32-bit and 64-bit variants, both of which use the excellent Cinnamon desktop environment.

Source:

<https://betanews.com/2018/07/31/linux-mint-debian-lmde-cindy-beta/>

LINUX KERNEL 4.18 DELAYED: BUG ATE MY RC7, SAYS LINUS TORVALDS

All looked sunny enough on Sunday evening, when he set Linux 4.18-rc7 free to roam: “Unless something odd happens, this should be the last rc for 4.18,” the chief penguinista wrote. Something odd did, indeed, happen, and after nearly two days of discussion on the Linux Kernel Mailing List, Torvalds made the decision to revert:

El Reg took a backwards walk through the mailing list to work out what went wrong – or rather, what primarily went wrong, since there are so many commits since the previous release candidate.

One large headache involves ashmem, an application-level virtual memory area type introduced to the Linux kernel to solve a problem arising from Android's security paranoia.

Android lacks a writable tmpfs temporary file system, to prevent malicious applications doing naughty or messy stuff in /tmp, so

ashmem was created to let apps “obtain memory that can be shared with peer processes without creating resource leaks.” In other words, ashmem can be used by programs to share information without having to go through a temporary file system, and only when there is no big pressure for free memory.

Then it emerged that the open-source flavor of Android would suffer a “userspace crash with v4.18-rc7”, and not on rc6, due to changes to the memory management code involving `vma_is_anonymous()`. Removing `vma->vm_ops = &dummy_vm_ops` from `vma_init()` stopped the crashes.

That confirmation led to this longish post from Torvalds, in which he considered pulling rc7.

Source:

https://www.theregister.co.uk/2018/08/01/linux_kernel_418_delayed_bug_eats_rc7/

MYSQL UPDATES FOR UBUNTU RESOLVE SERVER DATA MANIPULATION AND DoS VULNERABILITIES

Fifteen medium priority vulnerabilities have been found in the Server and Client components of Oracle MySQL platform. Exploitation of these vulnerabilities requires that the attacker obtain network access via multiple protocols to compromise the MySQL server.

As per the advisories posted on the Ubuntu website, to resolve the threats posed by these vulnerabilities, package updates have been released for the respective Ubuntu versions. The update `mysql-server-5.7-5.7.2.3-0ubuntu0.18.04.1` is for Ubuntu 18.04 LTS and `mysql-server-5.7-5.7.2.3-0ubuntu0.16.04.1` is for Ubuntu 16.04 LTS. The update for Ubuntu 14.04 LTS and Ubuntu 12.04 ESM is `mysql-server-5.5-5.5.61-0ubuntu0.14.04.1` and `mysql-server-5.5-5.5.61-0ubuntu0.12.04.1`. These updates are available on the website for download and install directly.

Source:

<https://appuals.com/mysql-updates-for-ubuntu-resolve-server-data-manipulation-and-dos-vulnerabilities/>

UK CYBER SECURITY BOFFINS DISPENSE UBUNTU 18.04 WISDOM

The UK's National Cyber Security Centre (NCSC) has dispensed advice aimed at securing Ubuntu installs and followed it up with help for Dixons customers.

The NCSC, part of the UK's Government Communications Headquarters (GCHQ) exists to make the UK a safer place to do business online and, in an unusual step for a Government agency, does a pretty good job of dispensing sensible security advice.

Dixons Carphone customers got the treatment yesterday, following the admission that, er, maybe a bit more than 1.2 million users had actually had their privates exposed in a data breach. More like 10 million records. GCHQ's infosec

crew suggested Dixons users shouldn't fill in their log-in info via that link on that unsolicited email, hmm?

Last week, however, it was Ubuntu 18.04 LTS upon which the agency turned its gimlet gaze. The security wonks first stated the obvious – route data over a secure VPN to avoid prying eyes, stop users installing whatever they want and for goodness sake, cut down on the admin rights.

Once over the summary, the agency dove into detail. It has a number of security principles, and soberly explains the risks associated with Ubuntu along with mitigating steps. The list should be required reading for anyone about to leap into the wonderful of Linux, thinking all their Windows woes or Mac migraines will vanish overnight.

Of course, this isn't to say a default installation of Ubuntu 18.04 LTS isn't already pretty secure.

Source:
https://www.theregister.co.uk/2018/08/01/ncsc_ubuntu/

DRINK THIS POTION, LINUX KERNEL, AND TOMORROW YOU'LL WAKE UP WITH A WIREGUARD VPN DRIVER

The developer of WireGuard has laid the groundwork for plugging his open-source privacy tool directly into the Linux kernel in hope of making secure communications easier to deploy and manage.

Jason Donenfeld, creator of WireGuard and the founder of Edge Security, on Tuesday submitted a proposed set of patches to the Linux kernel project to integrate the secure VPN tunnel software as an official network driver. The code is now awaiting review by the kernel maintainers. Initially released and still available as an optional kernel module for Linux, WireGuard is also available for Android, macOS, Windows, and other platforms.

Source:
https://www.theregister.co.uk/2018/08/02/linux_kernel_wireguard/

OPERA IS AVAILABLE IN A SNAP ON LINUX

Opera is far from the most popular web browser, but it has its loyal fans. Now, if those fans also happen to be Linux desktop users, Canonical, Ubuntu Linux's parent company, and Opera SA have made it easier than ever to install it on almost any Linux distribution.

They've done this by packing Opera into a Snap in the Snap Store. The Opera snap is supported on Debian, Elementary, Fedora, Linux Mint, Manjaro, OpenSUSE, Ubuntu, and other Linux distributions.

Snaps are containerised software packages. They're designed to work securely within any Linux environment across desktop, the cloud, and IoT devices.

Source:
<https://www.zdnet.com/article/opera-is-available-in-a-snap-on-linux/>

LIBRELEC 9.0 ALPHA KODI 18 LEIA-FOCUSED LINUX DISTRO FOR RASPBERRY PI AND PC IS HERE

Kodi is great software for consuming media, but the best way to experience it is with a Linux distribution that focuses on it. If you aren't familiar, LibreELEC is one such distro -- it allows the user to focus exclusively on Kodi without any distractions. Best of all, it doesn't just run on traditional PC hardware, but the Raspberry Pi too. Yes, by leveraging an inexpensive Pi device, you can create a powerful media box for your television.

Today, the first Alpha of LibreELEC 9.0 becomes available for download. This follows the recent release of Kodi 18 Leia preview, and yes, LibreELEC 9.0 is based on Leia.

The team warns against using the pre-release distro by saying, "Alpha builds exist for hands-on testing not a hands-off experience. If you run Alpha builds you must be willing to report issues and engage

the LibreELEC and Kodi developers in hunting bugs. If you have no idea what a debug log is or 'wife acceptance factor' is critical, these builds are not for you."

Source:
<https://betanews.com/2018/08/04/libreelec-9-alpha-kodi-leia-linux-raspberry-pi/>

NETRUNNER 2018.08 UPDATES KDE AND UPGRADES KRITA TO VERSION 4.X

Netrunner is a Debian-based distribution that features a customized KDE desktop and a wide array of applications, codecs, and plugins, all with a friendly user interface. The operating system released a separate "Rolling edition" based upon Manjaro Linux back in 2014. Netrunner Rolling was discontinued briefly in between and then relaunched in 2017. Now, the Netrunner Rolling 2018.08 64bit ISO has just been released and the developers have explained that the update features upgrades to KDE, Qt, and the Linux Kernel among a long list of other

things.

Source:
<https://appuals.com/netrunner-2018-08-updates-kde-and-upgrades-krita-to-version-4-x/>

SEGMENTSMACK: TCP FLAW IN LINUX KERNEL COULD TRIGGER A REMOTE DENIAL OF SERVICE

The Linux kernel has been hit with a TCP flaw that was recently discovered by security researcher Juha-Matti Tilli. Assigned CVE-2018-5390, this flaw could be exploited by malicious actors to trigger a resource exhaustion attack using an available open port. This flaw, named SegmentSmack by Red Hat, affects the Linux kernel 4.9 or above.

The attacker could make expensive calls using specially modified packets, which can further lead to denial of service. This could happen due to CPU saturation, especially on a system with a small bandwidth of the incoming network.

To address this vulnerability, Linux kernel developers have already released the patch. At the moment, no other mitigation technique is known apart from running a fixed kernel. Any proof-of-concept of the attack is also unavailable.

Source:
<https://fossbytes.com/segmentsmack-tcp-flaw-linux-kernel-remote-denial-of-service/>

KDE PLASMA 5.14 DESKTOP ENVIRONMENT LETS YOU UPGRADE YOUR COMPUTER'S FIRMWARE

One of the coolest new features of the KDE Plasma 5.14 desktop environment, as developer Nate Graham notes in his latest usability and productivity report, is the ability to upgrade your computer's firmware through the Plasma Discover graphical package manager, which is installed by default and helps KDE Plasma users update their GNU/Linux distributions and KDE applications.

The ability to upgrade your computer's firmware recently landed in the Plasma Discover package manager and was implemented by developer Abjiheet Sharma. KDE Plasma 5.14 looks to be the first release of the open-source desktop environment to ship with this features, as it doesn't look like it will be backported to Plasma 5.13.

Source:

<https://news.softpedia.com/news/kde-plasma-5-14-desktop-environment-lets-you-upgrade-your-computer-s-firmware-522253.shtml>

DEBCONF19 DEBIAN GNU/LINUX CONFERENCE TO TAKE PLACE JULY 21-28, 2019, IN BRAZIL

Curitiba is the capital of the southern Brazilian state of Paraná, a beautiful city with numerous attractions. To celebrate 11 years since the first DebConf Debian developer conference was held in South America, the Debian Project announced earlier this year that next year's DebConf event

would be hosted in Curitiba, Brazil.

And, now, Debian Project's Laura Arjona Reina announced over the weekend the dates when the developer conference will take place: DebConf19 will take place from July 21 to July 28, 2019, but the usual Debian Open Day event is scheduled a day early, for July 20, 2019, welcoming all Debian users, not only developers.

Source:

<https://news.softpedia.com/news/debconf19-debian-gnu-linux-conference-to-take-place-july-21-28-2019-in-brazil-522274.shtml>

EXTIX 18.7 IS NOT QUITE AN 'ULTIMATE LINUX SYSTEM'

The latest release of the ExTiX Linux distro is a major disappointment.

ExTiX 18.7 has several shortcomings that make it troublesome to use. The flaws easily might be fixed in a patched follow-up release. Still, to a new Linux user, the problems inherent in ExTiX 18.7 give the Linux OS in

general a black eye.

New releases of any software platform never come with guarantees. Sometimes, an earlier release works almost flawlessly while its upgrade down the line fails to impress. That was my experience revisiting the ExTiX distro.

Source:

<https://www.linuxinsider.com/story/ExTiX-187-Is-Not-Quite-an-Ultimate-Linux-System-85481.html>

AMD RELEASES 18.Q3 LINUX DRIVERS FOR RADEON PRO, INCLUDING UBUNTU 18.04 LTS SUPPORT

AMD has just officially released their Radeon Pro 18.Q3 enterprise driver update, which includes packages available for supported Linux distributions, which officially are:

RHEL 7.5 / CentOS 7.5
RHEL 6.9 / CentOS 6.9
Ubuntu 18.04.0
Ubuntu 16.04.4
SLED/SLES 12 SP3

These are QA-tested professional-grade driver updates for the current quarter, so Linux users should see performance and optimization improvements.

However, there are some remaining issues unresolved in this update. This includes GPU hangs on long stress tests, hangs within the Houdini application, call traces being observed while performing pm-suspend in dmesg/kmsg, and display color issues after installing the driver on SLED 12 SP3.

Source:

<https://appuals.com/amd-releases-18-q3-linux-drivers-for-radeon-pro-including-ubuntu-18-04-lts-support/>

FREEBSD HAS ITS OWN TCP-QUEUE-OF-DEATH BUG, EASIER TO HOSE THAN LINUX'S SEGMENTSMACK

Hard on the heels of the Linux kernel's packets-of-death attack dubbed SegmentSmack, a similar vulnerability has been disclosed and fixed in FreeBSD.

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Some questions are a requirement, some you can skip over if not applicable.

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Survey URL:
<http://bit.ly/fcm2018>

Attributed to SegmentSmack discoverer Juha-Matti Tilli of Aalto University in Finland, the FreeBSD TCP issue is related to how the operating system's networking stack reassembles segmented packets. Much in the same way Linux kernel versions 4.9 and higher can be brought down by bad network traffic, a sequence of maliciously crafted packets can also crash FreeBSD machines.

FreeBSD 10, 10.4, 11, 11.1, and 11.2 are affected, and the maintainers have released patches to mitigate the programming cockup. In the open-source operating system project's advisory for CVE-2018-6922 (Linux's SegmentSmack was assigned CVE-2018-5390), the problem was this week described as an "inefficient algorithm" involving a segment reassembly data structure.

Source:
https://www.theregister.co.uk/2018/08/08/freebsd_tcp_queue_vulnerability/

VALVE MAY SOON RELEASE A NATIVE 64-BIT VERSION OF ITS STEAM FOR LINUX CLIENT

Valve is certainly not the last software developer in the world to still offer 32-bit versions of its applications, but as the world kind of moved to 64-bit apps and operating systems, they will be forced to that very soon.

Apple already forced their hands with the upcoming macOS Mojave 10.14 operating system, which will be available this fall, by deprecating support for 32-bit apps and urging application developers to move to 64-bit apps.

Valve complied and released a native 64-bit Steam for Mac client along with its recent major Steam Client update that also brought the all-new Chat client and a significant design change, among numerous other new features and improvements.

With Steam Client stable update, Valve brings support for shipping different binaries to 64-bit versus 32-bit operating systems via

the built-in updater in preparation for future updates, which could signal a native 64-bit Steam for Linux client might be on the way.

Source:
<https://news.softpedia.com/news/valve-may-soon-release-a-native-64-bit-version-of-its-steam-for-linux-client-522309.shtml>

DROPBOX MAKES THE CLOUD RAIN POOP ON LINUX USERS

Cloud storage rules -- especially when coupled with a local backup plan. Quite frankly, it is one of the best computing innovations of all time. How cool is it that you can easily backup important files to an offsite location? Let's be honest -- before the cloud, many computer and smartphone users didn't bother backing up at all. While many still do not, the cloud has definitely improved the situation through convenience and affordability.

I have long been a proponent of the cross-platform Dropbox, as it has really been the only major cloud storage company to offer Linux support. Google, for example

-- which uses the Linux kernel for both Android and Chrome OS -- shamefully never brought its Drive cloud storage platform to traditional desktop Linux. Unfortunately, Dropbox is suddenly making the cloud rain poop on Linux users. In a shocking turn of events, it is dropping support for most file systems.

On the surface it doesn't seem too bad because ext4 support will remain. This is the file system that many -- if not most -- desktop Linux installations use. Far fewer users are leveraging, say, Btrfs. The problem? Dropbox apparently won't support an encrypted ext4 volume either. Woah. So, in other words, the company is essentially telling its Linux-based customers to disable encryption.

Source:

<https://betanews.com/2018/08/11/dropbox-linux-doh/>

HOLLYWOOD GOES OPEN SOURCE; COLLABORATES WITH LINUX FOUNDATION

The Academy of Motion Picture Arts and Sciences which is best

known for organizing the Oscars has announced its love for open source tech. It has joined hands with the Linux Foundation to establish the Academy Software Foundation (ASWF).

The objective of ASWF is to increase the quality and quantity of contributions to the entertainment industry through open-source projects. It will provide a neutral platform to facilitate cross-project efforts, a common build and test infrastructure.

The founding members behind this initiative include big names like Google, Walt Disney Studios, Cisco, DreamWorks, Intel, SideFX, Blue Sky Studios, Epic Games, Animal Logic, etc.

Nearly 84% of Hollywood already uses open source software to throw in visual effects and animation in film production. But all of that work has been accomplished in isolation by different companies till now.

Source:

<https://fossbytes.com/hollywood-open-source-linux-foundation/>

LENOVO LAUNCHES ITS THINNEST AND LIGHTEST PRO LAPTOP – THINKPAD P1

Lenovo has unveiled its ThinkPad P1 workstation laptop, which packs a 1080p or 4K 15.6-inch display, and powerful hardware.

The P1 is available in multiple configurations and offers the choice of Intel 8th-gen Core i5, i7, i9, or Xeon processors.

Integrated Intel UHD Graphics 620, or Nvidia Quadro P1000 or P2000 GPU; up to 64GB of DDR4 2,667MHz RAM; and up to 4TB of SSD storage are also available to users.

Connectivity is taken care of via Bluetooth 5.0, 802.11ac Wi-Fi, four USB-C ports – 2 Thunderbolt and 2 USB 3.1 – and HDMI.

What Lenovo is punting about its new laptop, however, is its size.

The P1 is said to be its thinnest and lightest professional laptop to date, and measures in at 18.4 x 361.8 x 245.7 mm – and weighs 1.7kg.

Lenovo is also offering users an array of operating systems to choose from, including Windows 10 Pro, Windows 10 Pro for Workstations, Ubuntu Linux, and Redhat Linux.

AnandTech reported that the ThinkPad P1 will go on sale from late August 2018, with a starting price of \$1,949 in the US.

Source:

<https://mybroadband.co.za/news/hardware/271715-lenovo-launches-its-thinnest-and-lightest-pro-laptop-thinkpad-p1.html>

LINUX 4.18 AND ZORIN OS 12.4 RELEASED WITH BIG CHANGES

Linux boss Linus Torvalds has officially shipped the much-awaited Linux kernel 4.18 release.

It has arrived a week late due to some minor changes, primarily related to networking. Overall, as compared to the previous releases, 4.18 is a lighter release with about 100k fewer lines than 4.17.

The major changes that have arrived pertain to the improved AMDGPU support and complete Raspberry Pi 3B and 3B+ support. There's an initial support for Vega M graphics and Intel Ice Lake Gen 11 graphics as well.

The developers of the beginner-friendly Linux distro Zorin OS have released the latest version — Zorin OS 12.4. Just as you'd expect, it brings better hardware support, bugs and security fixes, and performance improvements.

Powered by Linux kernel 4.15 and updated X server graphics stack, 12.4 aims to serve users in a better manner.

Source:

<https://fossbytes.com/linux-kernel-4-18-zorin-os-12-4-download-features/>

DAVINCI RESOLVE 15 RELEASED FOR REDHAT ENTERPRISE AND CENTOS SYSTEMS

Video editing on the Linux platform just got a whole lot

easier, as Blackmagic Design just released their long-awaited DaVinci Resolve 15 software update – a free to use professional-grade video editing, visual effects, motion graphics, and audio post-production software suite.

Note that this release officially supports Red Hat Enterprise Linux and CentOS systems.

This update brings “an entirely new Fusion page with over 250 tools for compositing, paint, particles, animated titles and more. In addition, DaVinci Resolve 15 includes a major update to Fairlight audio, along with over 300 new features and improvements that professional editors and colorists have asked for”.

The free version of DaVinci Resolve 15 already has a ton of features that make it a great choice for professional work, but the Studio edition adds even more features – though it costs \$299. Still, there's no subscription fee or licensing costs.

Source:

<https://appuals.com/davinci-resolve-15-released-for-redhat-enterprise-and-centos-systems/>

NEW LINUX KERNEL DEBUTS, ADDS MORE SUSPECT NSA- SOURCED CRYPTO

Linux creator and lead developer Linus Torvalds has released a new version of the Linux kernel.

Version 4.18 went through eight release candidates – one more than usual – on its way to release.

The biggest change this time around is the omission of the Lustre filesystem, software popular in the high-performance computing community because it helps storage to scale.

Lustre's developers emphasized work on the standalone version of the software and it was never fully-integrated with Linux, so this release dumped it.

An interesting inclusion is improved support for the Speck128 and Speck256 encryption algorithms in some other filesystems.

Speck was developed by the United States' National Security

Agency (NSA) and security experts aren't entirely certain the NSA has told the world all it needs to know about the algorithms. Some suspect the agency may be able to circumvent its use.

Another notable addition is support for the Qualcomm 845 system-on-chip. That silicon already powers plenty of phones, but the chip will also be adapted into the model 850 to power Microsoft's forthcoming PCs powered by ARM chips.

Those PCs are promised to have 24-hour-plus battery life, making Linux support for the 845 an important step on the route towards Qualcomm getting into the PC business and the Intel duopoly shaking just a little.

Source:

<https://www.itnews.com.au/news/new-linux-kernel-debuts-adds-more-suspect-nsa-sourced-crypto-500094>

NEW ROUND OF 64-BIT ARM PATCHES MERGED INTO LINUX 4.19 KERNEL, INCLUDES GCC STACKLEAK PLUGIN SUPPORT

A new round of changes for 64-bit ARM architecture (ARM64/AArch64) were just loaded into the Linux 4.19 kernel merge window, and its generally some pretty good stuff being included.

The 64-bit ARM space on Linux as been fairly busy, and there's likely more to come before Linux 4.19 kernel is released.

Some highlights of the 64-bit ARM merges include:

ARM64 support for the new GCC STACKLEAK plug-in that was merged into gcc-plugins for Linux 4.19. The STACKLEAK compiler plug-in is able to fend off possible flaws/attacks pertaining to uninitialized stack usage, stack content leaking, and stack exhaustion/guard-page skipping. This mainline kernel STACKLEAK was ported from old GrSecurity/PaX code.

Support for the Restartable Sequences system call. This new system call was originally added in Linux 4.18 and "RSEQ" allows for faster user-space operations on per-CPU data by providing a shared data structure ABI between each user-space thread and the kernel.

Source:

<https://appuals.com/new-round-of-64-bit-arm-patches-merged-into-linux-4-19-kernel-includes-gcc-stackleak-plugin-support/>

DEBIAN GNU/LINUX PROJECT TO MARK 25TH BIRTHDAY ON THURSDAY

The Debian GNU/Linux project will turn 25 on Thursday, with the Linux distribution having made its debut on 16 August in 1993 under the leadership of the late Ian Murdock.

In its original manifesto, Murdock stated: "Many distributions have started out as fairly good systems, but as time passes attention to maintaining the distribution becomes a secondary concern."

Maintaining a Debian system

was made simple after some developers created a package management system known as apt.

Apt — and its derivatives like aptitude and synaptic — have served to make the task of updating a Debian system simple. With apt, the secondary concern that Murdock referred to was effectively taken care of. Incidentally, there are now about 29,000 packages available in Debian. Debian has served as the base for two distributions — there are more than 300 in all — that are well-known for different reasons. One, Ubuntu, is the most widely used distribution. The other, Knoppix, is the best known live system.

Source:

<https://www.itwire.com/open-sauce/84040-debian-gnu-linux-project-to-mark-25th-birthday-on-thursday.html>

VALVE SEEMS TO BE WORKING ON TOOLS TO GET WINDOWS GAMES RUNNING ON LINUX

Valve appears to be working on a set of "compatibility tools," called Steam Play, that would allow at least some Windows-based titles to run on Linux-based SteamOS systems.

Yesterday, Reddit users noticed that Steam's GUI files (as captured by SteamDB's Steam Tracker) include a hidden section with unused text related to the unannounced Steam Play system. According to that text, "Steam Play will automatically install compatibility tools that allow you to play games from your library that were built for other operating systems."

Tools that let users run Windows apps in Linux are nothing new; Wine has existed for decades, after all. But an "official" Steam-based compatibility tool, with the resources and backing of Valve behind it, could have a huge impact on the Linux development space that could reach beyond games.

Source:

<https://arstechnica.com/gaming/2018/08/valve-seems-to-be-working-on-tools-to-get-windows-games-running-on-linux/>

AMDGPU-PRO 18.30 LINUX GRAPHICS DRIVER RELEASED WITH UBUNTU 18.04 LTS AND RHEL / CENTOS SUPPORT

The long awaited AMDGPU-PRO 18.30 driver update for the AMD Linux graphics driver package has finally been released, with a driver installation option for both “all open” and closed / proprietary driver modules.

What is great about this driver package update is that it is supported on the latest Ubuntu 18.04.1 LTS as well as Ubuntu 16.04.5, and RHEL / CentOS 6.10 and 7.5 respectively for their Enterprise Linux support targets.

Some of the new features in this AMDGPU-PRO 18.30 driver package update includes support for the latest Radeon Pro WX 8200, WattMan-style functionality which uses the new CLI-based interfaces, the RHEL / CentOS installation updates, and some new installation instructions for users.

Downloading and setting up the new driver is fairly using the CLI, as the AMDGPU stack depends on packages provided by the Linux distribution vendors – although the AMDGPU-PRO driver requires access to specific RPMs from Red Hat Enterprise Linux (RHEL) or SUSE Linux Enterprise (SLE) installation media, because of the dependency resolution.

This is despite the fact that all external dependencies on packages provided by the Linux distro vendor were eliminated starting with driver package 18.30 and all the dependency checks were intergrated into the amdgpu-install package, and subsequently amdgpu-pro-preinstall was eliminated to streamline installation. Access to distribution media or online package repos is still required to satisfy base operating system dependencies.

Source: <https://appuals.com/amdgpu-pro-18-30-linux-graphics-driver-released-with-ubuntu-18-04-lts-and-rhel-centos-support/>

DEBIAN GNU/LINUX 9 "STRETCH" RECEIVES L1 TERMINAL FAULT MITIGATIONS, UPDATE NOW

According to the security advisory published on Monday, the new kernel security update addresses both CVE-2018-3620 and CVE-2018-3646 vulnerabilities, which are known as L1 Terminal Fault (L1TF) or Foreshadow. These vulnerabilities had an impact on normal systems, as well as virtualized operating systems, allowing a local attacker to expose sensitive information from the host OS or other guests.

The Debian Project urges all Debian GNU/Linux 9 "Stretch" users to update their installations to the 4.9.110-3+deb9u3 kernel, which is now available from the main software repositories. However, to fully mitigate the L1 Terminal Fault (L1TF) vulnerabilities, the Debian Project recommends users to also install the latest microcode firmware update for Intel CPUs.

Users must install the intel-microcode 3.20180703.2~deb9u1

release from the Debian non-free repositories, which also includes Speculative Store Bypass Disable (SSBD) support to mitigate both the Spectre Variant 4 and Variant 3a security vulnerabilities. Keep in mind that you need to reboot your computer after installing the new kernel and intel-microcode versions.

Source: <https://news.softpedia.com/news/debian-gnu-linux-9-stretch-receives-l1-terminal-fault-mitigations-update-now-522361.shtml>

CANONICAL APOLOGIZES FOR UBUNTU 14.04 LTS LINUX KERNEL REGRESSION, RELEASES FIX

The kernel security update addressed both the L1 Terminal Fault vulnerabilities, as well as two other security flaws (CVE-2018-5390 and CVE-2018-5391) discovered by Juha-Matti Tilli in Linux kernel's TCP and IP implementations, which could allow remote attackers to cause a denial of service.

Unfortunately, on Ubuntu 14.04 LTS (Trusty Tahr) systems, users reported that the mitigations also introduced a regression in the Linux kernel packages, which could cause kernel panics for some users that booted the OS in certain desktop environments.

The regression also appears to have prevented Java applications from starting on Ubuntu 14.04 LTS systems so Canonical has addressed the issue and released a new kernel version, urging all users to update their installations as soon as possible.

If you're using the Ubuntu 14.04 LTS (Trusty Tahr) operating system with the original Linux 3.13 kernel, you should update your installations right now to linux-image 3.13.0-156.206 on either 32-bit, 64-bit, or PowerPC 64-bit systems, whether you're using the generic, lowlatency, or generic-lpae kernels.

Source:

<https://news.softpedia.com/news/canonical-apologizes-for-ubuntu-14-04-lts-linux-kernel-regression-releases-fix-522360.shtml>

FLATPAK 1.0 RELEASED, AIMS TO SIMPLIFY INSTALLATION OF LINUX APPS

There are hundreds of Linux distributions to choose from, and while there are some similarities, there are also some differences — like the way you install applications.

Traditional Debian-based applications like Ubuntu have relied on apt. Fedora use yum. And so on. For the most part you can find popular programs like Firefox, LibreOffice and GIMP on each platform. But developers have to build their software for each platform. And then when you install the application you might also have to install a bunch of other programs or “dependencies” to go along with it.

In recent years we've seen a few efforts to make things simpler by offering developers a build-once-distribute-everywhere option while also giving users a single file that contains everything they need to run an app.

Ubuntu designed its own solution called Snappy, and for the past few years Snaps have been available for other operating systems as well.

Flatpak is another option. It's an open source package management, deployment, and virtualization technology that's been around since late 2014. And today the developers have released version 1.0.

Flathub is also coming out of beta today. It's basically an app store/web site/repository for software that's packaged in the Flatpak format.

Source:

<https://liliputing.com/2018/08/flatpak-1-0-released-aims-to-simplify-installation-of-linux-apps.html>

BODHI LINUX 5.0.0 NOW AVAILABLE WITH UBUNTU 18.04 BASE

One of the best things about there being so many Linux distributions, is it can be fun to try them all. Believe it or not, “distro-hopping” is a legit hobby, where

the user enjoys installing and testing various Linux-based operating systems and desktop environments. While Fedora is my reliable go-to distro, I am quite happy to try alternatives too. Hell, truth be told, I have more fun trying distributions than playing video games these days, but I digress.

A unique distribution I recommend trying is the Ubuntu-based Bodhi Linux. The operating system is lightweight, meaning it should run decently on fairly meager hardware. It uses a desktop environment called “Moksha” which is very straightforward. The Enlightenment 17 fork is a no-nonsense DE that both beginners and power users will appreciate. Today, version 5.0.0 finally becomes available. This follows a July release candidate.

Hoogland further says, “If you installed a pre-release of Bodhi 5.0.0 you will simply need to run your system updates to grab all the latest goodies that are in these ISO images. Keep in mind that system updates will not adjust the look of your desktop automatically though because this would require

messing with custom configurations you might otherwise have already."

The lack of a change log is surprising, but apparently, the move to an Ubuntu 18.04 base from 16.04 is the only major difference. With that said, updating the base is rather significant, so that alone should be worth the upgrade. The improved "modern" user experience should also excite users -- eye candy does matter.

Source:

<https://betanews.com/2018/08/22/bodhi-linux-5/>

RED HAT ENTERPRISE LINUX 7.6 BETA IS OUT NOW

I've said it before. I'll say it again: Red Hat, not content with being a Linux power, wants to be a cloud powerhouse. Need proof? Look no further than the newest beta for Red Hat Enterprise Linux (RHEL) 7.6.

Sure, you'll see Linux security improvements. These include an

improved GnuTLS library with Hardware Security Module (HSM) support, a strengthened OpenSSL for mainframes, and enhancements to the nftables firewall. In addition, RHEL 7.6 integrates the extended Berkeley Packet Filter (eBPF) to provide a safer, more efficient mechanism for monitoring Linux kernel activity. In later versions, this will enable additional performance monitoring and network tracing tools.

But the real changes are to make RHEL better for hybrid cloud deployments. For example, 7.6 uses Trusted Platform Module (TPM) 2.0 hardware modules to enable Network Bound Disk Encryption (NBDE) to provide two layers of security features for hybrid cloud operations: The network-based mechanism works in the cloud, while on-premises TPM helps to keep information on disks more secure.

RHEL 7.6 also introduces Podman. This is part of Red Hat's lightweight container toolkit. It adds enterprise-grade security features to containers. Podman complements Buildah and Skopeo by enabling users to run, build, and

share containers using the Bash shell. It can also work with CRI-O, a lightweight Kubernetes containers runtime.

Source:

<https://www.zdnet.com/article/red-hat-enterprise-linux-7-6-beta-is-out-now/>

LENOVO'S LATEST TABLETS INCLUDE A \$70 ANDROID GO MODEL

Android Go isn't just for entry-level smartphones. Lenovo is refreshing its Android tablet line, and the centerpiece is arguably the Tab E7 (above), an ultra-low-end model for anyone who just wants the basics. The 7-inch slate won't wow people with its 1,024 x 600 screen, 1.3GHz MediaTek processor, 1GB of RAM, 16GB of expandable storage and 5-hour video playback time. However, Android Oreo Go edition should help it perform more gracefully than other tablets in that class -- and the \$70 starting price makes it a tempting option if you just want a no-frills e-book or Netflix viewer.

It'll be a Walmart exclusive when it ships in October, and a 10-inch Tab E10 counterpart will arrive at the same time offering a faster Snapdragon 210 and a 1,280 x 800 panel for \$130.

Other slates are more conventional, but welcome if you've been waiting for Lenovo to update its rapidly aging mobile tablet lineup. The Tab E8 jumps to a much nicer 8-inch 1,280 x 800 display and it's available now at Walmart for a not-too-unreasonable \$100. And you won't just have to stick to budget models. The mid-range Tab M10 sports a 1,920 x 1,200 display and a Snapdragon 450 processor, while movie mavens will want to look at the quad-speaker Tab P10. You'll have to be patient if you want those last two, however -- they won't arrive until the winter, and Lenovo hasn't provided pricing.

Source:

<https://www.engadget.com/2018/08/23/lenovo-android-tablets-2018/?quccounter=1>

UBPORTS RELEASES

UBUNTU TOUCH OTA-4 FOR UBUNTU PHONES, BASED ON UBUNTU 16.04 LTS

Ubuntu Touch OTA-4 is the first release to be based on the Ubuntu 16.04 LTS (Xenial Xerus) operating system series, which means that it includes more recent and up-to-date components than all previous releases, which were based on the older and deprecated Ubuntu 15.04 (Vivid Vervet) operating system series.

Therefore, Ubuntu Phone users that have a supported device (see below for supported devices) will now run a much-improved Ubuntu Touch mobile OS that runs recent technologies, such as the long-term supported Qt 5.9 application framework, which brings performance improvements and new features.

Apart from being based on Ubuntu 16.04 LTS, Ubuntu Touch OTA-4 includes up-to-date firmware for various of the supported devices, new power saving features, a new upgrade wizard to help users set up their

devices for the Ubuntu 16.04 base, a new option to allow users to manually set the opacity of dash's background, as well as a new option to let users request the desktop version of a website.

Ubuntu Touch OTA-4 also adds new keyboard layouts for Bulgarian, Turkish, and Swiss-French, a new search engine start page, and consistent release numbering across devices for all Ubuntu Touch channels.

Source:
<https://news.softpedia.com/news/ubuntu-touch-ota-4-released-for-ubuntu-phones-finally-based-on-ubuntu-16-04-lts-522382.shtml>

KALI LINUX 2018.3 ETHICAL HACKING OS ADDS IOS RESEARCH, PENETRATION TESTING TOOL

Powered by the Linux 4.17 kernel series, Kali Linux 2018.3 adds more fixes for the latest Spectre and Meltdown security vulnerabilities, better power management, improved GPU support, and lots of updated

hacking and penetration testing tools, including Aircrack-ng, Burp Suite, OpenVAS, Wifite, and WPScan. A full changelog with all the fixes and updates is available here:
https://bugs.kali.org/changelog_page.php

"Another edition of Hacker Summer Camp has come and gone. We had a great time meeting our users, new and old, particularly at our Black Hat and DEF CON Dojos," writes the Offensive Security team. "Now that everyone is back home, it's time for our third Kali release of 2018, which is available for immediate download."

One of the coolest new features of the Kali Linux 2018.3 release is a new penetration testing tool called idb, which hackers or bug hunters can use for research and penetration testing on Apple's iOS mobile operating system. Also new are the Kerberoast tools for Kerberos assessment and DataSploit OSINT framework for performing various recon operations.

Kali Linux 2018.3 also includes the GBD - PEDDA (Python Exploit Development Assistance for GDB)

tools.

Source:
<https://news.softpedia.com/news/kali-linux-2018-3-ethical-hacking-os-adds-ios-research-penetration-testing-tool-522401.shtml>

UBUNTU AND CENTOS ARE UNDOING A GNOME SECURITY FEATURE

Current versions of Ubuntu and CentOS are disabling a security feature that was added to the GNOME desktop environment last year.

The feature's name is Bubblewrap, which is a sandbox environment that the GNOME Project added to secure GNOME's thumbnail parsers in July 2017, with the release of GNOME 3.26.

Thumbnail parsers are scripts that read files inside a directory and create thumbnail images to be used with GNOME, KDE, or other Linux desktop environments.

This operation takes place every time a user navigates to folders, and the OS needs to

display thumbnails for the files contained within.

In recent years, security researchers have proven that thumbnail parses can be an attack vector when hackers trick a user into downloading a boobytrapped file on their desktop, which is then executed by the thumbnail parser.

It's for this reason that the GNOME team added Bubblewrap sandboxes for all GNOME thumbnail parser scripts last year.

But according to German security researcher and journalist Hanno Boeck, the Ubuntu operating system is disabling Bubblewrap support inside GNOME for all recent OS versions.

Furthermore, Google security researcher Tavis Ormandy also discovered that GNOME Bubblewrap sandboxes were also missing in the default version of CentOS 7.x.

But there's a valid explanation for what Ubuntu is doing, according to Alex Murray, Ubuntu Security Tech Lead at Canonical.

Murray says the Ubuntu team

opted to disable GNOME's Bubblewrap because they did not have the time and resources to audit the feature.

Source:

<https://www.bleepingcomputer.com/news/security/ubuntu-and-centos-are-undoing-a-gnome-security-feature/>

TAILS 3.9 ANONYMOUS OS IS COMING SEPTEMBER 5 WITH TRUECRYPT & VERA-CRYPT SUPPORT

The Linux-based Tails operating system is getting a new release early next month that will bring some much-anticipated technologies along with the latest and greatest software updates.

As we reported a few weeks ago, Tails devs planned on implementing support for opening VeraCrypt encrypted drives in the GNOME desktop environment that's used by default in Tails.

Tails 3.9 promises to be the first release to ship with VeraCrypt support, but it also looks like there

will be support for opening TrueCrypt encrypted volumes as well, straight from your GNOME desktop. Moreover, this release will integrate the "Additional Software Packages" feature into the desktop.

It also promises to revamp the interface of the "Configure Persistent Volume" dialog, and bring latest software updates, including the TOR Browser 8.0 anonymous web browser based on Mozilla Firefox 60 ESR, Tor 0.3.4.6 client/server for accessing the anonymous Tor network, as well as Mozilla Thunderbird 60 email and news client.

Tails 3.9 appears to be one of the last releases to ship with the Liferea feed/news reader, which will be removed from the default install images at the end of 2018 due to security concerns. As such, users are urged to start migrating their feeds to Mozilla Thunderbird once Tails 3.9 hits the streets.

The final release of the upcoming Tails 3.9 operating system will hit the streets early next month on September 5, 2018, the same day when the GNOME Project launches the highly

anticipated GNOME 3.30 desktop environment to the masses. However, Tails 3.9 will still ship with the latest and greatest GNOME 3.28 desktop environment.

Source:

<https://news.softpedia.com/news/tails-3-9-anonymous-os-is-coming-september-5-with-truecrypt-veracrypt-support-522397.shtml>

DEBIAN STRETCH GETS PATCH FOR REGRESSION CAUSING BOOT FAILURES ON ARM SYSTEMS

In a recent security advisory, Salvatore Bonaccorso writes that the last Linux kernel update released for Debian GNU/Linux 9 "Stretch" to mitigate the L1 Terminal Fault (L1TF) security vulnerabilities is causing boot failures for users on the ARM architecture.

Also known as Foreshadow, these security vulnerabilities are similar to the Spectre security vulnerabilities and allow an attacker that has access to an

unprivileged process to read the memory from arbitrary addresses that aren't controlled by users, including from the kernel.

To mitigate the two L1TF security vulnerabilities (CVE-2018-3620 and CVE-2018-3646), users had to update their kernels to version 4.9.110-3+deb9u3 and also install the latest processors microcode firmware update from the Debian non-free repositories.

If you're using Debian GNU/Linux 9 "Stretch" on an ARM machine, and you updated the kernel package to the version mentioned above, you might have experienced boot failures. Therefore, a patch is now available to fix this regression via a new Linux kernel update.

To fix the regression on your ARM systems running Debian GNU/Linux 9 "Stretch," you must update the kernel to version 4.9.110-3+deb9u4. Make sure you reboot your machine after installing the new Linux kernel version in your system.

Source:

<https://news.softpedia.com/news/debian-project-fixes-regression-causing-arm-boot-failures-on-debian-stretch-522418.shtml>

FIREFOX BROWSER WILL SOON BLOCK ALL WEB TRACKERS BY DEFAULT

There's no denying the fact that data collection on the web is one of the fundamental ways how our Internet actually works. But then comes the practice of unchecked data collection, which brings along tons of negative impacts like performance impact and data breaches.

It seems that Mozilla is planning to block all kinds of web trackers by default in the upcoming releases. This might be a massive blow to the advertisers in the regions where Firefox enjoys a more significant market share.

In an official blog post, Mozilla has outlined the plans to roll out a series of privacy-focused features.

The first feature will be rolled out in Firefox Nightly builds to

block trackers that increase the page loading time. It'll be first shipped using a field study in September. Mozilla further plans to implement it by default in Firefox 63 — if the test results turn out to be encouraging.

To remove cross-site tracking, Mozilla plans to block storage access from 3rd-party trackers and strip cookies as well. Firefox 65 might get this second important security feature; it's already available for testing in Nightly builds.

The third major change aims to fix the general malicious techniques being used on the web. You might have read about shady practices like traffic fingerprinting, in-browser crypto mining, etc.

Source:

<https://fossbytes.com/firefox-blocking-trackers/>

FULL CIRCLE 2018 SURVEY

It's that time of the year again where we ask what you think of FCM, Ubuntu, and Linux.

Some questions are a requirement, some you can skip over if not applicable.

Your answers will help shape Full Circle, so please use your constructive criticism. If you don't tell us what you think, or what we're doing wrong, then we won't know.

Survey URL:
<http://bit.ly/fcm2018>



Over the last month, I've been on holidays and haven't spent too much time working on my various devices. As such, I'll be covering some updates to past topics, and also give a sneak peek at some articles that are in progress.

UPDATES

EXERCISM

I previously mentioned Exercism in my "learning to code" articles, and alongside similar topics. Specifically, I mentioned it in issues 73, 99, 110, and 135. It is, however, worth noting again – because the website was recently updated. Exercism now offers two tracks - independent study, and mentored learning. My main issue with Exercism has always been that you sometimes get wonderful feedback, and other times you'll have to track down other people's solutions to try to learn. Now each track has a mentor assigned, who will respond to your solutions and offer feedback. They've also

redesigned the site to be a little more user friendly (at least that was my experience), though their approach in the CLI has changed (it seems like you need to now join a track on the website before you can fetch the problems).

CODEFIGHTS

I previously mentioned this website in issue 122. It's a site that essentially offers coding challenges that were user-submitted. They also offer problems from companies, and even offer an interview preparation course. I've recently started working through their interview problems, and the results have been quite interesting. Most of the problems I've done so far aren't terribly difficult - the difficulty (for me) comes from the runtime constraints (memory limits, maximum runtime, etc). They also always mention which company has previously had similar questions in interviews. So if you're looking to prep for an interview (or, like me, just want to practice something

different), I highly recommend giving it a shot. Before you do, I'd also recommend working your way up to it a bit with other programming challenges or things like the Euler Project. Or simply plan out every problem with pen and paper to optimize your process as much as possible before coding.

HUGO

I mentioned Hugo last month (issue 135). A brief recap - it's a static site generator written in Go. Since then, there have been a few major updates to the application - it now supports PostCSS, SASS, and resizing images using Resources.Get. However - if you use Netlify, you will need to include your resources folder in the git repository as Netlify does not currently regenerate these assets or CSS files. Last I heard, they are currently investigating options for supporting both versions of Hugo.

TAILWIND CSS

I mentioned this in my last two articles - issues 134 and 135. Just a small update though - I recently used Tailwind on a project, and had to spend some time optimizing the file size. I originally edited the configuration file, until I discovered the official documentation on using Tailwind CSS with PurgeCSS. This article, specifically. The key part there is their TailwindExtractor function, which adds support for special characters (as Tailwind uses `:` in CSS classes). I had to check a few other articles to get it working in my workflow, so here (on the next page, top right) is what my `postcss.config.js` looks like.

This file is then utilized by webpack and npm to generate my CSS. I haven't had any issues with `@apply` support, or classes utilized in my templates. This is because PostCSS processes the file after tailwind, meaning the `@apply` sections are executed first and converted to CSS. I wouldn't recommend trying to utilize `purgecss` outside of your actual build pipeline unless you're doing a

one-off optimization. I also wouldn't recommend purging stuff from your CSS file while you're still developing (just comment out the purgcss lines while you're working).

THE FUTURE

My intention is to order (and possibly assemble, depending on how much time I want to spend on this) a Redox keyboard (a slightly "reduced" Ergodox). Once I've ordered and received it, I'll be covering setup for the keyboard under Linux, and most likely also doing a review. For those readers who don't know what an Ergodox keyboard is - it's a split keyboard (roughly hand-shaped) that is programmable. Essentially my goal is to have a split keyboard that is comfortable to use that will use some custom layout (probably inspired by a US layout), while having multiple layers for special characters (such as German umlaut like äöü). I'd also have a layer that will just be a numpad (as I do tend to use it). The reasoning behind this is to improve my programming efficiency and typing speed (on DE layouts, the curly braces and square brackets are hidden behind

alt-gr keyboard combinations, etc) – while not losing the ability to quickly and easily write emails in German when the need arises.

CONCLUSION

I hope that my updates to previous articles might entice a few readers who were previously on the fence to give some of these websites and applications a shot. If there are any readers out there who are interested in the redox keyboard (or already own one), please feel free to email any questions or comments to lswest34+fc@gmail.com. Similarly, if you have any requests for articles or suggestions about the format, you can direct those comments to the above email address as well.

```
postcss.config.js

var tailwindcss = require('tailwindcss')
var purgcss = require('@fullhuman/postcss-purgcss')

class TailwindExtractor {
  static extract(content) {
    return content.match(/[A-Za-z0-9-_\:/]+/g) || [];
  }
}

module.exports = {
  plugins: [
    tailwindcss('./tailwind.js'),
    require('autoprefixer')({ /* ...options */ }),
    require('rucksack-css')({ /* ...options */ }),
    require('cssnano')({}),
    purgcss({
      content: ['./layouts/**/*.html'],
      extractors: [
        {
          extractor: TailwindExtractor,
          extensions: ['html']
        }
      ]
    })
  ]
}
```



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.



A little while ago, I wrote a blog article about a problem with Python and Tkinter. It has to do with the Checkbox widget not responding properly to the click event, at least in my mind. Here is how it all came about.

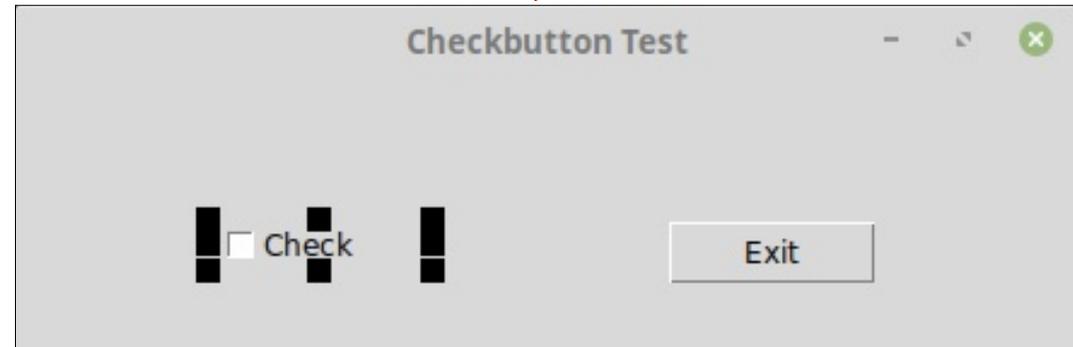
I was working on a custom widget for use with a database that implemented a scrolled checked list box. I figured that it would be helpful to be able to show a series of selected items from a list of categories on a per-record basis. As normal, I was using Page to create the GUI.

I wanted the widget to raise an event whenever any of the checkboxes in the widget were clicked, then display a list of all the selected items. It didn't really seem like a horribly daunting task at the time. However, when the event fired, and my callback code ran, the last checkbox that was clicked wasn't on the list. To make matters worse, if I clicked on the same button again, basically unchecking the button, that button THEN showed up on the

list. Now that didn't make any sense to me. I started digging and found the problem.

As you probably know, the Checkbutton widget looks just like any GUI checkbutton. It's an empty box that, when you click it, it shows a check in the box. If you click it again, the check goes away and the box is blank again. Under Tkinter, the Checkbutton widget provides a variable that you can monitor to show the state of the widget by using the `.get()` method of the widget. If it returns a "1", then the checkbutton is checked, and if it returns a "0", it's unchecked. Pretty simple. I wanted to use the mouse-click event to be the trigger to check the state of the widget.

Most of my work these days is under Linux, so that's the operating system that I did the base work under. I tried various workarounds and still couldn't get the silly thing to work the way it should. So, I went back to the basics. I created a simple GUI using Page and started exploring.



It looked something like this...

Nothing spectacular, but it would help with my snooping. If you have used Page before, you know that you usually bind an event (either mouse or keyboard) to a particular widget. In this case, I set the binding to the `<Button-1>` event (left mouse button click) for the Checkbutton widget. Then, in the callback function for the event, I printed out the state of the Checkbutton. The code (below) was pretty simple...

The first two lines are provided by Page as a simple notification

```
def on_ChkbtnClick(p1):
    print('chkbntest_support.on_ChkbtnClick')
    sys.stdout.flush()
    print(che38.get())
```

that the user has triggered the callback function. I usually leave these in until I'm done with the majority of the early testing. The last line of the function simply shows a '1' or a '0' in the terminal window, to show me what is going on. The thought being that when I click to check the button, I will see a 1 in the terminal.

However, what I saw when I ran the program and clicked the widget, was...

```
chkbntest_support.on_ChkBtnClick
```

Now, I knew that I didn't

initialize the checkbox, so the state was undetermined at startup, but the check showed on the widget, so the state should have been '1'. It wasn't. I clicked it again and the check went away as expected, but the terminal showed:

```
chkbntest_support.on_ChkBtnC  
lick
```

1

It didn't make any sense at all. The check value is 180 degrees out of sync with the visual indicator, just like in my custom widget. I've used the Checkbutton widget before, many times, and used the .get() method to query the status of that widget, but always from another event like a 'Save' button or something like that.

Frustrated to the MAX, I decided out of desperation to try the <ButtonRelease-1> event and see what happened then. I disabled the click event, and bound the other event to the widget. I wrote the same code for this event, and, low and behold, it worked properly. Everytime I let up on the mouse button, the state was queried and printed to the terminal correctly!

This made me feel much better, since now I have a workaround at least. I modified the code for my custom widget, and it still worked, so I was a happy camper. I even tried the code under both Python 2.x and 3.x and it worked as I wanted. However, this elation was only to be short lived.

I took my code over to a Windows 10 machine and started it up. Knowing that I had gotten it all figured out, I knew it would work just fine, since the code is all very basic (forgive the term) and nothing would go wrong.

Much to my surprise, it couldn't have gone worse. Not only did the capture of the widget state not work on the mouse release event, it didn't work using the mouse down event. I could query the state from a different "standard" button AFTER I had clicked the Checkbutton, but I couldn't get a "live update" to save my life. Nothing that I tried worked.

Eventually I came up with a very "dirty" workaround for it under Windows and basically called it a day. I still wanted to find out what was going on, but other projects

came up so that project was left for a while. Then, one day, I got some free time and decide to enhance the custom widget to support the scroll wheel. The scroll bar worked with the scroll wheel, but, if you tried to scroll from the center of the widget, nothing happened. That was so counterintuitive that I couldn't let it go. After a bunch of research, I found a way to do it. Unfortunately, Linux handles the mouse scroll wheel differently than Windows did, so I was back wrapping code based on the operating system. I tried again to capture the Checkbutton state in "real time", but I didn't get any further. Once again, I put the code off to the side with the plan to get back to it "some day".

The other day, I get an email from Don Rozenberg, who is the author of Page. Among other things, he said "Under Linux Mint, pressing and holding button-1 on one of the checkboxes causes it to toggle, whereas under Windows the checkbox doesn't toggle until the button-1 is released."

I decided to go back to basics and try to figure out, once and for all, a way to monitor the check

state correctly for both operating systems.

I recreated my simple Checkbutton test GUI app in Page and was in the middle of doing the bindings when I realized that I had forgotten that the Checkbutton widget also has a command attribute that you can use to respond to the mouse events. The main reason that I don't use it more is that you can't pass the event object into the callback function, which many times is useful to have since it includes the mouse position. This time, however, it isn't needed, so I added it to the mix. So now I had callback functions for mouse down, mouse up, and the command event. On the following page (top right) is the code.

This allowed me to see what happened whenever the mouse got clicked in every way. I started under Linux, since I thought I knew what should be happening. When I ran the program, I got the following (next page, bottom right) in the terminal window...

That was what I wanted to see. The mouse-down event came first, then the command callback was

fired, and finally the mouse-up fired. Good. So, I bundled up my app and booted up the Windows machine. I copied the code to a folder and ran it under Python. The form came up correctly and I clicked the Checkbutton to set it to Checked.

I fully expected to see pretty much the same thing, except that I wouldn't see the correct state for the button just like I did before. Much to my surprise, this is what I got:

```
chkbntest_support.on_ChkBtnClick
Unchecked
```

```
chkbntest_support.on_ChkBtnRelease
Unchecked
```

```
chkbntest_support.on_ChkBtnCommand
Checked
```

Under Windows, the mouse up event fires before the command event. AND the command event can query the state of the Checkbutton. Just to make sure, I clicked it again to uncheck it and sure enough I got this:

```
chkbntest_support.on_ChkBtnClick
Checked
```

```
chkbntest_support.on_ChkBtnRelease
Checked
```

```
chkbntest_support.on_ChkBtnCommand
Unchecked
```

So now I know that under Windows, the command event happens AFTER the mouse-up event, and actually does correctly follow the state of the widget.

What this means for someone who uses Python and Tkinter under the Mac operating system, I have no idea, but I am guessing that it will pretty much follow the Linux results.

I intend to dig a bit further into this to see exactly where the "problem" is and then try to figure who I should report this to.

Just goes to show, don't give up if, the first hundred times, things don't go the way you expect them to.

Until next time, have a GREAT month.

```
def on_ChkBtnClick(p1):
    print('')
    print('xxxxxxxxxxxxxxxxxxxxxxx')
    print('chkbntest_support.on_ChkBtnClick')
    sys.stdout.flush()
    if che38.get() == '1':
        print('Checked')
    else:
        print('Unchecked')
```

```
def on_ChkbtnCommand():
    print('chkbntest_support.on_ChkbtnCommand')
    sys.stdout.flush()
    if che38.get() == '1':
        print('Checked')
    else:
        print('Unchecked')
```

```
def on_ChkbtnRelease(p1):
    print('chkbntest_support.on_ChkbtnRelease')
    sys.stdout.flush()
    if che38.get() == '1':
        print('Checked')
    else:
        print('Unchecked')
```

```
xxxxxxxxxxxxxxxxxxxxxxx
chkbntest_support.on_ChkBtnClick
Unchecked
chkbntest_support.on_ChkbtnCommand
Checked
chkbntest_support.on_ChkbtnRelease
Checked
```



When creating mind maps, you don't want to spend all your time formatting individual nodes. As I showed in part 6, styles let you format once and use many times. Sometimes, it's handy to apply more than one style to a node. Or you want to apply a style according to the content, date created, or the icon applied. Rather than applying styles manually, conditional styles apply styles under predefined conditions. Conditional style can apply to an individual node or to an entire map.

Once you have all your styles created, you can save them in a template to use again. While there is no Save as Template option, it is possible to save a map in a template folder.

CREATING CONDITIONAL STYLES

The first step is to create a style for the condition to apply. Part 6 of this series discusses creating styles. When creating the

conditional style, all the styles are available to you. For example, you could create a style that bolds the text and makes the font bigger than the default.

There are conditional styles for individual nodes and the entire map. The dialogs work and display the same for both. To open the 'Manage conditional styles' dialog, use the menu Format > Manage styles > Manage conditional styles for map (or for node). When you select 'Manage conditional styles for node', the rules apply to the selected nodes. 'Manage conditional styles for map' applies to all nodes in the map.

The dialog shows any defined conditional styles. If you have not defined any styles, the list is blank. There are five buttons down the

right-hand side, two at the bottom, and four columns.

The New button creates a new conditional style. It has a filter of always and the default style. You can double-click the style to select another style. The always condition is unnecessary in the map conditional styles. But the always condition allows you to apply many styles to an individual node or selected nodes.

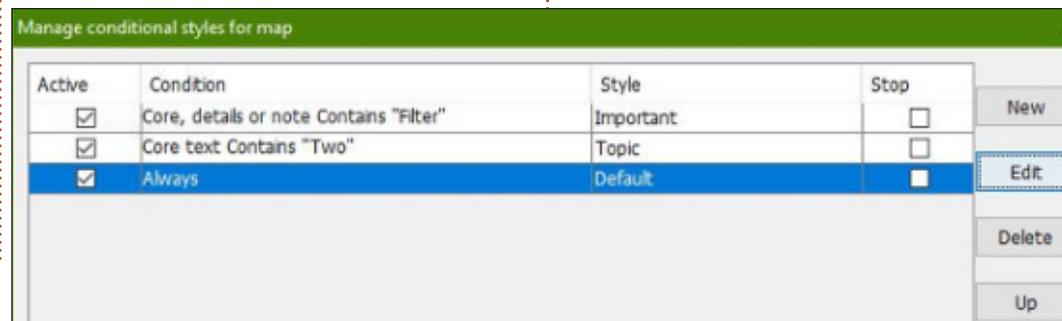
The Edit button opens the Filter Composer dialog. The Filter Composer allows you to edit the currently selected condition's filter. I'll cover the Filter Composer below.

Clicking the Delete button will remove the selected conditional style.

The Up and Down buttons allow you to reorder the conditional styles in the order you want them to trigger. The order can change the effect the conditional style has on the node(s).

Each conditional style has, without deleting it, uncheck the box. The Condition is the filter selected from the Filter Composer. To change the filter, click the Edit button to open the Filter Composer. The Style is the style to apply when the condition is met. You can change the style by double-clicking the style for a dropdown list of all the styles. The last column is the Stop checkbox. If you check the box, the program will not apply the conditions after it in the list. This is one more way to hold on to a conditional style without deleting it.

At the bottom of the dialog are the OK and Cancel buttons. Click the OK button to accept the changes and close the dialog. The Cancel button discards any changes and closes the dialog.



THE FILTER COMPOSER

Open the Filter Composer by clicking on the Edit button. You build your conditions (or filters) in the composer. The filters become the criteria for the conditional style. The options for creating these filters are many, and I will not attempt to cover them all. I will give examples to show how the composer works.

At the top of the dialog, you have three dropdown boxes. These boxes build a single filter. I like to think of it as building a sentence. The first box is the subject of the filter. From this dropdown, you can select the different elements of a node, i.e. core text, details text, notes. The middle dropdown is the action of the filter, i.e. equal to, contains, greater than, less than. The last dropdown is the qualifier.

This is the text or object, like an icon, to match. Together the three buttons create a complete filter. There are two checkboxes under the boxes. Checking Match Case forces the filter to match the case of the text in the qualifier box. Checking Approximate matches text that is close to the entered text, e.g. "files" will match with "flies".

The buttons down the right side perform actions on the filters created. The first button is the add button. It adds the filter created by the boxes to the list. The second button will negate the selected filter. The next two buttons are activated by selecting more than one filter. The third button will combine the selected filters with an AND command. An AND will activate the condition only when both filters are true. The fourth button combines the two filters

into an OR command. In this case, the condition will activate when either filter is true. The fifth button, split, breaks filters combined with AND or OR into individual filters. The sixth button deletes the selected filters. You use the seventh button to name a filter. The last two buttons are used to move the selected filter up and down in the list.

There are four command buttons across the bottom. The OK button makes the selected filter the condition of the edited conditional style. To ignore your changes click the Cancel button. You can write the list of filters to a file using the Save button. After clicking Save, browse to the location where you want to save the file. In the File name text box

enter a name for the file and click Save. The Open button lets you open a previously saved filter file. Browse to the location where the file was saved, select the file, and click Open.

EXAMPLES

EXAMPLE 1

The simplest conditional style is setting a node to have more than one style. In our example, we will assign the Topic and Important styles to a node. Select a node to apply the styles to. From the style dropdown in the main toolbar select the Topic style. Follow the menus Format > Manage Styles > Manage conditional styles for



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node. Click the New button. This creates the default Always condition. Double-click the Default style and select the Important style. Click on OK, and you will see both styles have been applied to the node.

EXAMPLE 2

The real power of the conditional styles is applying a style under defined conditions. Create four nodes named One, Two, Three, and Two More. Follow the menus Format > Manage Styles > Manage conditional styles for map. Click on New. With the new condition selected, click Edit. In the first box select Core Text, leave the second at Contains, and type "Two" into the third. Click the add button. With the newly created filter selected click on the OK button. From the style dropdown on the new conditional style, select the Topic style. Click OK. You will see the Topic style has

been applied to the nodes with Two in the core text.

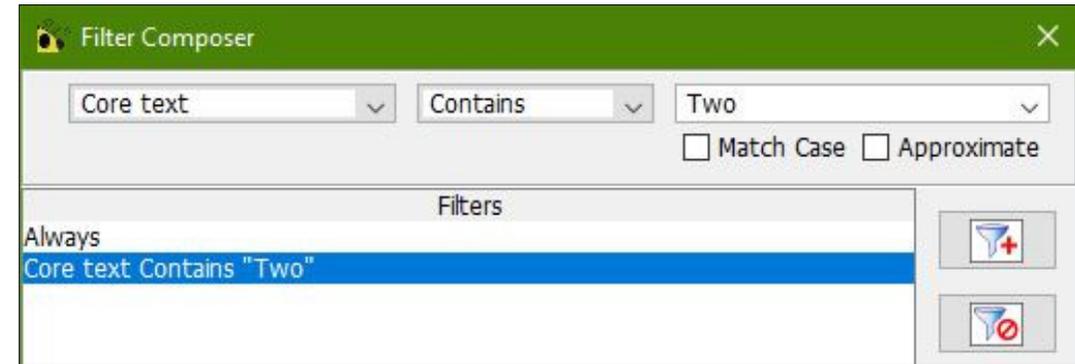
TEMPLATES

Once you have created your styles and conditional styles, you will want to save them in a template. Freeplane doesn't have a menu option for saving a map as a template so you will have to manually save them.

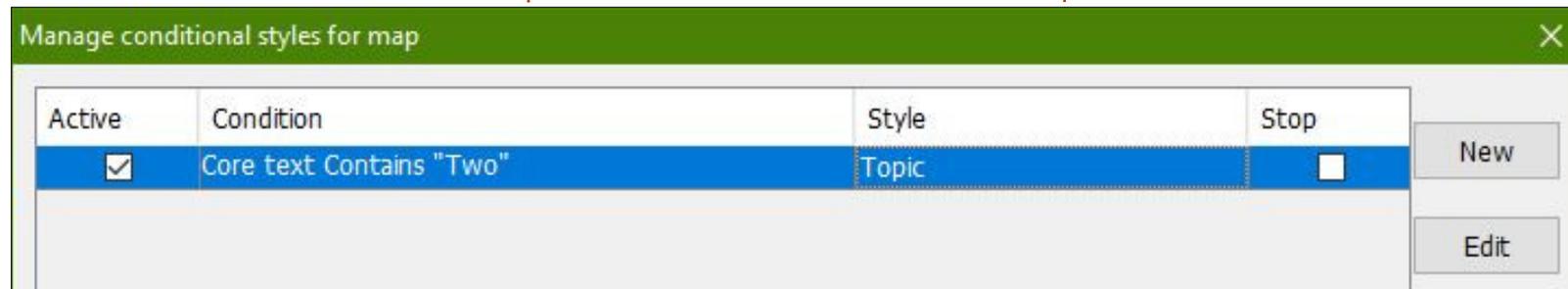
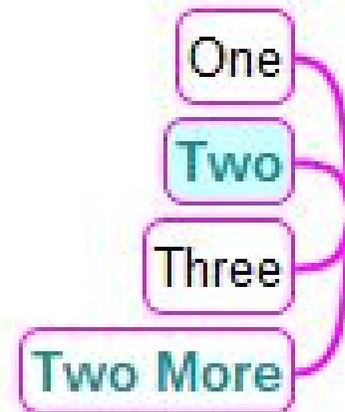
First, you need to know where the user directory is for your copy of Freeplane. Use the menus Tools > Open user directory. Make a note of the location of the directory. When you are ready to save your map as a template, save it in the Template folder under the user directory.

The next time you create a new map, your new template will show in the dropdown list of the templates.

Styles, conditional styles, and



templates let you create maps using your coding system. They speed up the process of creating new maps. You may want to create different templates for different map types.



Elmer Perry is a technical support rep for an international keyless access company. He enjoys writing, woodworking, and technology. He lives in Leicester, NC with his wife.



In FCM#129, I showed you how to use the analog-to-digital conversion (ADC) with a potentiometer, and how to control a LED with pulse width modulation (PWM) with the resulting value of the ADC. In this article, I will show how to use the ADC again, but this time we use a light dependent resistor (LDR) to gather information about the ambient brightness and how to communicate at distance.

LIGHT DEPENDENT RESISTOR

A LDR, or photocell, is a light-controlled variable resistor. The resistance decreases with increasing light intensity. Hence you may use it to develop light-dependent applications to react to

changes of the light intensity or the difference between light and dark conditions. In the dark, the LDR has a resistance of many megaohms; when the LDR is in the light, the resistance drops to a few hundred ohms. LDRs are available in different sizes (such as LED, e.g, 3 or 5 mm), and with different electrical resistances. Always review the datasheet, which contains the characteristics of specific LDRs.

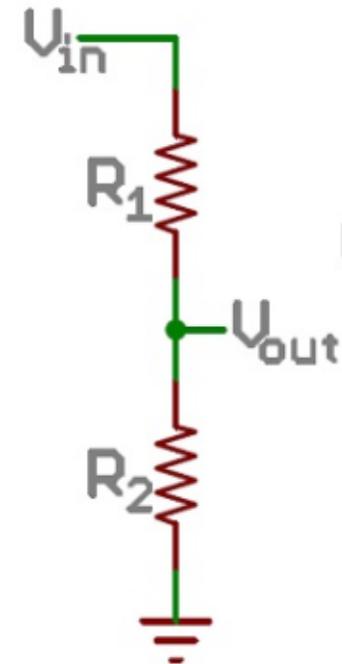
LDR AND THE ANALOG DIGITAL CONVERSION

To use the ADC, we need to know how to connect a LDR to the microcontroller – which seems simple – like any other resistor. But

$$V_{out} = V_{in} \cdot \frac{R_2}{R_1 + R_2}$$

here comes the tricky part: you need a voltage divider to connect it to get useful readings. Therefore, we need some theory before we can operate the LDR correctly. Using Ohms Law, the current which flows through a conductor between two points is directly proportional to the voltage across the two points. To calculate the voltage dividers values, you can use this equation. If we would use resistors with a fixed value of 100 Ohm for resistance, we could set $V_{in} = 5\text{ V}$, R_1 as 100 Ohm and R_2 as 100 Ohm and would have a fixed V_{out} of 2.5 Volts. Next, we assume R_1 to be our LDR and assume further it's dark and the LDR has gained its highest resistance of 1 MOhm - then V_{out} would be 0.45 V. On the other hand, if we set the LDR as R_2 and leave R_1 at 100 Ohm the voltage would be 4.55 V. As you can see, knowing on which side the LDR resides is important to interpret the measured values. So, first you have to decide where the LDR resides in your circuit. After considering the placement of the LDR, the ADC has to be connected between R_1 and R_2 . The schematic

of the circuit looks a bit like a twisted L with a joint to the right side. In the diagram, the V_{out} would be the connection to the ADC channel on the microcontroller.

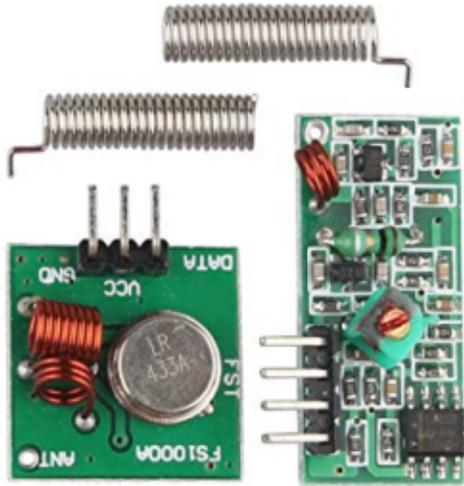


OVER THE AIR DATA TRANSMISSION

For the first experiments, I measure some changes of the LDR

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values by connecting the microcontroller and the LDR with the serial adapter and see how the values change by changing the light levels.



Then, as a further development, it is interesting to check the light levels outside the house, to get an idea whether it is dark or not. To gather the data from the outside, a way to transmit the LDR values over air would be great. In the Arduino world, there are some technologies to achieve this: ZigBee, 2.4 GHz, Bluetooth, WLAN, LoRa to name a few. But, for simplicity, we use the cheapest method of wireless data transfer: a 433 MHz transmitter and receiver (for those not living in the EU, it would be 315 MHz). They are really

inexpensive, a pair can be obtainable for a few Euros. On the vending platform of your choice, e.g. ebay, you can find them easily, as "Arduino 433 Mhz", "Arduino 315Mhz" also the keyword "superregenerative" will help, the receiver is called "HX-RM-5V" and the transmitter solely is called "FS1000A". Make sure you get only those with the plain transmitting / receiving circuits on them. Choose those with or without an antenna, if you do not have an antenna included, you can choose a thin wire. This setup can be unreliable because the data transfer is concurrent with other devices such as weather stations, remote power plugs, and the like. And read the article up to the conclusion if you are about to buy new ones.

For more important data, it is recommended to use other transfer methods. But, the simplicity with this hardware was intriguing: Just 3 Pins for a wireless data transfer, Vcc, GND and a DATA pin on both the transmitter and the receiver. Another point is the power consumption, transmitter and receiver draw only some mA of power which should give some neat wireless sensor nodes. With

respect to the Arduino, there are some libraries to receive and send data over those modules. Multi-purpose: virtualwire, and its successor radiohead, or, for switching power plugs: rc-switch. Great Cow BASIC does not include a demonstration for this type of solution. Most of the demonstration code focuses on modem-like transmitter/receiver and the nrf24L01 (2.4 GHz) module support.

So, how to create a simple solution to this problem? I asked myself why not use a plain serial connection?.. this might do the job with ease. After some research, it seems that this idea has been thought through and tested before, so I found proof in some Instructables projects (see links below for more information), and that my idea was feasible.

TRANSMISSION SOFTWARE

Using the plain serial connection has another advantage. You do not need major changes to the setup from the early articles I have published in this series. The same program code to send data to the USB serial converter can be

used, you would only interchange the connections between the USB serial converter and the transmitter. The following code might look familiar, because the ADC readings of a potentiometer and a LDR are similar, the only changes to the code was to rename the variable from POT1 to LDR (code on next page, top right).

Put an USB serial adapter with the RX-Line to the TX-Pin of the ATtiny13a, and start your terminal software to see what's going on there. At my site, during writing and testing the software, the surrounding light gives values around 66 - 71, after holding the camera light of my smartphone over the LDR the value increases to a maximum of 216.

TRIAL AND ERROR

After replacing the wires and heading over to air transmission, the results were very strange. This was the result for a quick installment: however, after soldering antennas (~ 17 cm) to both the transmitter and the receiver the results of the transmission improved. Achieving 40 cm distance with 'over the air

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transmission' and the quality was acceptable. Most reference articles I found suggest sending the data sometimes more than once. And, for the first test, shown below, this was proven by empirical testing (shown bottom right)

The next test configuration was to set the Sender device 1m from the Receiver device. As it turned out, the characteristics of the receiver could not handle the constant data stream the software sent to it every second. The surrounding noise pollutes the data stream. To improve the reception reliability, the software has to be written with the characteristics of the hardware in mind, the simple 433 MHz set used is best used with short bursts of data and not a constant stream of data. Also noteworthy in this article: the Sender device is always on, even when no data is being sent, therefore the transmitter device always has power applied. In many other setups, I found that the transmitter device is switched off after transmit. Either by setting the microcontroller to a powersave status, or by switching the transmitter device over a transistor. So, it is getting a bit tricky to use this technique for a

```
#CHIP tiny13a, 1.2
#OPTION Explicit
#include <SoftSerial.h>           'include the library. This is required.
#define ADSpeed MediumSpeed

'Config Serial UART:
#define SER1_BAUD 1200           'baudrate must be defined
#define SER1_TXPORT PORTB       'I/O port (without .bit) must be defined
#define SER1_TXPIN 1            'portbit must be defined

DIR PortB.4 IN
DIM LDR AS BYTE

'Main program
DO
    LDR = READAD(ADC2)
    Ser1Print LDR                'send the value from the LDR
    Ser1Send 13                  'new line in terminal
    Ser1Send 10                  'line feed in terminal
    WAIT 1 S
LOOP
```

```
DO
    LDR = READAD(ADC2)
    REPEAT 3
        Ser1Print LDR           'send the value from the LDR
        Ser1Send 13             'new line in terminal
        Ser1Send 10             'line feed in terminal
        WAIT 1 S
    END REPEAT
LOOP
```

direct microcontroller to serial line connection.

Experimentation with Byte transmitted as preambles, as suggested in the research articles, were not of sufficient

quality for the readability of the console output. The results were

even the same if given a value as 0xFA or given a simple 'dot' as preamble. So, I added dots as pre- and postamble. The results on the console for the short range of 40cm to 1m looked promising and the data received was read as in the snippet below.

After setting the Sender device to another room (~ 3m and a wall

```
--console data--      (jpnvulator --ascii --tty /dev/ttyUSB0 --
read)
00 00 00 00 E0 63 8A FE 2E 2E 2E 0D 0A 2E 2E 2E .....c.....
37 31 2E 2E 2E 0D 0A 2E 2E 2E 37 31 2E 2E 2E 0D 71.....71....
0A 00
--console data--
```

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between), the results looked promising the first seconds, but after a while the data got unreadable. Even in the same room (~ 3m, but no walls) left unusable data on the console as in this other snippet (top right)

So something was faulty in my code which gave poor results. After careful examination with the timings, the times the LDR values are sent and the last Byte value (Ser1Send 0b00000000) it seems that this last Byte value was too much. After deleting this line and recompiling it, the results (bottom right) were much better.

BREADBOARD

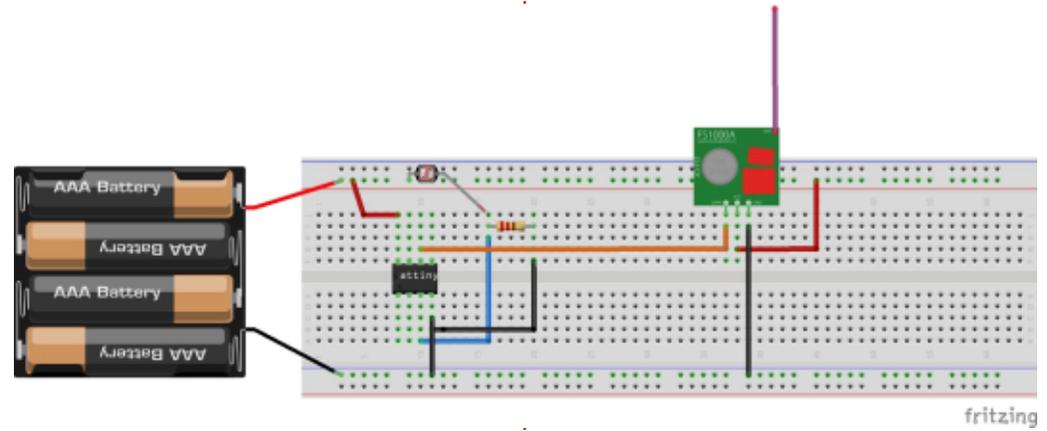
CIRCUITRY

To test the software, you might connect the Receiver directly to a USB to serial converter, connect 5V to Vcc, the RX to the DATA pin (only one of them, not both at the same time), and GND to GND. The transmitter device and the LDR should be connected to the ATtiny13a as seen below.

CONCLUSION

The software serial solution from Great Cow BASIC did the job as expected. But, to get reliable results from the over-the-air connection was much more work

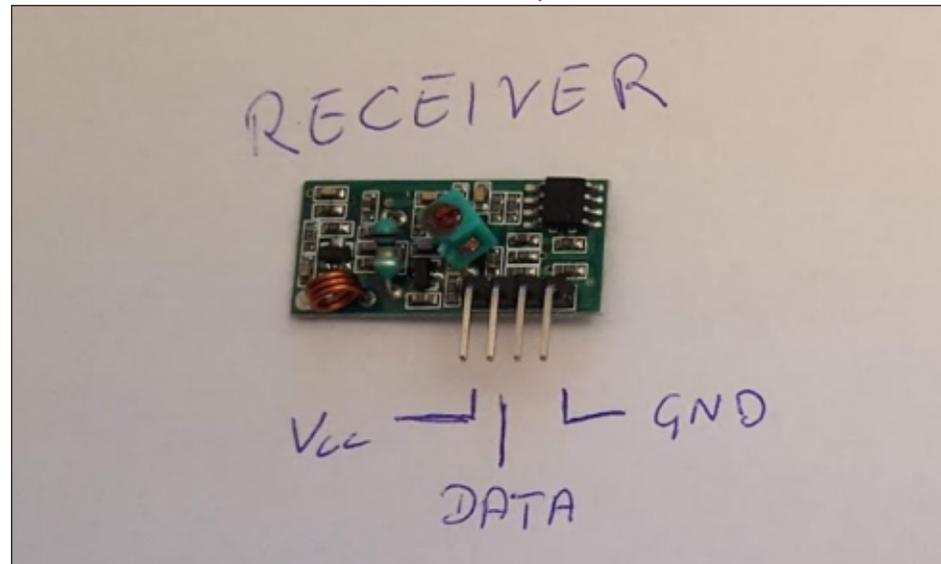
```
--console data--
00 00 00 00 00 00 C8 00 04 2C 00 06 7E C0 50 00 .....~.P.
1F F0 00 71 00 00 0D E0 01 19 64 80 DF 02 00 FE ...q.....d.....
86 F9 2A 7E 20 7A C3 F9 0A 00 D2 80 01 00 5F F6 ..*~ z....._
--console data--
```



than I had expected. Testing this little Transmitter outside was out of scope for this time due to my tight time budget. But, for a battery powered solution, I would implement some kind of power saving on the transmitter because sending data every 8 seconds without switching it off would soak

up the energy of the most powerful battery soon. The compiled binary has 772 Bytes, so there is some space left to implement maybe a solution with a watchdog timer and a power saving routine can be added.

On the hardware side, I maybe



```
--console data--
FF 2E 2E 2E 38 2E 2E 2E 0D 0A 2E 2E 2E 38 2E 2E
...8.....8..
2E 0D 0A 2E 2E 2E 38 2E 2E 2E 0D 0A .....8.....
FF 2E 2E 2E 38 2E 2E 2E 0D 0A 2E 2E 2E 38 2E 2E
...8.....8..
2E 0D 0A 2E 2E 2E 38 2E 2E 2E 0D 0A .....8.....
FF 2E 2E 2E 38 2E 2E 2E 0D 0A 2E 2E 2E 38 2E 2E
...8.....8..
2E 0D 0A 2E 2E 2E 38 2E 2E 2E 0D 0A .....8.....
```

would change the receiver on the long run as there might be better solutions for this. Other receivers which were mentioned to work better and are not really more expensive than the used one are "RXB6", "RXB8", "RXB12". If I would buy new hardware, I would maybe test another receiver as it seems that the used one is the one with the poorest reception you can get. The transmitter works fine and seems to have no better candidate.

For more reliable data transfers, it could be a good idea to implement another algorithm and receive the data first through another microcontroller, there are some suggestions in the references and elsewhere on the internet. Maybe change the transmitter and receiver side to a completely different solution would be another valid option. And, I would definitely add some kind of switching for the transmitter to power it off if no data is to be sent - otherwise your power plug cannot be switched - this project interferes with them.

Essentially, it works. The Tiny13a can support LDR and data transmission over the air.

SOURCES

If you want to download the sources instead of copy-pasting it, you can now check it out with git or an SVN client. Have a look at <https://github.com/Anobium/Great-Cow-BASIC-Demonstration-Sources/tree/master/Publication%20Solutions/Full%20Circle> for more information.

REFERENCES

Good introduction on voltage divider circuits
<https://learn.sparkfun.com/tutorials/voltage-dividers/ideal-voltage-divider>

Explanation about 433 / 315 Mhz receivers and transmitter, virtualwire library
<https://www.pjrc.com/teensy/tutorials/VirtualWire.html>

Simple transmit over 433 Mhz modules, using the USART - part 1
<https://www.instructables.com/id/Wireless-Communication-Using-Cheap-433MHz-RF-Modul/>

Simple transmit over 433 Mhz modules, using the USART - part 2

<https://www.instructables.com/id/Wireless-Communication-Using-Cheap-433MHz-RF-Modul-1/>

Tips for enhancement of the use of the 433 Mhz modules and a suggestion for a own transfer protocol

<http://www.romanblack.com/RF/cheapRFmodules.htm>

ACKNOWLEDGEMENT

I wish to thank ***Evan Venn (Anobium)*** from the Great Cow BASIC Team for his insights and valuable hints.



Boris holds a bachelor degree in business administration and works for an insurance company. While not working, he is a family person and enjoys playing with his kids or tinkering with his personal projects. Contact info and additional material at his site: <https://www.evil-publishing.de/fcm>



Last time, we looked at how it's possible to include animations in an SVG file that is loaded as an image. We introduced the general idea by animating the fill and stroke colors, and the stroke width, of a square we'd drawn in Inkscape. If we're just working with a square – or even a rounded rectangle – we could equally achieve the same effect in HTML by animating the “background” and “border” CSS properties, with no need to go near SVG. But the important point to note is that we actually used CSS to animate properties that only make sense for SVG. In other words, although CSS is most commonly used with HTML, we can still use it to modify many SVG-only values. Furthermore, we can animate those properties not only on squares and rectangles, but also on arbitrary paths.

By reusing the same animation that we had in the previous article, we can produce the same set of three snapshots, but this time of a more complex shape. For this example I created a star in

Inkscape and converted it to a path. The first CSS rule, which previously had a selector of “rect”, also needed to be updated to change the selector to “path”.

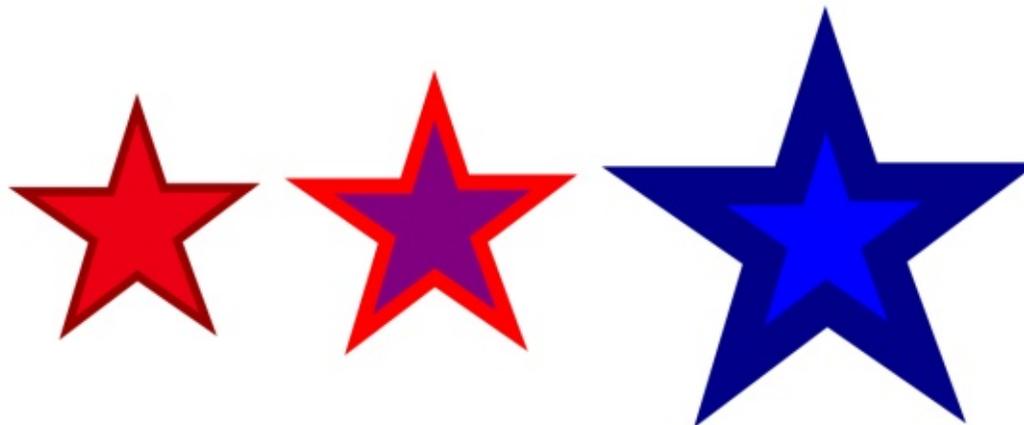
But what if you want to animate more than just the style of your elements? Perhaps you want to make them move around, to spin, or to change size. You might even want the shape of the path itself to change. All this and more is possible with SVG... but, as will become clear, I don't necessarily recommend doing it.

As I've previously discussed in this column, there was a time when the W3C went full tilt in favor of XML. They defined and specified a

wide range of XML languages – including SVG and XHTML (a pure XML version of HTML) – as well as working on various supporting technologies that could work with any XML language. One of these technologies was the “Synchronized Multimedia Integration Language”, or SMIL (pronounced “smile” apparently). SMIL is itself an XML language that describes how an XML document should change over time, or in response to certain interactions such as mouse movements and clicks. In the case of SVG, therefore, SMIL can be used to describe the way in which arbitrary attributes should change over time, allowing any part of the image to be animated.

If the W3C's plan for XML domination had panned out, SMIL would probably have become a universally implemented technology for animation and multimedia. In practice, however, browsers veered away from the XML-centric approach in favor of the more lax requirements of HTML, and Microsoft never implemented SMIL in their browsers. Faced with an animation standard that wasn't supported by Internet Explorer, it's no wonder that so much early animation on the web was outsourced to Flash. The result was that SVG languished for a long time and SMIL never really took off. In the meantime, CSS gained more and more abilities that were once the remit of SVG, and has begun to encroach on the domain of SMIL with CSS animations and transitions.

The penultimate nail in the SMIL coffin came with the release of version 45 of Google's Chrome browser, which officially listed the technology as deprecated. It would still work for the time being, but that was notification that it's



eventually going away. After a backlash from the community they revoked this announcement, so SMIL is no longer deprecated in Chrome – but it's only a matter of time before they decide that CSS animations are capable enough for them to try again. So that's why I don't really recommend using SMIL: with no support in Internet Explorer or Edge, and the prospect of being deprecated then removed in Chrome at some indeterminate point, it's not a technology that can be relied on as a viable solution for use on the web at large.

Given this situation I'm not going to discuss SMIL in any great detail. But as it is (currently) usable in (most) web browsers, I'll spend a couple of articles giving you a brief introduction in case you feel it is a technology that you can use and wish to investigate further – and as an insight into the sort of web we might have now, had Microsoft played ball, and XML gained stronger support from the browser vendors.

There are four types of animation that can be performed using SMIL with SVG, in each case by adding the relevant animation

tag (shown in brackets) inside the element you want to animate:

- Animate the attributes of an SVG element (<animate>).
- Animate the transformation that can be applied to an SVG element (<animateTransform>).
- Animate the color of the fill and stroke (<animate> or <animateColor>).
- Animate the position and, optionally, rotation of an object by making it follow another path (<animateMotion>).

Let's look at a simple example, by trying to replicate the CSS animation of the same red star I used earlier. In this case we will need to animate the fill and stroke color, and the stroke width, using the <animate> tag. So rather than having those values stored as CSS properties, they need to be moved out to independent attributes. This results in our SVG file looking something like that shown top right.

Note that, for simplicity, I've rounded all the coordinates down to whole numbers. There's also a

```
<?xml version="1.0" encoding="UTF-8"?>
<svg
  xmlns="http://www.w3.org/2000/svg"
  width="120mm"
  height="120mm"
  viewBox="0 0 120 120">
  <path
    fill="#f00"
    stroke="#800"
    stroke-width="4"
    d="m 40,15 6,18 19,0 L 49,45 56,64
      40,53 24,65 30,45 14,34 34,34 z"
    transform="translate(20, 20)" />
</svg>
```

transform attribute that translates the star 20 units to the right, and 20 units down: I could have done the calculations to adjust the coordinates for the path, removing the need for this entirely. As Inkscape seems rather keen to put transforms onto its content, however, I decided to leave it in to better represent the sort of (minimised) output you might see from the program.

As with the CSS animations from last time, I'm going to start by just animating the fill color. This

involves putting the <animate> tag as a child element of the <path>. In case you're not very familiar with XML, in the previous code the path is written as a self-closing tag: <path ... />. This can legitimately be rewritten as a non-self-closing tag: <path ...></path>. It's this latter approach we'll need in order to add a child element (note that the rest of the SVG file and many of the path attributes have been omitted for clarity - shown below).

```
<path
  fill="#f00"
  ...
  transform="translate(20, 20)" >
  <animate attributeName="fill"
    from="#f00" to="#00f"
    dur="5s" fill="freeze" />
</path>
```

HOWTO - INKSCAPE

The new element is pretty self-explanatory: `attributeName` defines which attribute in the parent element we're animating, `from` and `to` are the start and end values, `dur` is the duration of the animation, and `fill="freeze"` is used to make sure the attribute retains the last value, rather than flipping back to its original value.

That's easy enough, but our original animation wasn't a simple transition from one value to another, it also had a specific intermediate value, giving us three keyframes in total. That can be achieved with SMIL as well, by replacing our "from" and "to" attributes with "values" and "keyTimes" attributes which hold the three values we want to hit, and the proportion of the way through the animation that each is applied. The values in each list are separated by a semicolon. Code is shown top right.

I'm using a generic `<animate>` element for animating this fill color. There is also a specific `<animateColor>` element that could be used instead, but since `<animate>` can do everything that `<animateColor>` can achieve, plus more, there's no point using the

latter these days. Even the SMIL specification now recommends using `<animate>` rather than `<animateColor>`, so who am I to argue.

Our original animation not only changed the fill color, but also the stroke color and width. This obviously entails animating three attributes – which we do just by using three `<animate>` elements (shown right).

Notice that I've had to adjust the stroke-width values somewhat to get a similar result to the CSS animated version. I'm not sure why there's a difference – perhaps the CSS values are interpreted as pixels, whilst the SMIL values are treated as SVG user units, based on the `viewBox` declared at the start of the file. Whatever the underlying reason, a little tweaking was required but I was nevertheless able to produce the same result.

Animating attributes works well where the attribute can hold only a single, simple value, such as a length or color. The "transform" attribute is a more complex case, as it can hold a combination of `translate()`, `rotate`, `scale()`, and

```
<animate attributeName="fill"
  values="#f00; purple; #00f"
  keyTimes="0; 0.5; 1"
  dur="5s" fill="freeze" />
```

```
<path
  fill="#f00"
  stroke="#800"
  stroke-width="2"
  ...
>
<animate attributeName="fill"
  values="#f00; purple; #00f"
  keyTimes="0; 0.5; 1"
  dur="5s" fill="freeze" />
<animate attributeName="stroke"
  values="#f00; purple; #00f"
  keyTimes="0; 0.5; 1"
  dur="5s" fill="freeze" />
<animate attributeName="stroke-width"
  values="4; 8; 20"
  keyTimes="2; 3; 6"
  dur="5s" fill="freeze" />
</path>
```

`skew()` functions. If your element already has a transformation applied – as many will do if they're created in Inkscape – you probably want your animation to be added to the current transformation rather than replacing it entirely. To achieve this requires more than a simple `<animate>` element; it needs something that understands

the syntax and structure of the `transform` attribute. It needs `<animateTransform>` (next page, top right).

Here I've used a couple of `<animateTransform>` elements to zoom and rotate the star during the course of its animation. The first element scales the star

(type="scale"), first making it bigger (1 > 1.5) and then smaller (1.5 > 1 > 0.75), covering four keyframes in the five second duration. You might think that attributeName="transform" is redundant when the element itself is called <animateTransform> – and I would agree with you – but the animation doesn't work without it.

The second element rotates the star. In this case the values each consist of three space- or comma-separated numbers. These represent the amount of rotation (in degrees), and the x and y coordinates to be used as the center of rotation. I've selected 40 for each, to put the center roughly in the middle of the star, so it doesn't spin off-screen entirely.

Thanks to the scale animation, however, it does still move around quite a bit. As the star is scaled in size, so its center point moves and the values in the rotation animation are no longer correct. This could be accommodated, to some extent, by tweaking the x and y coordinates in the rotation, or by adding another animation to set a translate() transform to compensate for the moving center

point. A better approach would be to re-draw the star centered on the 0,0 coordinates, then position it on the page by tweaking the transform attribute on the element itself. That way, there's no need to specify a center point for the rotation, and the values for the "rotate" animation could be reduced to a simple list of angles.

You'll have noticed that both the <animateTransform> elements have an additive="sum" attribute. SMIL animations can be configured so that the animated values completely replace any previous value on the element, or so that the effects of the animation are cumulative. Without this extra parameter, the scale animation replaces the transform="translate(20, 20)" attribute that Inkscape created; then the rotate animation replaces the scale animation. The result is that the star only rotates, and doesn't scale – and it does so in the wrong location. The additive="sum" attribute tells the browser to keep any existing transforms around, and add the new animated value to them to give a cumulative effect. In other words, the star both zooms and rotates, and does so (roughly) in

```
<path
  ...
  transform="translate(20, 20)">
  <animate attributeName="fill" ... />
  <animate attributeName="stroke" ... />
  <animate attributeName="stroke-width" ... />

  <animateTransform attributeName="transform"
    type="scale" values="1; 1.5; 1; 0.75;"
    keyTimes="0; 0.33; 0.66; 1" dur="5s" fill="freeze"
    additive="sum" />

  <animateTransform attributeName="transform"
    type="rotate" values="0 40 40; 120 40 40; 360 40 40"
    keyTimes="0; 0.5; 1" dur="5s" fill="freeze"
    additive="sum" />

</path>
```

the location specified by Inkscape's translate() value.

Over the years, CSS has gained ever more of SVG's capabilities, with the result that the SMIL animations I've shown so far can all be implemented as CSS animations. The fill and stroke we covered last time, but even <animateTransform> has a counterpart in CSS, now that the latter supports a "transform" property that allows elements to be translated, rotated, scaled, and skewed. Unlike SVG, it also offers a few options for transforming your element in three dimensions.

But there are still some tricks up the SMIL sleeve which CSS

animations can't compete with (yet). One of these is the ability to animate a path between one shape and another. Much like animating a color, this is just a special case of animating an attribute – in this case the "d" attribute that holds the data representing the shape of a path. As a reminder, here's what the path data for our star looks like:

```
d="m 40,15 6,18 19,0 L 49,45
56,64

    40,53 24,65 30,45 14,34
34,34 z"
```

I'm going to animate the star turning into a large arrow, pointing to the top right of the screen. To do this, I just use another

HOWTO - INKSCAPE

<animate> element, transforming the "d" attribute from its default value to a new path definition. This will do the trick:

By commenting out the other <animate> and <animateTransform> elements (using the XML/HTML method of wrapping them in <!-- and --> tags), we can see what this path animation looks like in isolation. Here (above) are six frames from the transition.

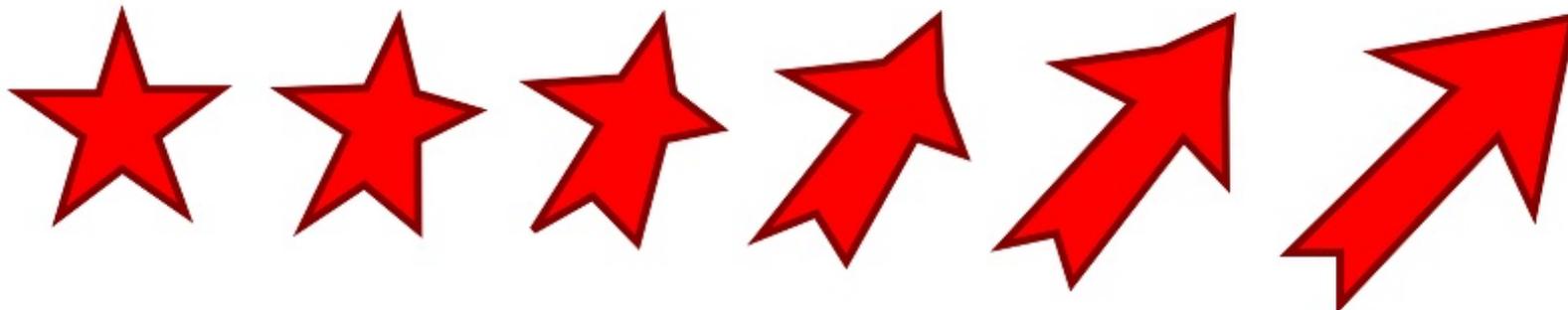
Removing the comment tags to reinstate the other animations results in a star that smoothly changes to an arrow whilst it's rotating, changing size, and it transitions from a red fill with a thin dark red outline to a blue fill with a thick dark blue outline (via a purple fill along the way). Stacking up multiple individual transitions to create one larger animation is something that SMIL excels at.

```
<animate attributeName="d"
  to="M 92,26 88,45 82,75 73,56 33,98
    33,85 20,85 62,44 42,35 71,30 Z"
  dur="5s" fill="freeze" />
```

It's important to note that the animated "d" values must all contain the same number of parameters for a smooth transition. Obviously the browser wouldn't know how to animate from a 5-pointed star to a 12-pointed star; which lines should the new nodes appear on? But the same goes for the other parameters in a "d" attribute – if you want curved lines in your animation, you need to start out with them curved (even if the curvature is visually non-existent) to ensure that each part of the animation contains the same line types and number of coordinates for all the nodes and Bézier control points. If your paths contain different line segments the animation will still take place but,

rather than a smooth transition from one shape to another, you'll get sudden, discontinuous jumps from shape to shape.

To my eye, SMIL animation is easier to follow than its CSS counterpart. Admittedly, it's rather verbose which can result in having to edit a lot of elements to make a simple timing change. But that verbosity also has its advantages, as we'll see next time – when we'll also send our star on a trip along a path.



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

BACK NEXT MONTH



SJ Webb is a researcher coordinator. When he is not working, he enjoys time with his wife and kids. He thanks Mike Ferarri for his mentorship.



In the Unity interface, most of your activities that have to do with the operating system itself (including launching of applications) are done from the Dash. I personally think the Dash has some inherent shortcomings, but we can certainly find ways to work with or around them.

One of the really handy aspects of the Unity interface is the built-in hint capability:

You can press and hold down the Super key (most often labeled as a Windows key, especially if your Linux machine started life as a Windows device). That will bring up a screen showing you your

keyboard shortcuts.

Tapping the Super key without holding it down, will invoke the Dash.

The Dash is also (usually) the first icon on the Launcher (the strip of icons defaulting to the left side of the screen). The Dash is where you will do a lot of your work in the Unity interface:

The Dash gives you access directly to applications and recently used files and folders. There is a line of icons at the bottom of the Dash that modifies its focus. These are referred to as Dash lenses. The Dash will default

to the Home lens (an icon of a house), but can be changed to Applications (an uppercase 'A' character), Files and Folders (a dog-eared sheet of paper), Videos (a Play button), Music (a musical note), or Photos (a camera icon). I only personally ever use Home or Applications, but the other options allow you to make quick and easy searches for particular media.

The Home lens will show you your most recently used applications at the top, and will also allow you to expand to more of your recently used applications, or to search all your installed applications. The Home-based search will search both applications and files/folders.

The Applications lens is the one I personally use the most. Click the 'A' icon at the bottom of the Dash to invoke it. This will allow you to search for or manually launch any of the applications installed on the machine, either by using Recently Used or Installed (all). It also allows you to control Dash plugins. Most users will probably never need to

bother with the plugins, but, briefly, you can use the plugin settings here to disable searches that you don't want the Dash to use. For example, you can tell it not to search in your Chromium bookmarks by default, by clicking the Chromium bookmarks plugin and selecting Disable.

Now let's look at some of the handier Unity keyboard shortcuts. If the mouse isn't working, or you just prefer the keyboard, Alt - F1 will put you into keyboard mode in the Launcher. The top application will highlight and you can use the arrow keys to move up and down, then hit Enter to activate the highlighted application. You can similarly navigate by holding down the Super key and repeatedly hitting Tab or Shift-Tab. Super - T opens the Trash.

When tapped, the Alt key opens the HUD (which I personally don't find all that useful). When held, the Alt key activates the menus of the active application, so tapping the coinciding letter (e.g., F for File) will activate that menu. That can





This is the final episode of this series since we don't need to browse the full code of the application, but I will stop only where there is something noteworthy. Last time, the main window was up and running – ready to accept user events. The code that handles them starts from line 157, and at line 189 we see another use of threading, in this case to load the DB. I didn't do it in the non-GUI app, the reason here is that if it is a big file, we still want the UI to be responsive (i.e. updating a progress bar). Same usage of threading goes at line 218 when we update the view of data. Here, note that the toggle is to display only tracks that are missing sort information. This way, the user can choose between seeing the whole DB, or just the songs that need sort information. I used only the latter option but I thought the former can be useful to others.

When the user right-clicks a track, we want to provide a quick way of entering sort information; this is accomplished through the function at line 270. At 295 there is

code to automatically handle “The” in front of a band name. Here, there could be more ideas in place. The other automatic option is looking for the first space to try offer: “Bruce Springsteen” or “Springsteen, Bruce”. This may work well if you have a single track, but it's not handy with many of them. Also because I wasn't able to correctly handle the right-click on a multiple selection to update a group of tracks. To solve this issue, I came up with the “filling” icons on the toolbar. There's three of them: automatically, asking and manual. The automatic one is implemented from line 536 and this is similar to the right-click on the track, but with no user input. Since this was written originally for me, I want “Houston, Whitney” and “Smiths, The”, with the year, as album sort information. If you want something different you can use the other ones or change the code. Note also that here “Green Day” will become “Day, Green” which of course is unwanted. Automatic, but not very clever.

The second mode (line 569 and

on) asks for user input, so you can avoid the Green Day issue amongst other things. Still the year is hard-coded. When the user is asked to choose, we don't want him to play around with the other windows of the application, it doesn't add any value to the user and it could cause issues (closing the DB in the middle of this function, or reloading an older version...). Hence at line 596:

```
selection_dialog.set_modal(True)
```

This locks the user on the dialog window until a choice is made.

Since this process can take some time, and stops when the user has to make a choice, we have the following lines of code:

```
while Gtk.events_pending():
    Gtk.main_iteration()
```

This allows the UI to react in between user inputs (and while cycling through tracks). One reason is to update the treeview on the go.

The subsequent lines try to add a bit of cleverness to the program. If the user has already said that “Scouting for Girls” should stay as it is, there's no point in asking it for every track. So every time we have some user input, this is saved in a temporary array:

```
already_found.append(selected_artist)
```

```
already_chosen.append(proposed_sort_artist)
```

This is checked at the beginning of the loop where user action is required, only if it is a “new” artist encountered:

```
if selected_artist not in already_found:
```

This information is lost at the end of the function, I'll come back to this.

The third option allows the user to enter any sort information including the album sort field. The code begins at line 637. All of these functions use the `update_record` to change the DB (in memory, not on the file yet!).

MY STORY

This function (line 702) is very similar to the code of the non-GUI application we saw months ago, so you should be already familiar with it.

Finally, I had to convert posix date to year - at line 760... this function comes from googling how to do it, and merely copies someone else's idea. The beauty of the modern world where information is few clicks away!

This is the end of my brief overview of fixrhygtk. which has a huge space for improvement and to correct any bugs. For example, when it fills sort information by asking the user about the artist names, these choices could be permanently saved, so that if, at another time, the same artist is encountered, you don't need to ask the user again. Another major point is localisation. The current code is not written for easy changing of language. Lines like:

```
confirm_text = "Rhythmbox is currently running."
```

requires changes to the source code – which is not the way it should be.

There's also no proper installation procedure: it will run from its folder, but if you want to install it system-wide, there are a few commands you have to enter at the CLI (including the schema for the settings – see <https://askubuntu.com/questions/251712/how-can-i-install-a-gsettings-schema-without-root-privileges>). Even better, a package for a PPA could be created. I tried this last bit, with no luck. I read many web pages and tutorials on this, but I couldn't figure out the proper way of doing it for a Python application. Which brings me to the concluding thought – which was also the one at the beginning of this project: the open source

community. I don't have the time, the skills and the patience to move forward from here, but I am happy if anyone else will do it. The whole project is available for download at: <http://www.paolopelloni.com/download/fixrhygtk.tar.xz> feel free to use it, improve it and share it. I hope others will benefit from it as I am benefiting from the whole OSS world!

This is the end of my little story and again I want to thank Ronnie and Full Circle Magazine for the precious information, Greg D. Walters for teaching me Python and motivating me to use it and of course the whole open source

world starting from the rhythmbox team!



The screenshot shows a window titled "Fix Rhythmbox Database" with a toolbar containing icons for home, search, help, user, info, and other functions. Below the toolbar is a table with columns: Artist, Album, Year, Sort Artist, Sort Album, Track, and Title. The table lists several tracks by "Scouting for Girls" from the album "The Light Between Us" (2012). The track "Summertin'" is highlighted in orange. At the bottom of the window, it says "15017 songs loaded, 11 listed".

Artist	Album	Year	Sort Artist	Sort Album	Track	Title
Scouting for Girls	The Light Between Us	2012	Scouting for Girls	2012	1	Without You
Scouting for Girls	The Light Between Us	2012	Scouting for Girls	2012	11	Make This
Scouting for Girls	The Light Between Us	2012	Scouting for Girls	2012	8	Rocky Balboa
Scouting for Girls	The Light Between Us	2012	Scouting for Girls	2012	4	Downtempo
Scouting for Girls	The Light Between Us	2012	Scouting for Girls	2012	10	The Light Between Us
Scouting for Girls	The Light Between Us	2012	Scouting for Girls	2012	6	Six Degrees of Separation
Scouting for Girls	The Light Between Us	2012	Scouting for Girls	2012	7	Rains in Louisiana
Scouting for Girls	The Light Between Us	2012	Scouting for Girls	2012	5	Snakes and Ladders
Scouting for Girls	The Light Between Us	2012	Scouting for Girls	2012	9	Somebody
Scouting for Girls	The Light Between Us	2012	Scouting for Girls	2012	2	Summertin'
Scoutina for Girls	The Light Between Us	2012	Scoutina for Girls	2012	3	Love How I



HOW-TO

Written by Ronnie Tucker

Write For Full Circle Magazine

GUIDELINES

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

RULES

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

• For advice, please refer to the **Official Full Circle Style Guide:** <http://bit.ly/fcmwriting>

• 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.





REVIEW

Written by EriktheUnready

- Version: 1.57.0
 - No License given, but states 'no limitations'
 - Price: Free
- Website:

<http://uvviewsoft.com/cudatext/>

If you have Lazarus >1.84 installed, there is a script to build it:

https://github.com/Alexey-T/CudaText_up

You can pick up a binary at:

<http://uvviewsoft.com/cudatext/files/Linux/>

When sudo apt install notepadqq brought up "Unable to locate package notepadqq", I did a quick search on alternatives and found this. I did not want a snap, so I settled on Cudatext, and I am so glad I did! Like Notepadqq, it has tabs – they make my life easier. (I love leafpad, but sometimes I need tabs that keep my data without saving it.)

For a text editor, Cudatext is

amazing. It also doubles as an IDE. It is written in Lazarus and is a cross platform app. Cudatext has it all, syntax-highlighting with support for popular languages, tabbed interface, and multi-project support. In addition, it supports plugins written in Python and config files in JSON. It comes with a series of features for web page design, such as HTML tag completion, colour codes in both RGB and HEX, and can preview embedded images, such as png or

jpg. The built-in console is a bonus. Cudatext can also edit binary files, making it a one-stop-shop without the need to use other programs.

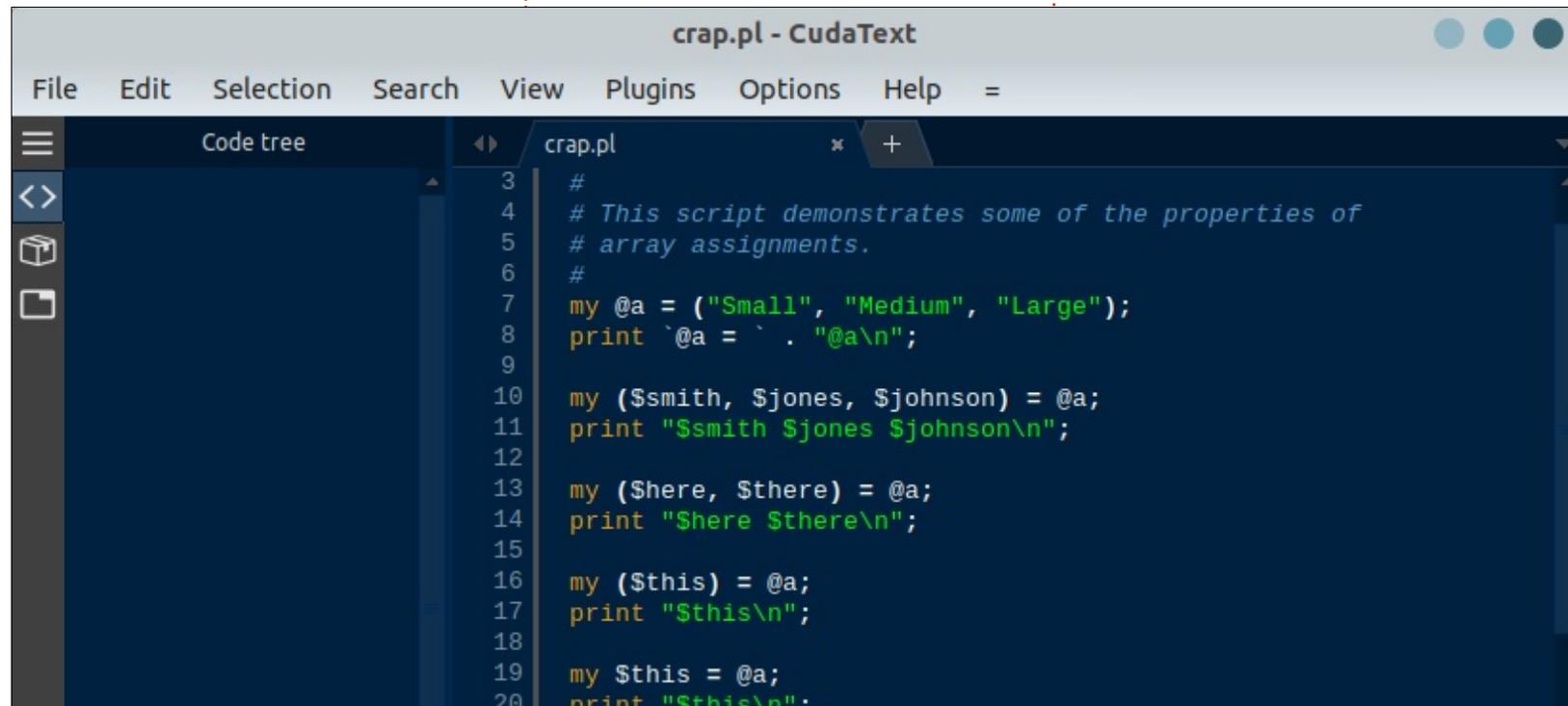
When we say Cudatext is lightweight, the download is a mere 4.4MB. The interface is configurable with themes, right down to a colour picker.

I tested Cudatext with a few languages, and the syntax highlighting was of good quality.

Code completion is not automatic, which I liked, you need to push CTRL+Space. F12 opens/closes the code tree if you just want to type plain text.

Pros: Small, fast, simple, powerful and extendable.

Cons: Still GTK2, config files can be a pain to edit.





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ubuntuforums.org/forum-display.php?f=270

FULL CIRCLE 2018 SURVEY

It's that time of the year again where we ask what you think of FCM, Ubuntu, and Linux.

Some questions are a requirement, some you can skip over if not applicable.

Your answers will help shape Full Circle, so please use your constructive criticism. If you don't tell us what you think, or what we're doing wrong, then we won't know.

Survey URL:
<http://bit.ly/fcm2018>

FULL CIRCLE NEEDS You!



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

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

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



Q&A

Compiled by EriktheUnready

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

I got asked a funny question by Hein:

Q: How do I start libresprite?

I did an internet search and found this to be a common question, with no answer.

reference:

<https://askubuntu.com/questions/1051100/how-do-i-iniate-the-libresprite-app>

A: As it currently stands, there is an error in the snap. Launch it from a terminal with:

```
libresprite-  
simosx.libresprite
```

Q: G. Perl asks: when I switch Ubuntu to Hebrew, I get gobbeldy-gook as folder names.

A: That's Hebrew, right? Just kidding. When you choose Hebrew as locale, you need to restart Ubuntu. Please note that the Hebrew translation, that is

menus, etc, is not 100% done.

There is a reference here to help you:

<https://help.ubuntu.com/community/HebrewLocalizationHowto>

Q: My PC has Ubuntu 18.04 installed. It does not want to launch the System Monitor.

This seems to be an 18.04 related issue. Before the upgrade, it worked fine. It could be that it is now a snap that it has stopped working.

This is the terminal output:
You need to connect this snap to the gnome platform snap. You can do this with these commands:
snap install gnome-3-26-1604
snap connect gnome-system-monitor:gnome-3-26-1604
gnome-3-26-1604

A: This is an interesting one, it usually turns out to be:
a. Hardware error, hard drive busy failing, or a bad spot of memory.
b. Bad installation media, failing

thumb drive, bad DVD, c. Bad iso.

Q: I cannot change the root password on ubuntu 18.04. Why? I tried to reset it, and put on Putty the root username and the emailed password, but when I put the current password on the putty console, it kicks me out of the putty program.... what should I do to fix it?

A: Open a terminal and type:
su

insert your current root password and type passwd.

Q: I have cloudflare for ssl. People access my website through domain.com and it is secured. But people can also access it through the public IP. How do I stop that?

A: Block all IP's in your firewall, except those from cloudflare. Available here:

<https://www.cloudflare.com/ips/>

Q: I have a core2duo with 2GB ram and 500MB hard drive. My database is mySQL. It keeps crashing with - 2018-07-20T09:26:00.760560Z 0 [ERROR] InnoDB: mmap(137428992 bytes) failed; errno 12. Why?

A: The short answer is you do not have enough memory.

Q: Is it possible to install Plesk on Ubuntu 18.04?

A: Yes and no, the very latest version installs, but does not work 100%.

Q: I really like to customize everything on my ubuntu install. I can't figure out how to change the magenta color on boot. What can I do?



A : I had a quick look and I saw this:
<http://ubuntuhandbook.org/index.php/2017/10/change-login-screen-background-ubuntu-17-10/> It should work for 18.04 too.

Q : I have installed Ubuntu 18.04 on my laptop, it seems okay. However, I am getting temps from 76-80 degrees when playing gjeweled. This can't be normal, can it? I have tried kubuntu, lubuntu and Ubuntu gnome.

A : This is not straightforward as you have not included any information about your laptop. Some laptops control the system fan via software. Some control it via hardware. If your laptop falls in the first category, you will have to scour the internet for a Linux equivalent of that software. Lenovo is one of those manufacturers; you can search for thinkfan, though it is old. If your laptop controls the fan via hardware, your airflow path may be blocked. You can also try installing TLP.

Q : I am running Ubuntu 16.04. Should I upgrade to 18.04.1?

A : I cannot tell you if you should, that is your choice. I can tell you that Ubuntu 16.04 is still supported for a while. I can also tell you that Ubuntu 18.04 is buttery smooth in comparison. There is also a lot of software that does not work on 18.04 any more. Check your software compatibility. Then decide.

Q : My laptop is a Core i5, 4GB of memory. Whenever I close the lid for suspend, and wake it up again, my wifi asks for a password and won't connect (with the saved password). Do I need more memory for my laptop?

A : It is usually due to proprietary laptop WiFi drivers. You probably have a Broadcom card. That is a common problem. That said, nobody can help you as the drivers are not open source and not able to be fixed by the community. You can try using the open source driver instead of the proprietary one, or you can petition Broadcom to fix

the driver.

Q : I have upgraded Ubuntu 17.04 (which had no problems) to Ubuntu 18.04. Once I log in, everything graphical is frozen. I switch to another TTY and kill the login, but when I log in again, it freezes again. I cannot get past the freeze. Help me.

A : You do not give me much to work with, but if you can switch to another TTY, it means that either your proprietary graphics driver needs updating or downgrading. If you are using nouveau, install the proprietary driver. If you still cannot log in, send us the full specs of your machine as well as what driver you are using.

Q : I am using XFCE as my desktop on Ubuntu 16.04. All works fine, but then, after a while, my screen starts flashing and I get XScreenSaver login terminal. Now I cannot even type. What did I do wrong?

A : This is what happens when the xscreensaver process falls over - it will spawn another xscreensaver process. This second process will run and will not detect that you are typing or moving the mouse, thus it will kick in within the allotted time. Just remove xscreensaver from your startup, and again, either install the proprietary driver or downgrade to nouveau if you have Nvidia.

Q : Problem on Asus Ultrabook. Kernel 4.15.0-23 runs o.k. Kernel 4.15.0-24 extreme boot delay, up to a minute.

A : See: <https://bugs.launchpad.net/ubuntu/+source/linux/+bug/1779961>



Erik has been in IT for 30+ years. He has seen technology come and go. From repairing washing machine sized hard drives with multimeters and oscilloscopes, laying cable, to scaling 3G towers, he's done it.



UBUNTU GAMES

Written by Oscar Rivera

BACK NEXT MONTH



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



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

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

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

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



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