Full Circle

THE INDEPENDENT MAGAZINE FOR THE UBUNTU LINUX COMMUNITY

ISSUE #142 - February 2019

BOOK REVIEW

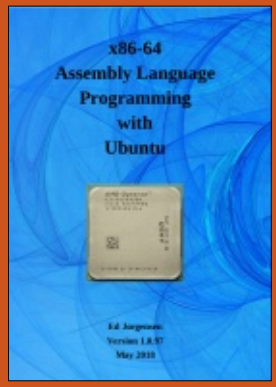

Photo: Magnus (Flickr.com)

HATARI

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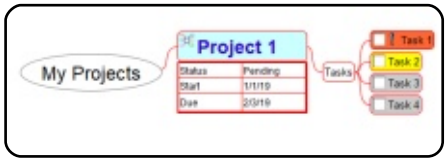

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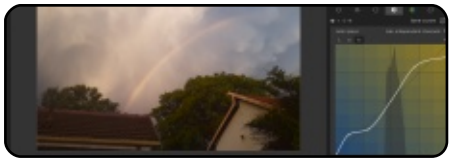
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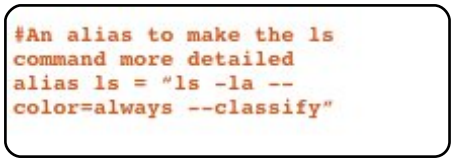

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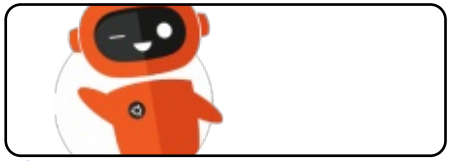
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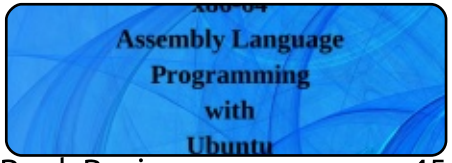

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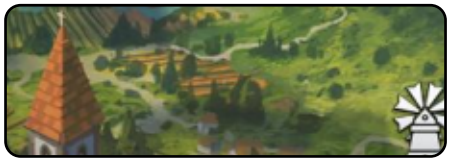
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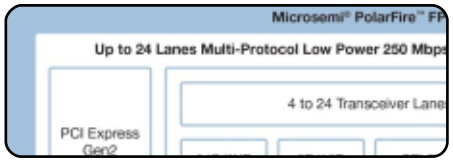

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EDITORIAL

Welcome to the latest issue of Full Circle.

This month we have the usual suspects of Python, Freeplane, Inkscape and the return of Darktable for a part two. You asked, and Erik delivered. SJ continues his Loopback series with a look at encryption, Erik continues with more Hatari, and (while on the subject of retro) Richard finishes up his look at retro gaming.

Elsewhere, Erik gives his opinion of Linux devices, and Hansrudolf discusses his troubles and woes with two sound cards. It sounds like he had a pretty brutal battle on his hands with ALSA sound settings. Oof!

I think this issue will just miss the next OTA release for Ubports Touch. Hopefully there'll be an OTA update in the next issue.

That's it from me. Short and sweet this month. For a change.

All the best, and keep in touch!
Ronnie
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openSUSE Tumbleweed Is Now Powered by Linux Kernel 4.20, Latest KDE Apps

The biggest news, is, of course, the addition of the latest kernel series, Linux 4.20, which adds lots of goodies to OpenSuSE Tumbleweed, including support for the upcoming AMD Radeon Picasso and Raven 2 GPUs, stable support for AMD Radeon Pro Vega 20 GPUs, a new C-SKY CPU architecture, and support for Hygon Dhyana x86 CPUs.

Linux kernel 4.20 also adds stronger mitigations for the Spectre Variant 4 vulnerability on ARM64 (AArch64) CPUs, better Spectre Variant 2 userspace-userspace protection, a new "Early Departure Time" model for TCP, improvements to virtualized graphics, as well as numerous updated and new drivers for better hardware support.

Apart from the Linux 4.20 kernel, openSUSE Tumbleweed received all the latest KDE apps that are distributed as part of the recently released KDE Applications 18.12.1 and Frameworks 5.54.0 software suites, along with a minor update to GNU Compiler Collection (GCC) 8 system compiler to include a backport of asm inline.

Source:
https://news.softpedia.com/news/opensuse-tumbleweed-is-now-powered-by-linux-kernel-4-20-latest-kde-apps-524701.shtml

LXQt 0.14 Desktop Adds Split View in File Manager, LXQt 1.0 Still in Development

LXQt 0.14.0 is the latest version of the lightweight desktop environment that continues the legacy of the LXDE (Lightweight X11 Desktop Environment) project based on recent Qt technologies. This version comes eight months after the LXQt 0.13.0 release to add yet another layer of enhancements and other optimizations.

Highlights include a new Split View in the PCManFM-Qt file manager, which is the Qt port of the PCManFM file manager used in LXDE, as well as better handling of the desktop and mounted devices. Taking about the desktop, it can now show icons for Computer, Trash, Network, and user's Home directory.

Source:
https://news.softpedia.com/news/lxqt-0-14-desktop-adds-split-view-in-file-manager-lxqt-1-0-still-in-development-524700.shtml

Japan Will Hack Its Citizens' IoT Devices To 'Make Them Secure'

The Japanese government has passed a new law amendment that will allow officials to hack into citizen's Internet of Things devices to compile a list of devices that are prone to hacking.

The government will attempt to break into the devices as a part of a survey that will be carried out by the National Institute of Information and Communications Technology (NICT); The Ministry of Internal Affairs and Communications will supervise the survey.

Default passwords and password dictionaries will be used to hack into citizen's devices. The Japanese government wants to weed out the devices that are using easy to guess passwords and can be hacked easily. The owners of such devices will be, then, notified and will be urged to change the password.

The survey will be started next month onwards, and more than 200 million IoT devices including routers and web cameras will be tested.

Source:
https://fossbytes.com/japanese-will-hack-its-citizens-iot-devices-secure/

Debian-Based DebEX OS Now Shipping with Linux Kernel 5.0 and Budgie Desktop 10.4

DebEX Build 190128 is now available with the Budgie 10.4 desktop environment, and it's the first release of the GNU/Linux distribution to ship with the soon-to-be-released Linux 5.0 kernel. This release is based on the upcoming Debian GNU/Linux 10 "Buster" operating system series, which is currently available as Debian Testing.

The biggest news is the implementation of the Linux 5.0 kernel as Arne Exton took the risk to add a pre-release version into his DebEX operating system. Therefore, DebEX Build 190128 is using Linux kernel 5.0.0 RC3, which means that it shouldn't be installed on production systems.

Another change in this new DebEX Budgie release is the fact that the ISO image decreased in size from 1.3 GB to 925 MB, making it easier to run the operating system directly from RAM without installing anything on your computer. "That ability allows DebEX Budgie to be very fast, since reading and writing data from/to RAM is much faster than on a hard disk drive," says the developer.

Source: https://news.softpedia.com/news/debian-based-debex-os-now-shipping-with-linux-kernel-5-0-and-budgie-desktop-10-4-524725.shtml

System76 unveils 'Darter Pro' Linux laptop with choice of Ubuntu or Pop!_OS

When people come to me for advice on buying a computer that comes with a Linux-based operating system pre-installed, my first suggestion is always System76. While other companies, such as Dell, also make great laptops running Ubuntu, for instance, System76 stands above the rest by also offering its own operating system -- Pop!_OS (which is based on Ubuntu). In other words, System76 has better control over the overall customer experience. Not to mention, its contributions to both the Linux and open source communities are invaluable.

Today, the company unveils its latest laptop, and it looks like a winner. The 15.6-inch "Darter Pro," as it is called, is thin, but not overly so -- it still has USB-A ports (thankfully). The computer is quite modern, however, as it also has a USB-C/Thunderbolt 3 port.

Source: https://betanews.com/2019/01/29/system76-darter-pro-linux-laptop/

MakuluLinux Core OS Debuts With Impressive Desktop Design

A new Linux OS gets to the core of Linux computing with a revamped desktop environment and a new way to have fun with your daily computing tasks.

Developer Jacque Montague Raymer on Monday debuted the MakuluLinux Core OS. He hopes Core becomes the crown jewel of the Series 15 release family.

MakuluLinux released the latest versions of family members LinDoz and Flash several months ago.

While the Core entry integrates some of the features of its two cousins, it offers something new and exciting that brings MakuluLinux to a higher level of usability. It adds a homegrown desktop design that turns something old into a modern Linux platform.

MakuluLinux is a relative Linux newcomer. Its positive reputation has been growing since 2015, thanks to a variety of desktop environments the developer adapted for better integration. Its small developer team, based in Vietnam, forged the first two desktop distributions, both efficient and productive, in a relatively short time period.

All three of the Series 15 editions -- LinDoz, Flash and now Core -- feature a redesign of the original Ubuntu-based LinDoz OS. First, the team revamped LinDoz's Ubuntu foundation. Series 15 is based on a hybrid that gets its primary updates from both Debian and Makulu directly.

Source:
https://www.linuxinsider.com/story/MakuluLinux-Core-OS-Debuts-With-Impressive-Desktop-Design-85808.html

Canonical Releases Snapcraft 3.1 Snap Creator Tool with Various Improvements

Snapcraft 3.1 is now available as a minor update to the Snapcraft 3.x series, adding build environment improvements to allow you to be once again able to clean parts using the "base" keyword while running the "snapcraft clean < part-name >" command, and offering you a more intuitive cleaning of steps from specific parts.

The "cmake" and "rust" plugins have been updated as well in Snapcraft 3.1. While the "cmake" plugin gets two new features to allow you to package more applications in the Snap universal binary format, such as KDE apps, the "rust" plugin was revamped to work better with the non-legacy rustup tool.

Also improved in the Snapcraft 3.1 release is the appstream metadata extractor, which can now properly filter xml:lang and handle tags inside connected nodes. Moreover, Snapcraft will now accurately find desktop files from appstream "launchable" entries, as well as by falling back to legacy mode and fetch it from the appstream id.

Source:
https://news.softpedia.com/news/canonical-releases-snapcraft-3-1-snap-creator-tool-with-various-improvements-524761.shtml

Canonical Outs Major Linux Kernel Update for Ubuntu 18.04 LTS to Patch 11 Flaws

Several security issues were discovered in the Linux kernel used by Canonical's Ubuntu 18.04 LTS (Bionic Beaver) operating system, affecting all of its derivatives, including Kubuntu, Xubuntu, Lubuntu, Ubuntu GNOME, Ubuntu Budgie, Ubuntu Kylin, and Ubuntu Studio, as well as other third-party flavors based on them.

A total of eleven security vulnerabilities were addressed in this major kernel update, seven of which are flaws discovered by Wen Xu in Linux kernel's EXT4 filesystem implementation.

These vulnerabilities, which ranged from use-after-free and buffer overflow to out-of-bounds writes, could allow attackers to either execute arbitrary code or crash the system via a denial of service attack by utilizing a maliciously crafted EXT4 image that could be mounted on the vulnerable machine….

Canonical urges all Ubuntu 18.04 LTS (Bionic Beaver) users to update their installations immediately to the linux-image 4.15.0-44.47 kernel that's available for generic, lpae, and lowlatency 64-bit and 32-bit installations, as well as for Snapdragon processors.

Source:
https://news.softpedia.com/news/canonical-outs-major-linux-kernel-update-for-ubuntu-18-04-lts-to-patch-11-flaws-524740.shtml

Tails 3.12 with new installation method

Tails stands for "The Amnesic Incognito Live System" and is used to anonymize the Tor network, through whose node computer the network traffic is routed. It is designed as a live system for use on USB sticks or DVDs and specializes in anonymity and privacy of its users. The basis is Debian Testing.

With Tails 3.12 the distribution converts the previously somewhat cumbersome installation as a live system to USB sticks. The team's response to this is that far more users install Tails on external devices such as USB sticks than on optical media. However, the possibility remains due to a still available set of ISO images.

For the installation of Debian and Ubuntu, gnome disks will be offered by default. The installer is no longer needed. For other Linux distributions, where the user previously needed two USB sticks, Gnome disks or etcher can be used. With macOS Etcher can now also be used instead of the command line. From Windows also only a USB

stick is needed and recommended Etcher.

Source: https://www.pro-linux.de/news/1/26725/tails-312-mit-neuer-installationsmethode.html

Ubuntu 18.04.2 LTS to Arrive on February 7 with New Components from Ubuntu 18.10

Dubbed "Bionic Beaver," Ubuntu 18.04 LTS is the latest LTS (Long Term Support) series of the widely used Linux-based operating system, supported by Canonical for at least 5 years, until April 2023, with maintenance and security updates, though Mark Shuttleworth promised a 10-year support for the Bionic Beaver.

Ubuntu 18.04 LTS shipped with the Linux 4.15 kernel by default, and the first point release, Ubuntu 18.04.1 LTS, which arrived on July 26, 2018, didn't bring updated kernel and graphics stacks due to Ubuntu 18.10 (Cosmic Cuttlefish) being in development. Therefore, Ubuntu 18.04.2 LTS should be the first release to change that.

Now that the Ubuntu 18.10 (Cosmic Cuttlefish) operating system is available for some time now, and it ships with a newer kernel from the Linux 4.18 series, we believe Canonical will implement it in the forthcoming Ubuntu 18.04.2 LTS point release, along with various other up-to-date components.

Source: https://news.softpedia.com/news/ubuntu-18-04-2-lts-to-arrive-on-february-7-with-updated-components-524785.shtml

Linux Kernel Gets Another Option to Disable Spectre Mitigations

Believe it or not, the mitigations for the Spectre-class of CPU vulnerabilities are now some of the biggest enemies of system administrators.

Despite being security-focused patches, these mitigations are known to introduce huge performance hits to Linux systems.

A recent benchmark showed that just one of the many Spectre mitigations --namely the one named Single Thread Indirect Branch Predictors (STIBP)-- introduced a 30 percent performance dip for PHP servers, causing system administrators to reconsider applying some of these patches.

Despite being more than one year old, the Meltdown or Spectre vulnerabilities have remained a theoretical threat, and no malware strain or threat actor has ever used any in a real-world attack.

Over the course of the last year, system and network administrators have called on the Linux project for options to disable these protections.

Source: https://www.zdnet.com/article/linux-kernel-gets-another-option-to-disable-spectre-mitigations/

Endless OS Functionality Controls Simplify Computing

Endless OS is an unusual Linux distro in that its user interface is more like an Android smartphone or tablet than a Linux desktop computer platform.

Version 3.5.4, released on Jan. 17, brings parental controls and other refinements that make this distro a cool alternative to the Chromebook for home, educational and community use. Endless OS goes a long way to eliminating the learning curve attached to using more traditional Linux OSes.

This ease-of-use performance makes it a good selling point as a computing platform for kids and for groups of users within a school -- as well as in other agencies that control what users can access and configure.

Source: https://www.linuxinsider.com/story/Endless-OS-Functionality-Controls-Simplify-Computing-85819.html

Bareos 18.2 released

Bareos (Backup Archiving Recovery Open Sourced) is a cross-network open source backup solution that can back up and centrally store data from all major operating systems. Multiple versions of a file can be kept for any length of time. A database records which files from which computer in which version and where. The backup is done on hard drives, tape drives or encrypted in the cloud. If necessary - e.g. after accidental deletion of a file or hard disk failure - individual files or an entire backup can be restored.

The new version 18.2.5 already uses TLS encryption when logging in. All services, such as Bareos Director, File Daemon, and Storage Daemon, also support Pre-shared Key (PSK) TLS encryption during authentication. Previously, certificates were required for TLS / SSL encryption of network traffic. The certificates are now no longer a must, because Bareos can use the stored passwords to encrypt the communication between the participating computers via TLS-PSK.

Source:
https://www.pro-linux.de/news/1/26733/bareos-182-freigegeben.html

LibreELEC 9.0 released: Linux distro built around Kodi media center

Popular media center software Kodi is an open source, cross-platform application for music, movies, photos, online media, and other content. The software runs on Windows, Mac, Linux, and Android, but if you have a device that you pretty much only want to use for Kodi, there's LibreELEC — a GNU/Linux-based operating system designed to put Kodi front and center.

Last week Kodi 18 "Leia" was released, bringing support for games, improved Blu-ray support, DRM support, and other improvements.

A few days later, an updated version of LibreELEC designed around Kodi 18 was released. But that's not the only change in LibreELEC 9.0.

LibreELEC is a light-weight operating system that can run on low-power devices including the Raspberry Pi and other computers with limited processing power and system resources. But it also should run on pretty much any relatively recent computer with Intel or AMD processors.

Source:
https://liliputing.com/2019/02/libreelec-9-0-released-linux-distro-built-around-kodi-media-center.html

Arch Linux's February 2019 Snapshot Is Now Available with Linux Kernel 4.20.6

The Arch Linux 2019.02.01 ISO snapshot is now available for download, powered by the Linux 4.20.6 kernel and packed with all the updates released through the official archives of the GNU/Linux distribution since January 1st, 2019, when the Arch Linux 2019.01.01 snapshot was launched.

This is the second Arch Linux snapshot to use a kernel from the latest Linux 4.20 series. Linux kernel 4.20.6 is included by default in the Arch Linux 2019.02.01 image, which means that you'll get better support for the latest hardware, as well as a more secure operating system after installation.

Source:
https://news.softpedia.com/news/arch-linux-s-february-2019-snapshot-is-now-available-with-linux-kernel-4-20-6-524837.shtml

Canonical Releases Important Ubuntu Linux Kernel Security Patches, Update Now

Available for the Ubuntu 18.10 (Cosmic Cuttlefish), Ubuntu 16.04 LTS (Xenial Xerus), and Ubuntu 14.04 LTS (Trusty Tahr) operating system series, the new Linux kernel updates address a total of 12 security issues, one affecting both Ubuntu 18.10 and Ubuntu 16.04 LTS, three affecting Ubuntu 18.10, four affecting Ubuntu 16.04 LTS, and another four affecting Ubuntu 14.04 LTS.

Canonical urges all Ubuntu

18.10, Ubuntu 16.04 LTS, and Ubuntu 14.04 LTS users to update their installation immediately to the new kernel versions that are already available from the stable software repositories of their respective operating systems for 64-bit and 32-bit systems, Amazon Web Services (AWS) systems, Google Cloud Platform (GCP) systems, Raspberry Pi 2, and cloud environments.

Last week, Canonical released a similar kernel security update for the Ubuntu 18.04 LTS (Bionic Beaver) operating system series, which introduced an unfortunate regression with docking station displays when mounting an EXT4 file system with the "meta_bg option" enabled. The regression was fixed a few days later with another kernel update, so make sure you're running the latest version, always.

Source: https://news.softpedia.com/news/canonical-releases-important-ubuntu-kernel-security-patches-update-now-524834.shtml

SystemRescueCd 6.0.0 released

SystemRescueCd is a Linux system on a bootable CD or USB stick that provides an easy way to perform administrative tasks on the computer, e.g. the creation and modification of partitions or the backup of data. It contains many system programs, including parted, partimage and fstools, and important programs like editors, midnight commander and network tools. It also includes QtParted, a Partition Magic clone that makes it easy to change partitions with its graphical interface.

The version 5.0.0, released almost two years ago, has been constantly updated and extended with additional programs. But now a whole new generation of SystemRescueCd is available, increasing the version number to 6.0.0. The basis of the new version 6.0.0 is ArchLinux and no longer Gentoo. Reasons for this change were not announced. However, one immediate consequence of this is that the new SystemRescueCd no longer supports 32-bit systems. Although such systems are now shrinking, affected users must either stay with the older 5.x versions of SystemRescueCd or use other systems such as Grml.

Source: https://www.pro-linux.de/news/1/26747/systemrescuecd-600-freigegeben.html

Linux driver for old Mali GPUs should be maintained

ARM's Mali GPUs, along with Qualcomm's Adreno chips, are arguably the most popular graphics processors in embedded devices and smartphones. For more than one and a half years under the direction of the developer Qiang Yu with a new edition of the Lima driver project develops a free driver for the GPUs Mali-400 and Mali-450. This should now finally be incorporated into the main branch of the Linux kernel.

According to the developer, the necessary work to support various SoCs with Mali GPU has already been integrated into the Linux kernel. In addition, the kernel video driver itself is now reasonably stable, as well as the interface to the userspace components from the free graphics library Mesa. Therefore, the Lima driver can now also be maintained in the upstream kernel.

The mesa driver, according to the developers, is still in the development stage and is therefore not suitable for everyday use, but some important test applications such as Kmscube, Glmark2 or Kodi are already running on it. Some criticism of the proposed driver for inclusion comes from other leading Linux graphics driver developers, who question the choice of specific interfaces and suggest alternatives.

Source: https://www.golem.de/news/lima-projekt-linux-treiber-fuer-alte-mali-gpus-soll-eingepflegt-werden-1902-139251.html

Canonical Apologizes for Boot Failure in Ubuntu 18.10 & 18.04, Fix Available Now

After patching a nasty Linux kernel regression in the Ubuntu 18.04 LTS operating system series, Canonical now addressed another regression affecting the Linux 4.18 kernel packages of Ubuntu 18.10 and Ubuntu 18.04.1 LTS systems, which was introduced by an important kernel security update released earlier this week.

The kernel security update that Canonical published on February 4th was available for Ubuntu 18.10, Ubuntu 16.0.4 LTS, and Ubuntu 14.04 LTS systems, but only Ubuntu 18.10 machines were affected by a regression that could prevent them from booting when certain graphics chipsets are used.

The regression affects not only Ubuntu 18.10 (Cosmic Cuttlefish) systems, but also Ubuntu 18.04 LTS (Bionic Beaver) machines running the Linux 4.18 HWE (Hardware Enablement) kernel from Ubuntu 18.10, which will be included in the forthcoming Ubuntu 18.04.2 LTS point release, due for release on February 14th.

Source:
https://news.softpedia.com/news/canonical-apologizes-for-another-ubuntu-linux-kernel-regression-fix-available-524892.shtml

antiX MX 18.1 Distro Released with Latest Debian GNU/Linux 9.7 "Stretch" Updates

Based on Debian GNU/Linux 9.7 "Stretch," antiX MX 18.1 updates the mx-installer, which is based on gazelle-installer, to address bug that lead to crashes during installation of the GRUB bootloader, adds support in mx-repo-manager to lists even more repository mirrors, and improves MX-PackageInstaller and MX-Conky.

Another important area improved in antiX MX 18.1 is the antiX live-USB image, which now features persistence up to 20GB of disk space, as well as much better UEFI boot capabilities, especially when running it on 64-bit UEFI systems. The devs consider creating a "full-featured" antiX live-USB for 32-bit UEFI systems as well.

As expected, antiX MX 18.1 comes with up-to-date components from the Debian GNU/Linux 9.7 "Stretch" repositories, including the Mozilla Firefox 65.0 web browser and VLC 3.0.6 media player. Also improved is the antiX MX manual, which now contains revised sections and screenshots, and the translations for many mx-apps.

antiX MX 18.1 is available for download as 64-bit and 32-bit live ISO images from our free software portal. However, they are intended for new installations only as existing users do not need to download and reinstall to keep their systems up-to-date. All bug fixes and additions can be installed through the distro's repositories.

Source:
https://news.softpedia.com/news/antix-mx-18-1-distro-released-with-latest-debian-gnu-linux-9-7-stretch-updates-524910.shtml

Open source project aims to make Ubuntu usable on Arm-powered Windows laptops

Back in December 2017, Microsoft and Qualcomm announced a partnership to pair Windows 10 and Snapdragon Arm processors for ultra-thin LTE-connected netbooks with a 20+ hour battery life. This Windows-on-Arm initiative has faced several stumbling blocks, with the the first-generation HP Envy x2 and Asus NovaGo criticized for poor performance and app compatibility in Windows 10, due in large part to an inline x86 emulator for apps written for Windows on Intel or AMD processors.

Now, a group of programmers and device hackers are working to bring proper support for Ubuntu to Arm-powered Windows laptops, starting with first-generation Snapdragon 835 systems, like the HP Envy x2 and Asus NovaGo. The aarch64-laptops project on GitHub provides prebuilt images for the aforementioned notebook PCs, as well as the Lenovo Miix 630.

Although Ubuntu and other Linux distributions support aarch64 (ARMv8) by default, various obstacles including the design and configuration of Qualcomm Snapdragon processors make these default images not practically usable. The aarch64-laptops project developers are aiming to address these difficulties, though work is still ongoing. Presently, the TouchPad does not work properly on the Asus, with all three lacking proper support for on-board storage and Wi-Fi, which rely on UFS support. Likewise, accelerated graphics are not yet supported, but Linux benchmarking website Phoronix notes that this should be provided by the freedreno project. With that available, it is conceivable that Arm-powered laptops on Linux may well be more performant than on Windows, as open source apps available through Ubuntu's package repository will run natively on the Arm processor, rather than rely on an inline x86 emulator.

Source: https://www.techrepublic.com/article/open-source-project-aims-to-make-ubuntu-usable-on-arm-powered-windows-laptops/

Good Guy Malware: Linux Virus Removes Other Infections to Mine on Its Own

Coin miners have become the new norm in the malware world, and new versions are getting more complex, being able to hide their processes more effectively in order to avoid detection.

But security vendor Trend Micro has recently come across a new Linux coin miner whose purpose isn't only to run without users being aware of it, but to also remove the other malware and miners that are found on a compromised system.

In an analysis of the script, the security company explains that it uses code from KORKERDS and relies on crontabs to make sure it launches after reboot.

The script that the malware uses for spreading downloads a modified version of XMR-Stak, a cryptocurrency miner that is specifically aimed at Cryptonight currencies and which can use the most CPUs, as well as NVIDIA and AMD GPUs for its processes.

Trend Micro explains that the virus targets systems via IP cameras and web services on TCP port 8161, which the attacker uses to send a crontab file with the purpose of download a shell script.

Once the script reaches a target device, it removes all malware, coin miners, and services associated with these, in an attempt to use all available resources for its own mining tasks. By killing off the other miners and forms of malware on a system, the script makes sure that the resources of the computers are always available for its processes.

Source: https://news.softpedia.com/news/good-guy-malware-linux-virus-removes-other-infections-to-mine-on-its-own-524915.shtml

OpenBSD introduces its own rsync

Rsync is a network protocol developed in 1996 by Andrew Tridgell and Paul Mackerras and a program for the synchronization of data, which is usually transmitted over a computer network. Synchronization of the data is unidirectional with rsync, which predestines the tool predisposed for backup and adjustment processes. Tridgell described the functionality in an article entitled "Efficient Algorithms for Sorting and Synchronization." Because of the flexibility and speed, rsync has been deployed on multiple platforms. But especially on OpenBSD, the implementation came under criticism for safety concerns.

As the team announced, "openrsync" provides an alternative implementation of rsync that is fully tailored to the security requirements of OpenBSD. The new software was created as part of the rpki client and is under the liberal OpenBSD license. Furthermore, the implementation uses the security mechanisms of the system, which according to the developers makes them particularly robust against attacks. A disadvantage of the binding is that openrsync is quite portable, but loses one of its strengths on other systems. For

example, under FreeBSD using Capsicum, the security aspects of OpenBSD's pledge and unveil can be largely reproduced, but according to the developers, there is no adequate replacement under Linux.

The functionality of openrsync does not yet cover all the parameters of the original implementation and is limited to the most important options. According to the author, the software was tested against rsync 3.1.3 and supports protocol version 27. openrsync can now be found in the repository of the OpenBSD project.

Source: https://www.pro-linux.de/news/1/26769/openbsd-stellt-eigenes-rsync-vor.html

Dirty_Sock vulnerability in Canonical's snapd could give root access on Linux machines

A security researcher has discovered a vulnerability in Canonical's snapd package which could be exploited to gain administrator privileges and root access to affected Linux systems. The security issue has been dubbed Dirty_Sock and assigned the code CVE-2019-7304.

Chris Moberly found a privilege escalation vulnerability in the snapd API. This is installed by default in Ubuntu -- under which proofs of concept have been tested and found to work "100% of the time on fresh, default installations of Ubuntu Server and Desktop" -- but may also be present in numerous other Linux distros.

The Ubuntu CVE Tracker describes the vulnerability as: "snapd 2.28 through 2.37 incorrectly validated and parsed the remote socket address when performing access controls on its UNIX socket. A local attacker could use this to access privileged socket APIs and obtain administrator privileges".

Moberly found the security hole back in January and reported it to the snapd team who developed a fix fairly quickly, but unpatched systems remain at risk.

He provides two possible exploit routes, dirty_sockv1 (which "uses the 'create-user' API to create a local user based on details queried from the Ubuntu SSO"), and dirty_sockv2 (which "sideloads a snap that contains an install-hook that generates a new local user").

Moberly praises the response to his reporting of the vulnerability, saying: "The snapd team's response to disclosure was swift and appropriate. Working with them directly was incredibly pleasant, and I am very thankful for their hard work and kindness. Really, this type of interaction makes me feel very good about being an Ubuntu user myself".

Source: https://betanews.com/2019/02/13/dirty-sock-snapd-linux/

KDE neon Systems Based on Ubuntu 16.04 LTS Have Reached End of Life, Upgrade Now

With the rebase of KDE neon on Ubuntu 18.04 LTS (Bionic Beaver) on September 2018, the development team have decided it's time to put the old series based on Ubuntu 16.04 LTS (Xenial Xerus) to rest once and for all as most users already managed to upgrade their systems to the new KDE neon series based on Canonical's latest Ubuntu LTS release.

Unlike Ubuntu, the KDE neon distribution follows a rolling release mode where the user installs the operating system once and receives updates forever, where until something goes wrong and a reinstall is required, for which new KDE neon snapshots are refreshed and available to download from time to time.

Therefore, if you're still running a KDE neon system based on the Ubuntu 16.04 LTS (Xenial Xerus) operating system series, you must upgrade it to a newer version based on Ubuntu 18.04 LTS (Bionic Beaver). First, make sure you apply all system updates using the Plasma Discover package manager.

Then, log out and log back in again, and you should immediately see a notification of a new KDE neon release. Click the "Upgrade" button on the notification to start the upgrade process, which will take a while to download and

install all required packages.

Source:
https://news.softpedia.com/news/kde-neon-systems-based-on-ubuntu-16-04-lts-have-reached-end-of-life-upgrade-now-524959.shtml

Ethical Hacking, Ubuntu-Based BackBox Linux OS Is Now Available on AWS

If you want to run BackBox Linux in the cloud, on your AWS account, you should know that the ethical hacking operating system is now available on the Amazon Web Services cloud platform as an Amazon Machine Image (AMI) virtual appliance that you can install with a few mouse clicks.

The BackBox Linux operating system promises to offer Amazon Web Services users an optimal environment for professional penetration testing operations as it puts together a collection of some of the best ethical hacking tools, which are already configured and ready for production use.

The BackBox Linux team promises reliable access to your virtual server on Amazon Web Services (AWS) at any given time. They provide custom configurations for each instance, which allow you to have all the resources you need for your work for top-notch performance, high reliability, and availability.

BackBox Linux on AWS is currently only available to BackBox members, so those of you interested in installing it are required to pre-register on the official website. If you're not interested in running BackBox Linux in the cloud on Amazon Web Services, you can always install it on your personal computer.

Source:
https://news.softpedia.com/news/ethical-hacking-ubuntu-based-backbox-linux-is-now-available-on-aws-524960.shtml

Debian GNU/Linux 9.8 Released with over 180 Security Updates and Bug Fixes

Coming only a month after the Debian GNU/Linux 9.7 emergency release that, which included only an important security update for the APT package manager, the Debian GNU/Linux 9.8 point release is here as an up-to-date install media that contains numerous security and bug fixes, offering users a way to install the Debian GNU/Linux 9 "Stretch" operating system series without having to download hundreds of updates from the official software repositories.

As mentioned before, the Debian GNU/Linux 9.8 "Stretch" point release is packed with lots of updates. Precisely, it consists of 90 updates that add important corrections to various packages, as well as 96 security updates. In total, there are a total of 186 updated packages included in Debian GNU/Linux 9.8, which also removes 23 redundant packages. The Debian Installer has also been updated to include all these security and bug fixes.

Debian GNU/Linux 9.8 "Stretch" is now generally available, but live and installation mediums are yet to be released by the Debian Project, which are needed for new installations.

Source:
https://news.softpedia.com/news/debian-gnu-linux-9-8-released-with-over-180-security-updates-and-bug-fixes-524979.shtml

Ubuntu 18.04.2 LTS Is Here With New Hardware Enablement Stack

Canonical has finally released the second point release of its Ubuntu 18.04 Bionic Beaver LTS operating system. Ubuntu 18.04.2 follows Ubuntu 18.04.1 LTS, which arrived last year in July.

As expected, this version has been made available for Desktop, Server, and Cloud platforms, along with different official flavors like Kubuntu, Lubuntu, Ubuntu Budgie, Ubuntu Kylin, Ubuntu MATE, and Xubuntu.

For those who don't know, these point releases make sure that the users downloading a fresh ISO from Ubuntu's website get all the updates and fixes in one

bundle.

Talking specifically about the changes, it comes with the new hardware enablement stack (HWE) and newer Linux 4.18 kernel. It goes without saying that these additions make sure that Ubuntu is now supported on more number of devices and it delivers a better graphics performance.

The Raspberry Pi enthusiasts might also want to celebrate as this update adds Pi 3 as a supported device; Pi 2 was an already supported image target.

As it's an LTS release, the users will continue to get updates until 2023 for Desktop, Server, Cloud, and Base. The other official flavors remain supported for three years.

Source: https://fossbytes.com/ubuntu-18-04-2-lts-release-download-features/

Tor traffic from individual Android apps detected with 97 percent accuracy

Italian academics say they've developed an algorithm that can detect the patterns of Android app activity inside Tor traffic with an accuracy of 97 percent.

The algorithm isn't a deanonymization script, as it can't reveal a user's real IP address or other identifying details. However, it will reveal if a Tor user is using an Android app.

The work of researchers from the Sapienza University of Rome in Italy builds upon previous research that was able to analyze the TCP packet flows of Tor traffic and distinguish between eight traffic types: browsing, email, chat, audio streaming, video streaming, file transfers, VoIP, and P2P.

For their work, the Italian researchers applied a similar concept of analyzing the TCP packets flowing through a Tor connection to detect patterns specific to certain Android apps.

They then developed a machine learning algorithm that they trained with the Tor traffic patterns of ten apps: the Tor Browser Android app, Instagram, Facebook, Skype, uTorrent, Spotify, Twitch, YouTube, DailyMotion, and Replaio Radio.

With the algorithm trained, they were then able to point it at Tor traffic and detect whenever the user was utilizing one of the ten apps. Test results showed an algorithm accuracy of 97.3 percent.

However, the mechanism they devised isn't as perfect and efficient as it sounds. For starters, it can only be used when there's no background traffic noise on the communication channel, meaning it only works when the user is using his mobile device with one app, and nothing else.

Source: https://www.zdnet.com/article/tor-traffic-from-individual-android-apps-detected-with-97-percent-accuracy/

Slax 9.8 Linux Distro Released with Various Updates from Debian GNU/Linux 9.8

Slax 9.8 is now available for download and comes about three weeks after the release of Slax 9.7, which improved

compatibility with new USB devices and made the ISO image even smaller by using 1MB blocks to compress the SquashFS filesystem.

Slax 9.8 is based on the recently released Debian GNU/Linux 9.8 operating system and incorporates all of the upstream security updates and miscellaneous bug fixes that were included in the Debian GNU/Linux 9.8 "Stretch" point release.

Unfortunately, the Slax 9.8 release doesn't include any new features and improvements besides the security updates borrowed from Debian GNU/Linux 9.8. It's here only to offer users an up-to-date installation media if you want to deploy the distro on new PCs.

The next Slax releases should include more new features and improvements for fans of this minimalist GNU/Linux distribution, including better UEFI boot support, EFI support in VirtualBox, support for excluding certain core modules, as well as a bunch of new packages and various bug fixes.

Source: https://news.softpedia.com/news/slax-9-8-linux-distro-released-with-various-updates-from-debian-gnu-linux-9-8-524996.shtml

Linspire Cloud Edition 8.0 Office 365 Officially Released, Here's What's New

Targeted at corporate and education users, the Linspire Cloud Edition 8.0 Office 365 operating system brings together the security and stability of the GNU/Linux technologies and the standard Microsoft Office online platform called Office 365 into a single, affordable package that can be easily installed on a personal computer or deployed across a network in offices and classrooms.

Built around the gorgeous KDE Plasma desktop environment, the Linspire CE (Cloud Edition) 8.0 Office 365 operating system comes with popular applications from both worlds, including the Google Chrome web browser, VLC media player, Skype VoIP client, the Office 365 Online launcher, as well as Microsoft's Powershell task automation and configuration management framework.

Due to its corporate target, Linspire Cloud Edition 8.0 Office 365 is not a free product. You will have to purchase a user license of $49.99 USD per user or a corporate unlimited user license for $1,500.99 USD if you want to use the operating system. However, the Linspire project offers various discounts for educational, military, and law enforcement personnel for the unlimited license.

Linspire Cloud Edition 8.0 Office 365 can be purchased either a live USB flash drive, SD card, or MicroSD card. Linspire ensures that Linspire CE 8.0 Office 365 is certified and verified for compatibility online and localized Web apps of numerous state and educational facilities across the United States.

Source: https://news.softpedia.com/news/linspire-cloud-edition-8-0-office-365-officially-released-here-s-what-s-new-524997.shtml

Kali Linux 2019.1 Launched With Metasploit 5.0

Offensive Security has announced the launch of Kali Linux 2019.1, the go-to operating system for penetration testers and cyber security enthusiasts.

The Debian GNU/Linux based OS has been launched with Metasploit 5.0, which is considered to be among the best pen-testing frameworks available in the market today.

The tool has received a number of improvements and new features including a new json-rpc daemon, new search engine, integrated web services, new evasion modules as well as support for writing shell-code in C.

Since its initial release in 2013, Kali Linux has taken the world of cybersecurity by storm by providing a number of tools pre-installed within a single OS.

The latest version of Kali comes with numerous bug fixes and updates to a number of tools including DBeaver, Binwalk, Burp

theHarvester, and Fern-WiFi-Cracker, to name a few.

The current update of Metasploit comes after almost 8 years with the last version 4.0 that was released way back in 2011. This update has managed to turn heads owing to various usability updates, evasion capabilities and automation API's it offers.

The operating system also boasts an upgraded kernel (v4.19.13) that supports the use of both Banana Pi and Banana Pro single board computers. Moreover, Raspberry Pi images have been further simplified to help in choosing one easily.

Source: https://fossbytes.com/kali-linux-2019-1-launched-with-metasploit-5-0/

Privacy: Facebook now lets Android users block background collection of location data

Faced with continued criticism about privacy, Facebook is rolling out an update to Android users that gives a greater degree of control over the sharing of location data with the social network.

Specifically, the update makes it possible to stop Facebook from using tracking your location in the background when you are not using the app. The change brings parity to the iOS and Android Facebook apps.

While iOS users have been afforded control over the background collection of location data for a while, until now Android users have been presented with the blunt tool of simply enabling or disabling location data completely. In introducing the new finer-grained controls, Facebook insists that it is "not making any changes to the choices you've previously made nor are we collecting any new information".

Anyone who has previously enabled Location History will be alerted to the new option in the Android app. iOS and Android users will also be prompted to check their location settings.

Facebook points out that the collection of location data can be used for security purposes.

Source: https://betanews.com/2019/02/20/facebook-android-location-settings/

Chrome OS 74 To Bring 'Audio Output' Support For Linux Apps

Pixelbooks, which run on Chrome OS, are compatible with Linux apps owing to Google's Crostini software. However, it is still in beta, and there are many limitations if you are running Linux apps.

One of the major limitations is that Linux apps on Chrome OS do not support hardware-accelerated graphics and audio. Google is planning to end the latter restriction with the upcoming ChromeOS 74.

About Chromebooks has recently spotted a code commit in the Crostini documentation which suggests that Linux apps on Chrome OS will support audio output shortly. The apps will start supporting audio output as of now and still won't support audio input. And you still won't be able to use video chat apps or voice recorders

DistroWatch.com
Put the fun back into computing. Use Linux, BSD.

because neither camera is supported in Crostini nor audio input as Google doesn't allow mic access.

For bringing audio output support, Google will need to grant microphone permissions to the Linux apps which make it difficult for the search giant to uphold its claim that ChromeOS is a secure operating system that runs apps in a sandboxed environment.

The stable version of Chrome OS 74 with audio support for Linux apps is expected to be released on April 30th.

Source: https://fossbytes.com/chrome-74-audio-output-support-linux-apps/

10-year-old critical gap discovered in Linux kernel crypto function

A programming bug in the Linux kernel's user-space crypto API can be exploited by attackers to gain root privileges on a target system. Worse still, several kernel security scene observers also suspect that the use after free memory error could also be exploited by the attacker to execute arbitrary malicious code. For this reason, the vulnerability (CVE-2019-8912) in the NIST's National Security of Information Database (NIST) is 9.8 out of 10 possible - a critical gap.

All Linux kernels seem to be affected by the introduction of the module af_ag in the 2.6 kernel up to the current version 4.20.11. Although apparently only versions 4.10 and up are vulnerable, because a function that is necessary to exploit the error, was only then installed. Patches for the vulnerability have already been added to current development kernel releases. In which release versions the fix finally lands, is not yet known. Observers expect the bug fix to also feed into older kernel versions than Backport, as only a relatively small change is needed to close the vulnerability.

Source: https://www.heise.de/security/meldung/10-Jahre-alte-kritische-Luecke-in-Linux-Kernel-Kryptofunktion-entdeckt-4315290.html

Linux Foundation launches ELISA, an open source project for building safety-critical systems

Machines have a trust problem — particularly autonomous machines deployed in safety-critical scenarios, like industrial robots and driverless cars. In a pair of surveys published by the American Automobile Association last January and by Gallup in May, 63 percent of people reported feeling afraid to ride in a fully self-driving vehicle and more than half said they'd never choose to ride in one. Moreover, in a report published by analysts at Pew in 2017, 70 percent of Americans said they were concerned about robots performing tasks currently handled by humans.

In an effort to allay those fears, the Linux Foundation today launched Enabling Linux in Safety Applications (ELISA), an open source project comprising tools intended to help companies build and certify Linux-based systems whose failure could result in loss of human life, significant property damage, or environmental damage. In partnership with British chip designer Arm, BMW, autonomous platforms company Kuka, Linutronix, and Toyota, ELISA will work with certification and standardization bodies in "multiple industries" to establish ways Linux can form the foundation of safety-critical systems across industries.

Source: https://venturebeat.com/2019/02/21/linux-foundation-elisa/

A few months ago, I wrote an article on using LaTeX to easily manage and track a CV. I ended up using LaTeX instead of my first choice (Markdown + HTML Stylesheets), because I had a great deal of trouble getting the page sizing working properly. Since then, I've learned a fair bit more, and want to share my knowledge with you!

The Path

Shortly after writing the article mentioned above, I heard about Adam Wathan typesetting the book "Refactoring UI" in Markdown and generating PDFs from those files. He informed me on Twitter that he was using Prince XML to compile the PDF files. Looking into it, I decided it was way too expensive for the occasional (commercial) use that I was planning. It did, however, indicate to me that this was possible. If you're looking for a free tool for personal use, Prince does allow it, and only adds a small logo on the first page.

Instead, I then headed to alternativeto.net and had a look at the alternatives to Prince XML. There were 3 options listed - wkhtmltopdf, PDFReactor, and WeasyPrint. PDFReactor also has a licensing cost associated with it, so I instead focused on the other two.

WeasyPrint

My first look was WeasyPrint, as it looked the most similar to Prince XML. It takes a website, and turns it into a wonderful PDF. If you need to make brochures, or documents with images/diagrams/icons, this would probably be my recommendation. It's not too complicated to set up and use, but it does require you to create the HTML file somehow, including all the assets and styles. Combining this with Tailwind CSS would probably be the fastest way to create a nice looking PDF. However, I wanted something similar - just a set of Markdown files that could be turned into basic text-only PDFs.

wkhtmltopdf

This engine can be used with Pandoc (which I have previously used to turn .docx files into Markdown), and can take Markdown files directly, and, with one command, generate the HTML and then the PDF. You can include CSS files and many other options. Admittedly, I haven't found too many easy-to-follow guides, and I find their documentation to be confusing when you have little experience with pandoc. As a side note, pandoc also supports weasyprint.

Reddit to the Rescue

While I had done a few tests, I didn't have the time to invest in creating decent styles for either tool, especially since that was where I ran into the most issues originally. Instead, I put it on the back burner and continued working on my various other projects. That is, until the first week of February, where a user had posted on Reddit's /r/unixporn subreddit. His setup included a very nice PDF generated from a very normal-looking Markdown file. Hunting through the comments, I found someone who had already asked the question of "how?".

Well...it turns out to have been pandoc + wkhtmltopdf. Following the dialog (and the recommendation of tufte-css), I have successfully compiled a few easy Markdown files into usable, readable PDFs.

Why?

I've heard this question a lot when it comes to things I spend my time investigating. The answer for this one is also pretty standard - efficiency. As a developer, I often have to write documentation or make notes about some process or another. When I expect to have upwards of 5 pages of documentation (especially with images, an index, etc), I stick with Sphinx. This is extra useful, as I can output to LaTeX, PDF, ePub, or HTML (among other things). Depending on the needs of my client, I can then compile the same

files into any combination of formats they might need.

However, if I'm looking at maybe a single page of documentation, setting up Sphinx is a massive overkill for this kind of situation. Especially if it's not for a client and I just want to keep track of some process I used. I tend to write this stuff into Markdown (even before I could compile it into PDF easily) because I sometimes want to collect various items together, or add it to my internal documentation (which is HTML created from Markdown). Therefore, writing the short notes into Markdown was always my first approach. Now I can compile the Markdown into HTML (as normal), but also into PDFs for longer-term storage or sharing.

I also find Markdown much faster to type and format than anything like Google Drive, Microsoft Word, or Pages documents, since formatting is taken care of with just a few characters, instead of memorizing ever-changing (between the various applications) shortcuts, or having to use the mouse to select individual styles and settings. Best of all, Markdown is repeatable. I can write a dozen documents, and format them all the same way at the same time with one CSS file.

How?

This is surprisingly simple. Using the links in the Further Reading section, make sure you've downloaded the Tufte CSS file and fonts (or any CSS file you'd like to use), and save them somewhere. After that, make yourself a Markdown file you'd like to convert. Then use the command below:

```
pandoc -f markdown -t html5 ./fcm-notes/pandoc.md --pdf-engine wkhtmltopdf --css tufte.css -o "pandoc.pdf"
```

The options are pretty self-explanatory - f for the input format ("from"), -t for the target format ("to"), --pdf-engine for the engine to use, --css for the target CSS file, -o for the output file name.

You can also get fancier by creating a script to watch a specific file, or a bash alias to speed up the process of compiling a file. Either way, this should get you started!

Future

Now that I have the Markdown -> PDF workflow working, I will see about using pandoc to convert Markdown into Doc formats. This way, I can start writing Markdown files for articles, and host them internally as a website for easy searching, instead of hunting through a folder of Word and google documents.

Conclusion

While Pandoc can do an almost overwhelming amount of things, starting with a few simple (but powerful) options seems best. From there, you can move on to creating reveal.js slideshows, or any number of other formats. Have you ever used this? Or are you inspired to do so now? Feel free to share any awesome use-cases with me via email. Or reach out to me at lswest34+fcm@gmail.com with any recommendations, questions, or article requests.

Further Reading

https://www.reddit.com/r/unixporn/comments/al1uge/i3wm_my_comfy_notetaking_setup/ - Reddit thread

https://pandoc.org/MANUAL.html - Pandoc manual

https://weasyprint.org/ - WeasyPrint

https://github.com/edwardtufte/tufte-css - Tufte CSS repo

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.

Python In The REAL World Pt.90

When do children learn words?

This month, we are going to look at a different dataset. The dataset we used last month was, for the most part, pristine and perfect. However, that is not the way things work in the real world. Data will be missing from fields, or might not make sense in the scope of what the data is supposed to be. Many times, the data we really get has missing or bad data that will skew the results.

I'm going to try to show you how to use Pandas and Python, how to deal with data without ever having to open the dataset in a spreadsheet even if there are some cells that don't contain good data, using some of the tricks we learned over the last two months, and giving you some new skills at the same time.

We'll use a dataset with some missing data. This dataset can be found on kaggle.com under the heading 'When Do Children Learn Words - Information on when Norwegian children generally learn words'. The actual URL is https://www.kaggle.com/rtatman/when-do-children-learn-words. When getting data from web sources, sometimes they give you a good amount of information about the dataset, sometimes not so much. In this case, there is a pretty good writeup about the data. If you look at the tabs just under the picture, you will see that the second tab from the left is titled 'Overview'. That tab has a list of the column names and their content. This information is key to understanding what the data is really about and what we can expect to find. We will discuss the various columns in a moment. You should download the file 'main_data.csv' – the other csv file is optional, we won't be looking at it in this article.

If you open 'main_data.csv' in your favorite text editor, you will see something like that shown below.

I'm sure you realize that I'm showing only the first 5 lines of the file here, but it gives you a pretty good idea of what we will be looking at. If you have never looked at a .csv file in a text editor before, you will see that (in this case) the first line shows the names of each column, separated by commas, and that there will be 11 columns of data. You can also scroll down to the bottom and see that there are 732 lines, which means that there are 731 lines (rows) of data.

If you look at the fourth line of the file, you will see that the next to last data field has '#N/A' in it instead of a number. You can think of the '#N/A' meaning 'Not Available' or 'Not applicable'. (I prefer the former.)

Next page, top right, is the breakdown of the columns and their meanings.

So for this particular article, we will be interested in the following columns...

'Word_NW', 'Translation', 'AoA', 'VSoA', 'Lex_cat', 'Freq', 'CDS_freq'

which are the Norwegian word, the English translation, the age of the child when they learn this word, how many other words they generally know, the category of the word, how common the word is in Norwegian, and how common the word is when an adult is talking to a child.

```
ID_CDI_I,ID_CDI_II,Word_NW,Word_CDI,Translation,AoA,VSoA,Lex_cat,Broad_lex,Freq,CDS_freq
i_4_1,i_1_1,'au','au','ouch',16,40,sound effects,nominals,4366,7
i_4_2,i_1_2,'bææ','bææ','baa baa',15,40,sound effects,nominals,18,5
i_4_3,i_1_3,'brrr (bil-lyd)','brrr (bil-lyd)','vroom',13,20,sound effects,nominals,#N/A,20
i_4_4,i_1_4,'gakk gakk','gakk gakk','quack quack',17,40,sound effects,nominals,16,3
```

Now that we know what we have, and what we are interested in, let's get started. Create a folder for your project and copy the main_data.csv file into it, open a terminal, change directory to that folder, and fire up your Python shell. Now, import pandas like we did last month, and create a DataFrame that we can work with...

```
import pandas as pd

csvfile = 'main_data.csv'

rawdata =
pd.read_csv(csvfile)

# Create our beginning basic
DataFrame

df = pd.DataFrame(rawdata)
```

Now that we have our DataFrame in place, we need to know how "bad" the data is. We can do this with the following Python statement...

```
print(df.isnull().sum(axis=0)
)
```

I went to the Internet to get an easy way to explain the 'axis' parameter and, thanks to a posting in StackOverflow, the "easy" answer is that axis=0 is data along all rows for each column and axis=1 is data for all columns in each row. So the query means: give me the sum of all null values for each column in our DataFrame.

Main data

ID_CDI_I: Word ID from the Norwegian adaptation of the MacArthur-Bates Communicative Development Inventories, version 1
ID_CDI_II: Word ID from the Norwegian adaptation of the MacArthur-Bates Communicative Development Inventories, version 2
Word_NW: The word in Norwegian
Word_CDI: The form of the word found in the Norwegian adaptation of the MacArthur-Bates Communicative Development Inventories
Translation: the English translation of the Norwegian word
AoA: how old a child generally is was when they learn this word, in months (Estimated from the MacArthur-Bates Communicative Development Inventories)
VSoA: how many other words a child generally knows when they learn this word (rounded up to the nearest 10)
Lex_cat: the specific part of speech of the word
Broad_lex: the broad part of speech of the word
Freq: a measure of how commonly this word occurs in Norwegian
CDS_freq: a measure of how commonly this word occurs when a Norwegian adult is talking to a Norwegian child

That "query" gives us the following output...

```
ID_CDI_I        341
ID_CDI_II         0
Word_NW           0
Word_CDI          0
Translation       0
AoA              36
VSoA             27
Lex_cat          16
Broad_lex        16
Freq             10
CDS_freq          8
dtype: int64
```

Now, the next question would be what to do with those null values. We can simply replace the null values with the mean or average of the "real" values in each numerical column we are interested in, and 'unknown' in the text column. It WILL skew the data a little bit, but we should be able to live with that.

So, rather than mess with our main DataFrame, we'll create one that contains only the columns we are interested in, then fix the data there. First, we'll create a list of the column names we are interested in...

```
cols_to_use =
['Word_NW','Translation','AoA
','VSoA','Lex_cat','Freq','CD
S_freq']
```

Now, create a new DataFrame with just those columns...

```
df2 = df[cols_to_use]

print(df2)
```

Next, we can fix our numeric columns that have null data.

```
df2['AoA'].fillna(df2['AoA'].
mean(),inplace=True)
```

However, this gives us a warning message...

```
5434: SettingWithCopyWarning:
A value is trying to be set
on a copy of a slice from a
DataFrame
```

See the caveats in the documentation: http://pandas.pydata.org/pandas-docs/stable/indexing.html#indexing-view-versus-copy

self._update_inplace(new_data)

This is due to what is called a chained assignment. Now, we know this is a copy that we are dealing with, so we can safely thank Pandas for the warning, and run the command again. It will work this time. Now do the rest of the numerical columns...

```
df2['AoA'].fillna(df2['AoA'].
mean(),inplace=True)

df2['VSoA'].fillna(df2['VSoA'
].mean(),inplace=True)

df2['Freq'].fillna(df2['Freq'
].mean(),inplace=True)

df2['CDS_freq'].fillna(df2['C
DS_freq'].mean(),inplace=True
)
```

And 'unknown' in the 'Lex_cat' column…

```
df2['Lex_cat'].fillna('unknow
n',inplace=True)
```

However, if we are running this in script from an IDE, this will fail and only the last 5 commands will work. There is a command that we could use...

```
df2.is_copy = False
```

But, it's now deprecated, so it might work today, but not tomorrow. And we get another warning message if we do this...

```
site-
packages/pandas/core/generic.
py:4388: FutureWarning:
Attribute 'is_copy' is
deprecated and will be
removed in a future version.


object.__getattribute__(self,
name)

site-
packages/pandas/core/generic.
py:4389: FutureWarning:
Attribute 'is_copy' is
deprecated and will be
removed in a future version.


 return
object.__setattr__(self,
name, value)
```

Again, it WILL work today, but we don't know for how long. So, the easiest way to work around this is to turn off the warnings all together, again, for use in a script.

```
pd.set_option('mode.chained_a
ssignment', None)
```

That having been said, don't use this command unless you are completely sure you understand it.

Finally, let's make sure that we got everything covered by running our sum query again...

```
print(df2.isnull().sum(axis=0
))

Word_NW          0
Translation      0
AoA              0
VSoA             0
Lex_cat          0
Freq             0
CDS_freq         0
dtype: int64
```

Now, finally, we have mostly clean data that we can work with. Make your terminal pretty wide so we can see all our data at one time (next page, top) and let's do our first query of the DataFrame and find out how many words the typical Norwegian child knows by the age of 18 months and what they are...

```
print(df2[df2.AoA < 18])
```

That's kind of neat, but it would be better if the output were sorted by the average age column ('AoA' - see next page, bottom). We, can do it this way...

```
print(df2[df2.AoA <
18].sort_values('AoA',ascendi
ng=True))
```

That's much better. So, between the age of 12 and 13 months, the average Norwegian child knows somewhere between 20 and 40 words. If we want to sort it by both the 'AoA' column and then by the 'VSoA' column (page after next, top), we could do it this way...

```
print(df2[df2.AoA <
18].sort_values(['AoA','VSoA'
],ascending=True))
```

So all you Daddies out there can take heart that your name is (on average) the third word a child learns, and don't let the fact that 'vroom' usually comes before you get you down. 'Vroom' is SUCH a fun sound to make.

To make life easier for you all, I've created a full script that does everything we just did and threw in some wait-for-keypress statements, so you can visualize the data. It is on Pastebin at https://pastebin.com/fb4pH23H

```
                                                Word_NW    Translation   AoA  VSoA          Lex_cat          Freq  CDS_freq
0                                                  'au'         'ouch'  16.0  40.0    sound effects   4366.000000       7.0
1                                                 'bæ'       'baa baa'  15.0  40.0    sound effects     18.000000       5.0
2                                       'brrr (bil-lyd)'        'vroom'  13.0  20.0    sound effects  447695.847434      20.0
3                                            'gakk gakk'   'quack quack'  17.0  40.0    sound effects     16.000000       3.0
6                                                'mjau'         'meow'  17.0  60.0    sound effects    214.000000       7.0
7                                                 'møø'          'moo'  15.0  40.0    sound effects      8.000000       7.0
8                                           'nam - nam'       'yum yum'  13.0  40.0    sound effects     35.000000      19.0
11                                          'voff voff'     'woof woof'  15.0  40.0    sound effects     10.000000      52.0
70                                           'en ball'          'ball'  16.0  40.0     common nouns  96368.000000      74.0
91                                          'en banan'        'banana'  17.0  60.0     common nouns   4673.000000      17.0
110                                            'is'     'ice cream'  17.0  60.0     common nouns  180159.000000      11.0
350                                         'en baby'          'baby'  17.0  60.0           people  16739.000000      33.0
370                                         'en mamma'         'mommy'  12.0  20.0           people  36751.000000     171.0
379                                         'en pappa'         'daddy'  13.0  20.0           people  24689.000000     118.0
387                                          'å bade'         'bathe'  17.0  60.0  games & routines   8123.000000      16.0
391                                          'hadet'           'bye'  14.0  40.0  games & routines    467.000000       6.0
394                                            'hei'            'hi'  13.0  40.0  games & routines   64086.000000      74.0
397                                             'ja'           'yes'  15.0  40.0  games & routines  158496.000000    3291.0
401  'Borte! (lek hvor ansikt gjemmes og plutselig ...     'peek-a-boo'  15.0  40.0  games & routines       5.000000      27.0
404                                            'nei'            'no'  15.0  40.0  games & routines  136554.000000     470.0
409                                           'takk'     'thank you'  13.0  40.0  games & routines  106589.000000     106.0
>>>
```

```
                                                Word_NW    Translation   AoA  VSoA          Lex_cat          Freq  CDS_freq
370                                         'en mamma'         'mommy'  12.0  20.0           people  36751.000000     171.0
409                                           'takk'     'thank you'  13.0  40.0  games & routines  106589.000000     106.0
2                                       'brrr (bil-lyd)'        'vroom'  13.0  20.0    sound effects  447695.847434      20.0
8                                           'nam - nam'       'yum yum'  13.0  40.0    sound effects     35.000000      19.0
394                                            'hei'            'hi'  13.0  40.0  games & routines   64086.000000      74.0
379                                         'en pappa'         'daddy'  13.0  20.0           people  24689.000000     118.0
391                                          'hadet'           'bye'  14.0  40.0  games & routines    467.000000       6.0
1                                                 'bæ'       'baa baa'  15.0  40.0    sound effects     18.000000       5.0
401  'Borte! (lek hvor ansikt gjemmes og plutselig ...     'peek-a-boo'  15.0  40.0  games & routines       5.000000      27.0
397                                             'ja'           'yes'  15.0  40.0  games & routines  158496.000000    3291.0
7                                                 'møø'          'moo'  15.0  40.0    sound effects      8.000000       7.0
11                                          'voff voff'     'woof woof'  15.0  40.0    sound effects     10.000000      52.0
404                                            'nei'            'no'  15.0  40.0  games & routines  136554.000000     470.0
0                                                  'au'         'ouch'  16.0  40.0    sound effects   4366.000000       7.0
70                                           'en ball'          'ball'  16.0  40.0     common nouns  96368.000000      74.0
387                                          'å bade'         'bathe'  17.0  60.0  games & routines   8123.000000      16.0
91                                          'en banan'        'banana'  17.0  60.0     common nouns   4673.000000      17.0
6                                                'mjau'         'meow'  17.0  60.0    sound effects    214.000000       7.0
3                                            'gakk gakk'   'quack quack'  17.0  40.0    sound effects     16.000000       3.0
350                                         'en baby'          'baby'  17.0  60.0           people  16739.000000      33.0
110                                            'is'     'ice cream'  17.0  60.0     common nouns  180159.000000      11.0
```

```
                                                 Word_NW    Translation   AoA  VSoA          Lex_cat          Freq  CDS_freq
370                                          'en mamma'        'mommy'  12.0  20.0           people   36751.000000     171.0
2                                      'brrr (bil-lyd)'        'vroom'  13.0  20.0     sound effects  447695.847434      20.0
379                                          'en pappa'        'daddy'  13.0  20.0           people   24689.000000     118.0
8                                         'nam - nam'      'yum yum'  13.0  40.0     sound effects      35.000000      19.0
394                                             'hei'           'hi'  13.0  40.0  games & routines   64086.000000      74.0
409                                            'takk'     'thank you'  13.0  40.0  games & routines  106589.000000     106.0
391                                           'hadet'          'bye'  14.0  40.0  games & routines     467.000000       6.0
1                                              'bææ'      'baa baa'  15.0  40.0     sound effects      18.000000       5.0
7                                              'møø'          'moo'  15.0  40.0     sound effects       8.000000       7.0
11                                         'voff voff'     'woof woof'  15.0  40.0     sound effects      10.000000      52.0
397                                             'ja'          'yes'  15.0  40.0  games & routines  158496.000000    3291.0
401  'Borte! (lek hvor ansikt gjemmes og plutselig ...    'peek-a-boo'  15.0  40.0  games & routines       5.000000      27.0
404                                             'nei'           'no'  15.0  40.0  games & routines  136554.000000     470.0
0                                               'au'        'ouch'  16.0  40.0     sound effects    4366.000000       7.0
70                                         'en ball'        'ball'  16.0  40.0      common nouns   96368.000000      74.0
3                                         'gakk gakk'   'quack quack'  17.0  40.0     sound effects      16.000000       3.0
6                                             'mjau'        'meow'  17.0  60.0     sound effects     214.000000       7.0
91                                         'en banan'      'banana'  17.0  60.0      common nouns    4673.000000      17.0
110                                             'is'   'ice cream'  17.0  60.0      common nouns  180159.000000      11.0
350                                        'en baby'        'baby'  17.0  60.0           people   16739.000000      33.0
387                                         'å bade'       'bathe'  17.0  60.0  games & routines    8123.000000      16.0
>>>
```

I'll leave you with this information and let you experiment on your own. Next time, we'll dust off some of our Page skills and create a GUI that will make it easier to play with data using a very powerful custom widget called 'pandastable'. Until then, have fun and keep learning.

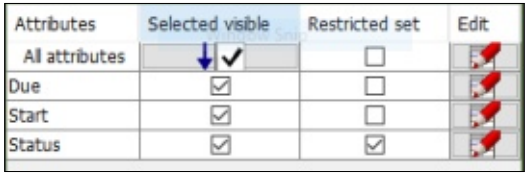
Greg Walters is a retired programmer living in Central Texas, USA. He has been a programmer since 1972 and in his spare time, he is an author, amateur photographer, luthier, fair musician and a pretty darn good cook. He still is the owner of RainyDaySolutions a consulting company and he spends most of his time writing articles for FCM and tutorials. His website is www.thedesignatedgeek.xyz .

Freeplane Pt.11

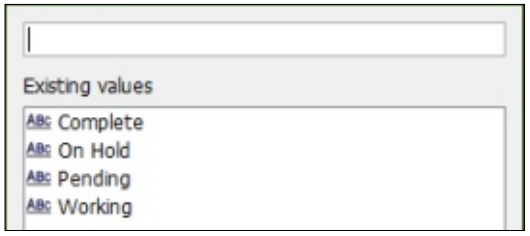
We have covered enough Freeplane features that we can build a useful template. For our example, I'm showing you a simple project management system. I've mentioned before I use Freeplane to outline and manage my projects. The template will allow for the management of many jobs. We will create a set of attributes and styles to make the system work for us. Once we finish the template, we will implement the model.

We'll build our model using the standard template file. Use the menus File > New Map and select the standard.mm file.

Attributes



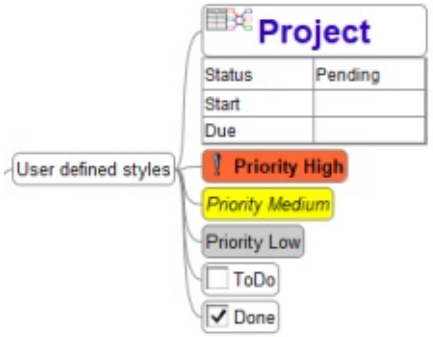
First, we will create the attributes. The attribute manager allows us to set up everything we need. You open the manager using the menus Edit > Node extensions > Attribute manager. We'll create the attribute names by clicking on the edit icon for the 'All attributes' row. Add these attributes through the list dialog: Status, Start, and Due. When you add to the list, a row is created in the manager window. After adding all the names, click the Close button.



For the attribute Status, we will add default values. Select the edit icon for the Status row and add the values: On Hold, Working, Pending, and Complete. Click the Close button and check the Restrict set checkbox. Restricting the set prevents mistakes when entering the project's status.

Select the checkboxes to make all the attributes visible. Click the OK button to close the manager.

Styles



Styles are the visual character of the mind map. Through them, we assign colors, icons, and attributes to differentiate nodes. We will create six for our template. Each style defines a different purpose on the map.

Getting Started

Use the shortcut keys CTRL + F11 to open the Style editor. Select the Default style and change the Node Shape to Bubble. Delete all the default User Defined Styles. To delete a style, right-click it and select 'Remove user defined style'.

Project

The project is a to- level node defining the project title. We'll assign the attributes Status, Start, and Due to the style. A node assigned to Project will become the parent node for each project. So, we want Project to stand out among the others.

Right-click the Default style and select New style from selection. In the text box that pops up, enter the name Project and click OK. The new Project node shows under in the User defined styles node.

Under the Color of whole core section of the Tool Panel, click on the Text swatch. From the color pallet, pick one of the darker blues for the text color. Scroll down to the Font for whole core section, and set the Font size to 18. Check the bold box. The Project style is big and bold and catches the eye.

We want to add some attributes to the Project style. To add the first attribute, use the menus Edit > Node extensions > Edit attributes in-line. A new attribute row is inserted into the node. Use the dropdown on the left to select Status. Double-click the value for

the Status and choose Pending, then add the Start and Due attributes using the right-click menu. Leave the values for the last two blank.

Finally, we'll crown it with the mind-map icon. When I think of a job, I think of all the things that go into it. Often, you can make a project a map on its own. For me, it's the best choice from an image. Select the icon from the Styles icon sidebar.

Priority Levels

We'll create three priority styles, high, medium, and low. These styles are meant to show the importance of an item in the project. As we step down through each of the priorities, the visual impact decreases. Use the Default node as the starting point for each level by right-clicking Default and selecting New style from selection.

For Priority High, bold the font and make the background color red. Add the exclamation point for an icon. The Priority Medium is simpler than Priority High. Make the font italic and the background color yellow. For the Priority Low, we just give it a dull gray background.

ToDo and Done

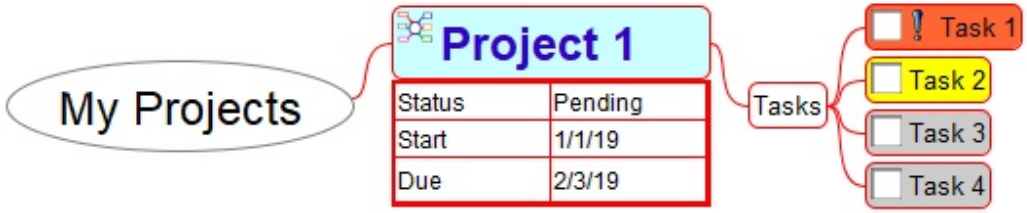
I can't create a template without my standard ToDo and Done. In this case, we will keep them simple. For ToDO, add the empty checkbox, and for Done, add the checked box. These two styles we'll use for tasks. By keeping the text plain, we can easily mix them with the priority styles. For both, use the Default style as the starting point.

Save Template

We are finished with the template. We need to save our work. Click the menus File > Save Map. At the top of the save dialog, you'll see a drop-down box. From the drop-down, select the option 'User templates' to move the location to your template folder. Name the file Projects.mm and click the Save button. Once the file is saved, you can close it.

Implementation

Now, we need to use our new



template. The menus File > New map brings up the Select template dialog. From the drop-down list, click on the Project.mm file and click the OK button. Freeplane creates a map using the template.

Rename the root node to My Projects. Pressing the Insert key will create a child node. Name the node Project 1. From the main toolbar, use the styles drop-down list to select the Project style. Use the menus Edit > Node extensions > Attributes from style to add the Status, Start, and Due fields below the node.

Use the Insert key to create a child node for the project and name it Tasks. Create several children for Tasks, naming them Task 1, Task 2, etc. Select all the tasks nodes and assign the ToDo style to them.

Now, let's make one of the tasks a high priority. After selecting one of the nodes, follow the menus Format > Manage styles > Manage conditional styles for node. Click the new Button to create an Always condition. From the Style drop-down list, pick High Priority. Click the OK button, and the style's format is added to the node. Repeat these steps for the other tasks, assigning them different priorities.

You can click into the Start and Due attributes below the project node and type in dates according to your local format.

We created a simple template without many bells and whistles; however, it is a starting point for more advanced features. Using conditional formatting, you could tag currently active projects. Play with the template, expand it, and make it your own. After all, making it your own is the core principle of mind mapping.

Darktable For Photography Pt.2

For the people just joining us, you can install Darktable from the software centre, however you may see:

Look at the version when installing and If you roll your own, be aware that once you hit 2.6, you cannot downgrade. There are BIG changes from 2.4 to 2.6. The PPA for version 2.6 is:

```
sudo add-apt-repository ppa:pmjdebruijn/darktable-release
```

When you install Darktable, you will notice Lensfun is also installed. You can see if your lens is supported here: http://lensfun.sourceforge.net/lenslist/

Do not worry if yours is not, you can always calibrate yours.

That out of the way, let us step into some more photo editing and workflow.

Lets face it, Photo's seldom look like the scene we remember. Sometimes the colours look faded, sometimes you just do not feel what you felt looking at the scene. One of the features of Darktable is the improved tone curve. In this issue, we would like to spend some time exploring this feature. For me, photos are about the feeling - so let us see if we can get the feeling back with colour manipulation. Feels? No, I thought not.

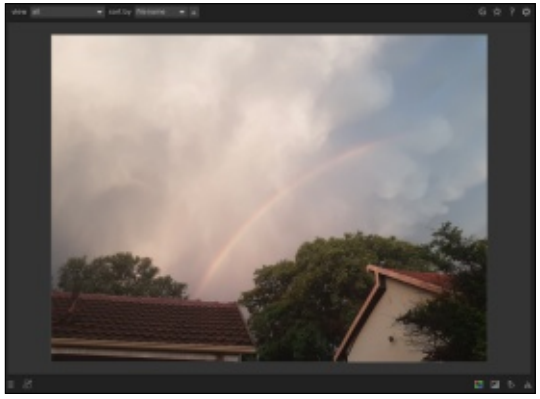
Quick tip - if you use Open Camera on your mobile phone, rename the .dng files to .raw

I was walking in the rain the other day and saw a rainbow, bright as can be and a double rainbow to boot. Yet every photo I took was washed out and the second rainbow was missing. Bear in mind that this is a mobile phone camera, it is not meant for anything more than 'selfies'. As you can imagine, I was pretty disappointed, but as it was a phone, I did not delete it immediately. Usually, I would discard these type of photos and I am sure many of you would too. This, I thought, would be the best test for the L*a*b tone curve. Those of you who are used to RGB tone curves, may say, hey hold on....

Don't feel alone if you do not know what L*a*b colour space is; I had to look it up on Wikipedia: https://en.wikipedia.org/wiki/CIELAB_color_space

The math is actually beautiful, but we are here for Darktable.

TL:DR version, it matches colours better to what your eyes see. Let us put it to the test.

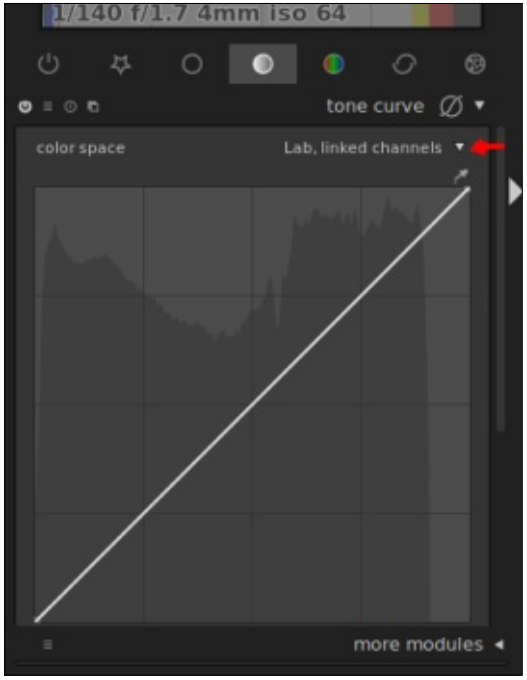


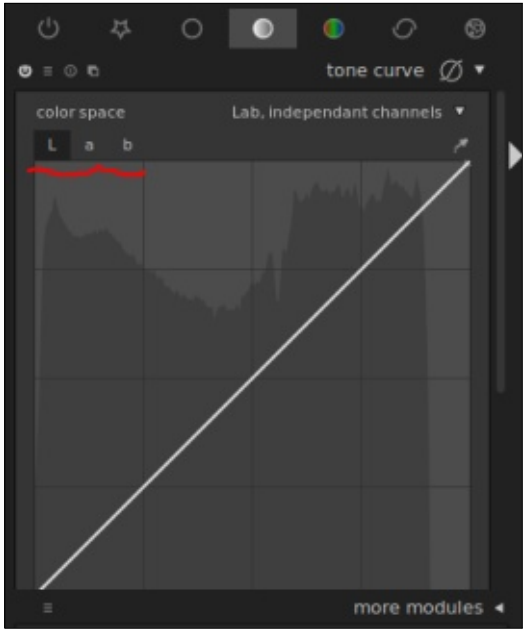
As you can see it is rather boring, now where is the L*a*b colour?

To find the L*a*b channels, you need to open the Tone curve and change it with the little down triangle, to lab independent channels. Now, when you click on "a" or "b", you'll get a green to red and blue to yellow histogram? (Sorry, English is not my first language and if I used the incorrect word, just roll with it).

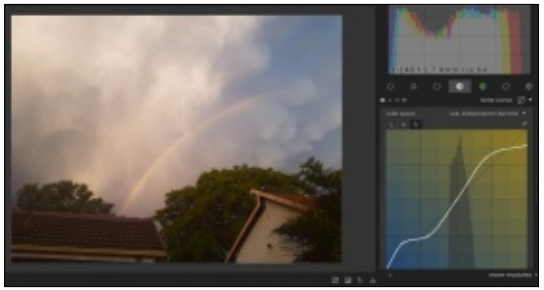
Now, drag a point on the line until you get the desired result. If you make a mistake, just double-click the little circle that you were dragging around and it will reset to default. The way it works is that the changes are more drastic the

closer you drag around the centre.

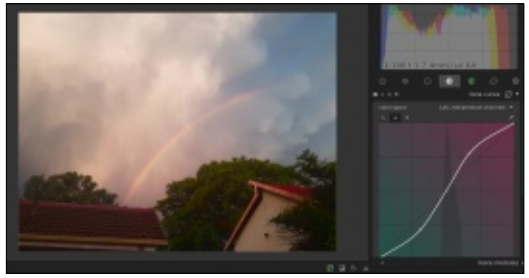




If I drag the “b” channel in a sort of s-curve, you will notice the green in the trees pop.



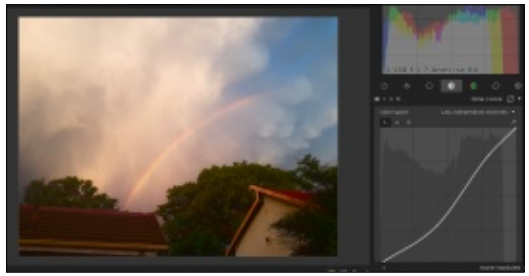
I am going to adjust the “a” channel in more or less the same way:



Now you can see the roof pop.

Lastly, I will adjust the “L” channel, which is the greys and contrast your eye sees. Again, I will make just a basic s-curve. S-curves are not always the best idea - it is high contrast, I am just using it as an illustration – it produces dramatic changes and this dreary picture needed dramatic change. S-curves are nice if the white balance on your picture is okay. Dragging below the line is darker and above lighter, and should you drag the top left, you will start seeing overexposure. Pay attention to the colour histogram in the top right. Do not squash your histogram into any of the sides.

Long story short, I drag it just enough to see the different greens on the tree and the grey’s in the clouds - with the blue smattering popping.



If Darktable can do this to a random picture with no value, imagine what it can do for your high value pictures. This is not about applying a snapseed filter, this is about fine grained control over every aspect of your photo. This is by no means all you can do with Darktable, this is but a tiny part of what this powerhouse can do.

For those who want a bit more, I will give the penny tour. “L” (lightness) is roughly comparable to dragging all three R,G,B values in RGB or the sum thereof. The width is 256 (not a coincidence) from -128 to +128 for all three settings. The histogram of what you are editing is shadowed in the background of each of the channels (colour space). There is no substitute for practical experience; go play with it! The little hamburger menu (right above the “L”) has presets defined and you can save your own for future use. Happy editing!

We will cover another feature soon, but if there are any features you would like us to cover first, you know where to find us!

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.

Inkscape - Part 82

Over the past few months, you'd be forgiven for thinking that this column has morphed from an Inkscape tutorial to a more general "SVG in HTML" series. In practice, I've been introducing a little background knowledge before delving into the (limited) JavaScript features that are already present in Inkscape. But that requires just a little more background information about JavaScript itself, and its use in SVG on the web…

JavaScript (JS) is the de facto programming language used in web pages. It's an implementation of a language called ECMAScript, so you might occasionally see that term mentioned. It's nothing to do with the Java programming language – it just shares a similar name thanks to someone in marketing at Netscape many years ago deciding that 'brand awareness' was more important than 'avoiding decades of confusion'.

Within a browser, JavaScript gives you the capability to write code that can modify the page and respond to interactions initiated by the user, or by external actions such as some data being pushed from a server. These triggers are referred to as 'events', and will form the core of the JS code we'll be writing in this series. The basic approach is that we'll use SVG to draw something to the browser window, then attach events to monitor for clicks, mouse movements, keypresses, and so on, each of which then triggers some JS code which can, in turn, modify the SVG.

Because JavaScript can read keypresses from the user, and can talk to a server, it raises security concerns. You could, for example, use SVG to create a beautiful image, but as soon as the mouse moves over it, your JS could redraw the image to look like a legitimate username/password box has opened on the screen. Anything typed into the box could be sent back to your server and used for your own nefarious ends. As a technically aware reader of FCM, you may not be fooled by such an obvious scam, but a huge number of people will happily enter their credentials into such a dialog as an almost Pavlovian response.

To prevent such attacks, browsers limit the ability of SVG to run JavaScript, depending on how the SVG has been included in the page. I've talked about this previously, but it's worth recapping:

SVG in an <img>:
This is how images are usually displayed in a web page, and is used in countless bulletin boards and social media sites. Because anyone can upload any image, there's a huge potential security hole, so JavaScript in SVG is blocked entirely.

SVG as a CSS background-image:
Although less frequently used as a way for users to upload images, the code paths used in browsers are pretty much the same for CSS images as for <img> elements, so the previous rule still applies: no JavaScript.

Inline SVG:
This requires the actual code of the page to be edited, so it's assumed that the work is being done by someone in a trusted position, and therefore the browser allows JavaScript.

SVG in an <object>
This is the W3C standard way to include "foreign" content into a web page – including Flash, Java applets, and other potentially dangerous code. As such, it's always had a more lax set of security rules than <img>, and no sensible website developer allows user-uploaded content to be displayed in an <object>. Therefore it's considered to be something that is added only by someone in a trusted position, and JavaScript is allowed.

SVG in an <iframe>:
Using an <iframe> has a simple syntax, similar to an <img>, but still allows JavaScript like an <object>. I tend to use <object> as that's the officially recommended approach by the W3C, but there are times when an <iframe> is a

better option.

There's one final way to display an SVG image in a browser which doesn't involve embedding it into an HTML file in any way, and that's simply to load the SVG file directly. For an SVG file on your local machine, you can just press CTRL-O and find it in the file selector. For one sent by a web server, the browser's URL field just has to point directly at the SVG image, and the browser will load it in the same manner as if you pointed directly at a PNG or JPEG file…

…except it won't. Not unless the server has been configured correctly. Which is a whole other story of politics and pain in which countless users and developers suffer from an ideological disagreement at a technical level. Brace yourself, this is going to get petty!

Serving an SVG file isn't terribly tricky. Your web server has to be configured to send the right MIME type (a header that tells the browser what sort of file it's receiving), but that's usually a small configuration change. If you've got direct control over the configuration of your server, search online for some appropriate terms (e.g. "Apache SVG MIME"), and you should find suitable instructions. If your server is managed by someone else – such as the typical case of a website hosted by an ISP – first try putting an SVG image onto your site and accessing it, as there's a good chance the configuration has already been done. If the file appears as text, the browser tries to save rather than display it, or there's a message suggesting the browser's treating it as an XML document, you'll need to raise a support request with your host.

Where it gets more complex is with SVGZ files – "compressed SVG" in Inkscape's terms. These are literally just SVG files that have been compressed using the Gzip algorithm, and you can get the same effect by using the gzip program on your Linux box:

```
gzip -k image.svg

mv image.svg.gz image.svgz
```

The first line creates a gzipped version of "image.svg" but doesn't overwrite the original file (due to the -k switch). Gzip defaults to simply appending ".gz" to the filename, so the second line renames the file to the standard ".svgz" (this could also be done directly with the "--suffix" switch to gzip). The resultant file can be directly loaded into Inkscape for further editing – it's indistinguishable from a "compressed SVG" file saved from Inkscape itself. On the surface, SVGZ seems like a great format, as it's much smaller than an equivalent SVG file, but you can still open it in Inkscape, or even convert back and forth from the command-line if you do want to edit the XML content by hand. The problems come when you try to put an SVGZ file online.

The W3C working group that created SVG thought, quite rightly, that defining a compressed form of the format as part of the spec would be a worthwhile addition, especially back in 2001 when storage space and bandwidth were more expensive. Gzipping of content on-the-fly was already a standard feature of the web, so browsers had decompression code in place, making for an obvious choice of algorithm. Unfortunately, this is where an ideological divide took place: rather than treat SVGZ as a format in its own right, the browser vendors opted to natively support only uncompressed SVG.

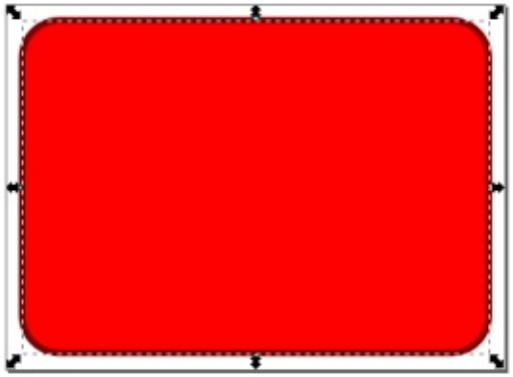
But saying that is like stating that browsers support only uncompressed HTML or CSS. In practice you can send any supported format with on-the-fly Gzip compression, provided your web server correctly sets the "content-encoding" header. This also means that you can send a pre-compressed SVGZ file if you also provide that header – the browser just thinks you've sent an SVG file using on-the-fly compression. Once again, search online for the instructions for your web server, or raise a support request with your ISP if necessary.

The summary, therefore, is that browsers don't really support SVGZ, but with the right server configuration, you can trick them into using those files nevertheless. It also explains why you can't load an SVGZ file directly into your browser from the local filesystem – if the file doesn't come from a web server, there's no "content-encoding" header, and the browser decides to play dumb. This situation could easily be fixed if browsers opted to treat SVGZ as a first class file format, and

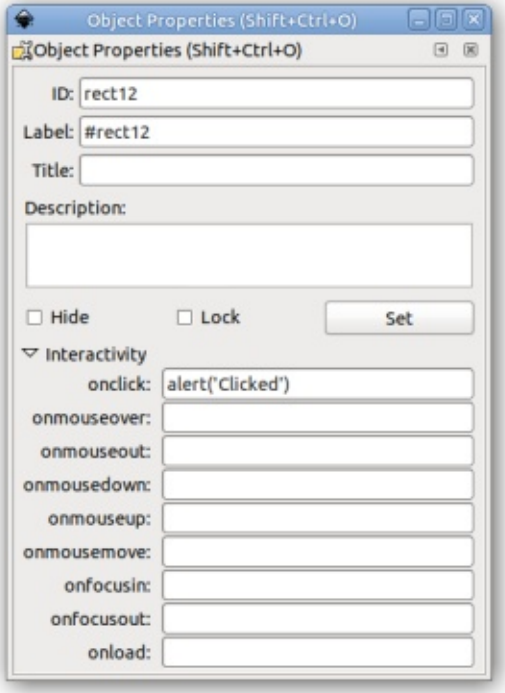
automatically unzip it even in the absence of the header. But as the situation is unlikely to change, I recommend sticking with SVG files and using on-the-fly compression from your web server, rather than trying to work directly with SVGZ files.

Personally, I think the browser vendors are wrong on this one. JPEG images, for example, are essentially just arrays of pixels that are compressed using a "discrete cosine transformation" (DCT) algorithm. Yet browsers don't insist on a "content-encoding: DCT" header to display a JPEG. The philosophical difference between a file that has been compressed using Gzip by the server, and one that has been natively stored in a gzipped format, is a subtle one. But the result is that users suffer from the complexity and confusion of not being able to directly load an SVGZ file into the browser, even though that format has been explicitly sanctioned by the SVG Working Group.

To begin our journey into the world of Inkscape and JavaScript, I'll assume that you are able to load an Inkscape-created SVG file into your web browser, either from a web server or from the local filesystem. Later on, we'll look at some differences that apply when you use <object>, <iframe>, or inline SVG, but, right now, let's keep things self contained in a simple SVG file.



Remember those JavaScript 'events' I spoke of earlier? Let's use Inkscape to add some JS code that listens for a "click" event – the result of the user clicking on an object in our image. Create a new image, draw a simple object, then right-click on it and bring up the



Object Properties dialog. At the bottom of the dialog is a series of fields, all with labels that start with the word "on". If they're not visible, you'll need to click on the "Interactivity" label to expose them. In the "onclick" field, enter the following JavaScript code:

```
alert('Clicked')
```

Save the file and load it into your web browser. You should see the object you drew in Inkscape. Click on it to confirm that the browser presents you with a dialog that contains the word "Clicked".

This type of dialog, referred to as 'an alert', is the simplest form of output from JavaScript. You can display only a single string, and you can't change the layout of the dialog or the label on the button. But writing even this most simplistic of code is a useful first step in any JavaScript application: it proves that Inkscape, your browser, and your web server (if you have one) are all working as expected, and it confirms that your code can respond to mouse clicks, which is a basic requirement for almost any interactive site.

The single line of code you wrote above does one thing: it calls a function named alert() when the user clicks the left mouse button (or taps) on the object to which you attached your code. The function is given a single parameter – a string containing the word "Clicked" – which it displays on the screen in a dialog. Let's see how that code in Inkscape manifests itself in the SVG file. Open the SVG file in a text edito and, towards the bottom of the file, you should find something similar to the code shown on the next page, top right.

You might have a different element than a <rect>, depending on what you drew – and therefore may have other attributes (the "rx" and "ry" attributes govern the roundedness of a rectangle's corners, for example). I've also significantly abbreviated the "style" attribute. But the thing to note is the "onclick" attribute, which contains the JavaScript we typed into the dialog in Inkscape earlier.

It's worth getting familiar with the way that your JS appears in the file. Whilst the single-line text boxes in Inkscape are okay for typing very short amounts of code, if you need something even slightly more substantial, it's often easier to edit the SVG directly. Here's a modified version of my object (with extraneous attributes omitted), to show how you might deal with multiple lines:

With those edits in place and saved, reload your page, and click on your object again. This time you should see a series of three alerts.

```
<rect
        ...
        onclick="alert('clicked');
                alert('A second alert');
                alert('Note the semicolons!');"
        ry="11.49259" />
```

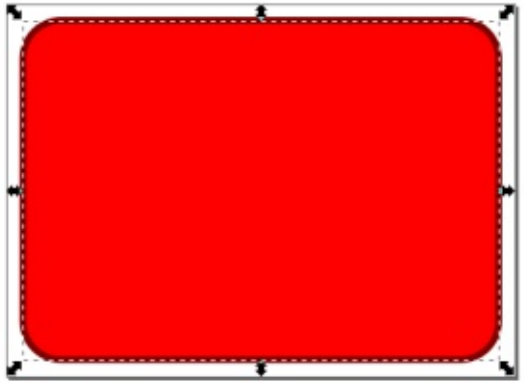
Unfortunately, edits made like this don't reflect well back in the Inkscape UI. Your three lines will be present, but all put onto a single line, and with any white space that you used to align them included in the line. Generally it's easiest to edit code in either a text editor, or in Inkscape, but not to go back and forth between them.

As you've guessed from the Inkscape UI, there are other events you can react to. But, in most cases, using the alert() function will prevent you testing correctly. Consider trying the onmousemove option, which is supposed to fire events continuously as your mouse moves over your object: as soon as your mouse moves over the object you'll get an alert which you'll need to dismiss before you can continue; then another, and another, each time your mouse moves over the object, with you having to manually dismiss each one in turn. Hardly

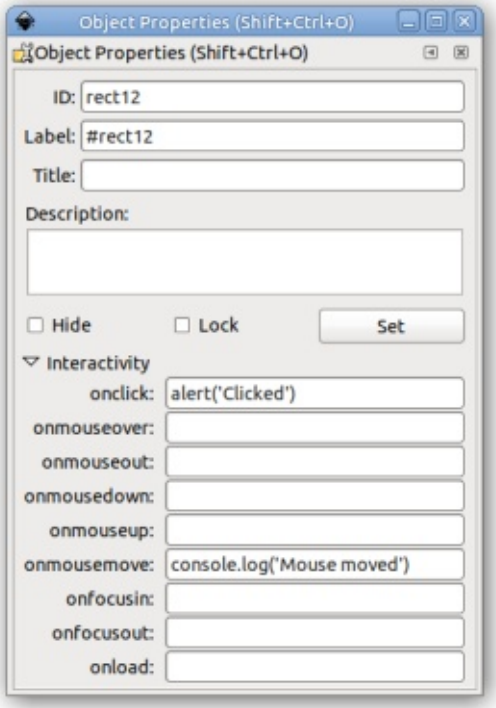
```
<rect
        style="fill:#ff0000;..."
        id="rect12"
        width="142.11905"
        height="101.29762"
        x="14.363094"
        y="19.565475"
        onclick="alert('clicked')"
        ry="11.49259" />
```

the constant stream of events you were interested in.

Back in the dim and distant past, debugging by throwing up alert messages was the de facto way to develop with JavaScript, but, thankfully, the tools have moved on a lot since then. Modern desktop browsers all have a developer toolbox which you can usually open by pressing F12.



There are a variety of tools in here, but the one we're interested in is the console – there should be a tab for it somewhere near the top of the toolbox. In Inkscape try adding a console.log('Mouse moved') call to the onmousemove section of the object properties:



Now, with the file saved and the developer console open, reload your file in the browser. Clicking should throw up an alert, as before, but moving the mouse around over your object should generate a stream of messages in the console. Actually you're likely to only see one message, plus a count to the right of the console indicating how many times the message has been logged. This is a convenience in modern tools to avoid filling your screen with duplicate messages. If you really want to see them streaming by, you can add a random number to your log entry so that each one becomes unique:

```
console.log('Mouse moved',
Math.random())
```

This demonstrates another huge advantage of console.log() over alert() – you can give it multiple parameters, and they don't all have to be strings.

That's a very basic start to adding some interactivity to an Inkscape file. We'll be exploring this topic a lot more over the coming months, so please do try the simple exercises above so that you've got a good basis to build on as we make our events do more interesting things than just printing some text to the screen.

A BLATANT PLUG!

Mark and his colleague Vince have been using Inkscape and MyPaint to create the monthly Elvie cartoon strip, first in Linux Voice, then in Linux Magazine (Linux Pro Magazine in the US), for five years now. To celebrate this anniversary, Mark has written an article in issue #220 of Linux (Pro) Magazine which describes the process they use in some detail. If you're interested in reading about the practicalities of creating a cartoon using FOSS, this issue should still be current by the time FCM#142 comes out, but it's also available to buy as a digital edition from http://www.linux-magazine.com/

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

FULL CIRCLE WEEKLY NEWS

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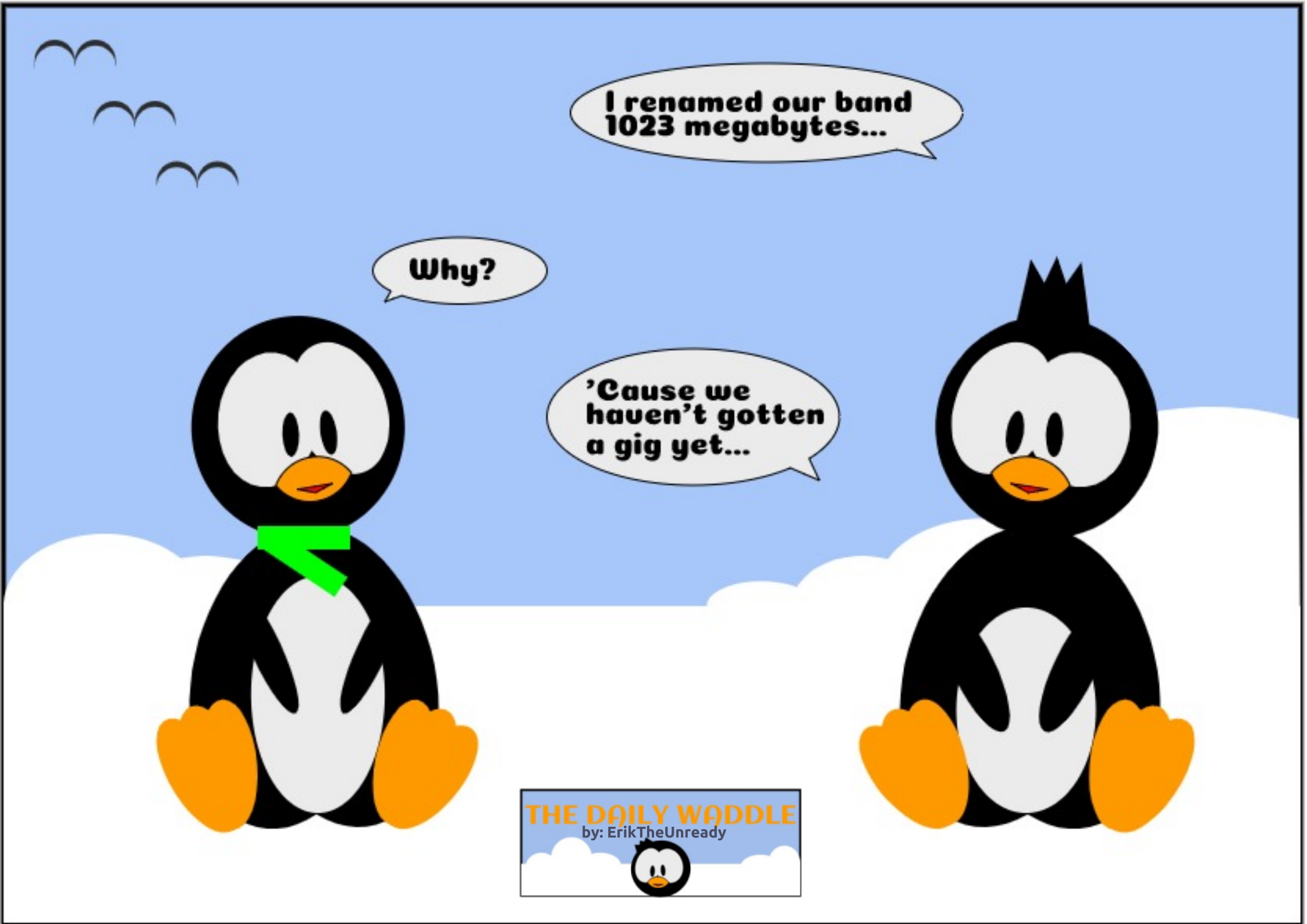
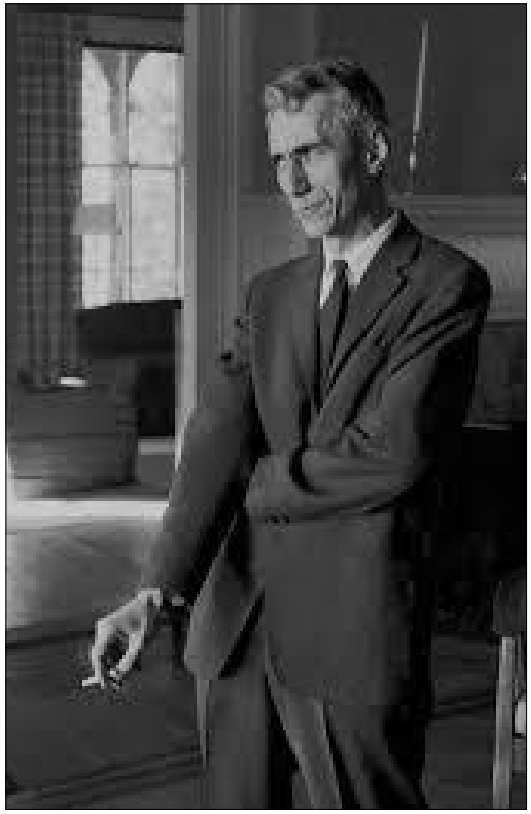

I renamed our band 1023 megabytes...
Why?
'Cause we haven't gotten a gig yet...
THE DAILY WADDLE
by: ErikTheUnready

The early days of encryption were tied to the art of war. The Roman empire used scytales and lettered leather strips during battle. Other countries utilized various tools to accomplish the same goal. Perhaps the most known use of encryption is the German Enigma Machine. This code was successfully broken by the British. Later the Japanese Purple Code was broken by the Americans. The Axis powers used the encryption devices to coordinate their military forces into early wins during World War II. Yet these machines were broken, and used by the Allies to win the war theaters in Europe and Asia. The early encryption devices were large, complicated, and required a department of staffers to run.

The father of modern mathematical cryptography is Claude E. Shannon. He recognized the binary condition of communications and wrote a paper called "Communication Theory of Secrecy Systems" while working at Bell Labs. IBM then developed a block process encryption to protect its business during the 1970's. Later on, this was adopted by the United States as the standard and called it the Data Encryption Standard (DES). DES was not broken until 1996 using supercomputers. A more advanced version of DES is now currently being used called Advanced Encryption Standards. This standard is currently being used.



Consequently, the need for encryption is still persistent with the deployment of cloud services. The powerful laptops today and the desire for privacy drive today's consumer encrypting needs. The first email privacy tool is Phil Zimmerman's 'Pretty Good Privacy'. He released the code to the internet where it enabled private communication among individuals. The debate of encryption is a political flashpoint between corporations, individuals, and government regulation.

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.

Retro Gaming Pt5

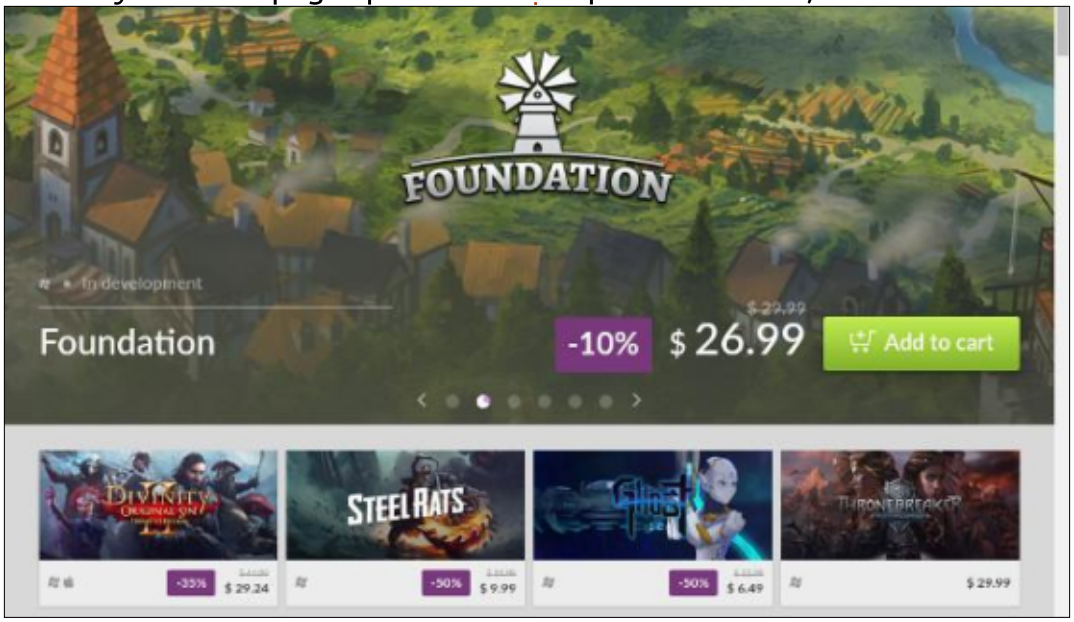
This month, we'll finish up with retrogaming for a while, but the fact that it has run for 5 months, and we're really only scratching the surface, is a strong indicator of how capable Linux can be for gaming, as long as your expectations are reasonable. There are a lot of games that can be run on your Linux box, and a lot of them are truly outstanding.

First out of the gate this month, we'll be talking about a gaming site, GOG.COM. This was one of the first places I went to look for games when I switched over to Linux on a more-or-less permanent basis a few years back. GOG is essentially an online game retailer, but they offer up some free games, too. They can be found at https://www.gog.com. I have always found their non-free game prices quite reasonable, and they have frequent sales into the bargain.

GOG has a pretty good selection of games that have been ported to Linux. In most cases, it looks like they're using DOSBox (see Everyday Ubuntu in FCM#137 for more on DOSBox), or possibly WiNE, which is a method for running Windows applications on Linux (although they insist that Wine is Not an Emulator, hence the name).

Let's search for an adventure game to try. Click the magnifying glass 'search' icon in the upper right, and type in 'steel sky'. The search will bring up a well-regarded adventure game called 'Beneath a Steel Sky'. Click the 'Free' button, and the website directs you to the page specific to this game. Read the reviews at the bottom if you are so inclined. Click Add to Cart, then Check Out Now. GOG will make you set up an account, but that's a small price to pay for free games, isn't it? Follow the prompts to create a new account. You can use your Facebook account for login if desired.

Click the cart icon in the upper right to check out. Once that is complete, login if you're not still logged in and hover over the small 'person' icon in the middle of the top of the screen, then click Games. You'll see 'Beneath a Steel Sky', click to go to the game page. Here you'll see the game installer available for download. Click it and download it to a known location on your drive.



The game installer is an .sh file, which means it's a shell script. While you're still here, download the manuals and any other files you like, like the wallpapers. GOG is great about providing some terrific extras like soundtracks, graphics files, strategy guides, and more.

Now, here's where we have to apply a Linux mindset, and some Linux skills. Double-clicking the .sh file in the file manager doesn't install anything. There are no instructions I've ever been able to find on the GOG website for installing their Linux games (which are all .sh files, at least, all the ones I've seen). So, what to do? Linux mindset says, "See if we can read the .sh file and look for instructions." And, Voila! That's exactly what we needed to do. Our prior double-click should have

opened the .sh file in a text editor, and instructions for installing are at the top.

The instructions are a little cryptic, and there's a more intuitive process. The instructions mention chmod, a powerful command run from the command-line, but we can do this (make the file executable) in an easier way. Go back to the file manager and right-click the .sh file, then select Properties. Go to the Permissions tab and click the checkbox next to 'Execute' to allow the file to be executed as a program.

Go back to the .sh file's location in file manager. Double-clicking still won't install it. Right-click an empty part of the right-hand pane and select 'Open in terminal'. This opens a command-line, where we can type in ./, followed by the name of the .sh file, and Linux will understand that we want to execute it, since we just made it executable. Type in:

```
./beneath_a_steel_sky_en_gog_2_20150.sh
```

then hit Enter. Click Next on the banner page:

Then click Next to confirm the license agreement. Click Yes to

accept, then either install to the default location of 'GOG Games' under your home directory, or pick another location if desired. For most of us, 'GOG Games' will do just fine. You'll probably want a desktop shortcut and a menu item, so leave those clicked and complete the installer. You now have 'Beneath a Steel Sky' running on your Linux machine, and the price is certainly right – FREE. Double-click the new desktop icon and see if you can solve the mystery!

A little housekeeping on last month's column, I mistakenly inferred that the Sega Genesis outsold the Super Nintendo, but I happened to watch a Sega documentary just yesterday that indicated it did not. To my surprise, the SNES beat the Genesis in sales by about 10%. That was, however, a great improvement from the Sega Master System's performance in comparison to the original Nintendo Entertainment System, which outsold the SMS by about 11 to 1.

Also, there are some other console emulators that I intended to mention, although without going into a detailed description of installing them. They include:

- Kega Fusion for the Sega Master System and Genesis.
- NEStopia and FakeNES for the Nintendo Entertainment System.
- ZSNES and BSNES for the Super Nintendo.
- Gens/GS for the Sega Genesis.
- Osmose for the Sega Master System.

Next month: Putting this monthly column together.

Richard 'Flash' Adams spent about 20 years in corporate IT. He lives in rural northwest Georgia, USA, with his adopted 'son', a cockatiel named Baby.

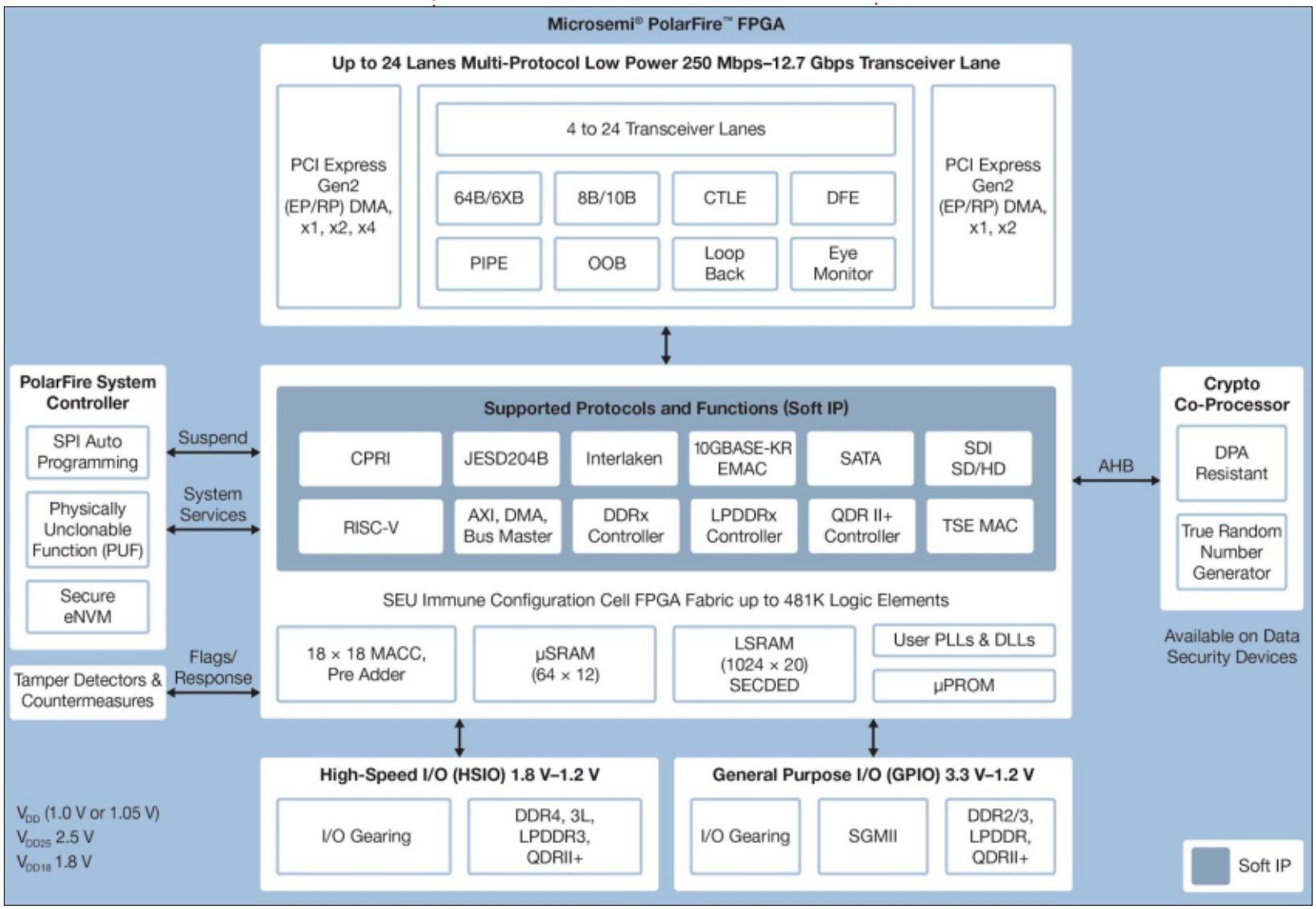
Hopefully OTA-8 next month!

THE DAILY WADDLE
by: ErikTheUnready
Star trek was written by a Linux administrator
Why do you say that?
Klingon is nothing but bash!
"Grep ls awk chmod."
"Mknod ksh tar imap."
"Wall fsck yacc!"

At the end of last month (November 27), The RISC-V and Linux foundation partnered up. Basically, RISC-V and the Linux Foundation agreed to a collaboration to accelerate open source development for the open source RISC-V ISA, starting with RISC-V starter guides for Linux. This month, the union brought forth the world's first RISC-V-based FPGA SoC that runs Linux. At the RISC-V Summit in USA, Microchip's Microsemi announced a PolarFire SoC architecture developed in collaboration with SiFive. The PolarFire SoC is supposed to be the world's first RISC-V based FPGA. The cores being 1.5GHz U54-MC which are about the equivalent of Cortex-A35 cores. The link to their website is here: https://www.microsemi.com/product-directory/fpgas/3854-polarfire-fpgas

There will be another fascinating link at the end of this piece.image credit: Microsemi

This new SoC will compete with ARM SOC's and boasts lower power usage. The U54-MC's are manufactured at 28nm. Intel has the Stratix 10, manufactured at 14nm, which it will also compete against, with the open RISC-V design and lower power consumption. "With the PolarFire SoC ISA, Linux and real-time can coexist side-by-side in a more elegant fashion than we've seen before" - Microchip's director of product marketing.



RISC-V's low power consumption is attributed in part to its simplicity (branch prediction is turned off), which makes it faster, easier to customize and debug, and secure against threats, says Microchip. The PolarFire FPGA architecture is notable for its low power consumption, which Microchip claims to be up to 50 percent lower than SRAM based FPGAs. (Have they mentioned low power consumption enough yet?).

The Linux driven development platform supplied by Microchip consists of the HiFive unleashed SBC and the HiFive unleashed expansion board. (That really expensive one on crowdsupply). More information here: http://linuxgizmos.com/fpga-based-add-on-board-brings-pcie-to-the-first-linux-based-risc-v-sbc/

"Microchip is supporting the SoC design with its PolarFire Mi-V RISC-V ecosystem. It also announced a Mi-V Embedded Experts Program, a "worldwide partner network to assist customers in hardware/software designs for PolarFire SoC." Services include full product life-cycle support, access to direct technical support, and early access to development platforms and silicon." according to an article.

The SoC may be based on open standards, but it is not open source. This seems to be a very interesting project, please read more here: https://investor.microsemi.com/2018-12-04-Industrys-First-RISC-V-SoC-FPGA-Architecture-Brings-Real-Time-to-Linux-Giving-Developers-the-Freedom-to-Innovate-in-Low-Power-Secure-and-Reliable-Designs

All in all, the PolarFire looks to be welcome edition to the Linux stable.

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.

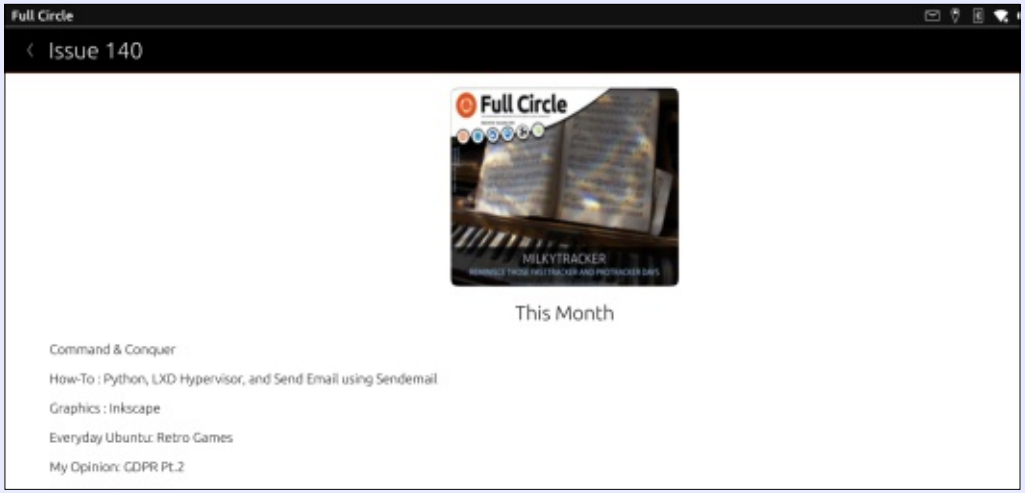
THE FULL CIRCLE APP FOR UBUNTU TOUCH - UPDATED!

Brian Douglass has updated his FCM app for Ubports Touch devices that will allow you to view current issues, and back issues, and to download and view them on your Ubuntu Touch phone/tablet.

INSTALL

Either search for 'full circle' in the Open Store and click install, or view the URL below on your device and click install to be taken to the store page: https://uappexplorer.com/app/fullcircle.bhdouglass

HUGE thanks to Brian for this.



ALSA Sound Problems

Years ago, I bought an "Asus Xonar Essence STX sound card. The sound is great and support under Linux is OK. The Xonar card is connected via fiber cable to a "Canton DM55" sound bar below my screen. My PC also has a GeForce GTX 560 Ti Nvidia graphic card installed. Therefore there are two potential sources for the sound: Nvidia via HDMI and the Xonar sound card.

For my music-collection, I use QuodLibet, Mpv to watch videos, and Audacious for listening to radio stations.

Every time I boot Linux, Nvidia and Xonar are discovered in a different order, as seen in Alsamixer:

```
- default
0 Nvidia
1 Xonar STX
2 HD Pro Webcam C920
```

or:

```
- default
0 Xonar STX
1 Nvidia
2 HD Pro Webcam C920
```

QuodLibet and/or Mpv started sometimes without sound. But Audacious never had a problem finding the right Xonar S/PDF port.

After several attempts, and some extensive searching on the Internet, I found a hint: It says in an aside that some programs accept symbolic names. I queried the symbolic names with:

```
aplay -L

  iec958:CARD=STX,DEV=0
  Xonar STX, Multichannel
  IEC958 (S/PDIF) Digital
Audio Output <=== for Canton-
DM55 <===
```

and defined the symbolic name to use alsa in:

```
QuodLibet>File>Preferences>Pl
ayback>Output Pipeline:
  alsasink device=iec958
```

and in Mpv:

```
~/.conf/mpv/mpv.conf:
audio-device=alsa/iec958
```

QuodLibet and Mpv seem to belong to these "some" programs, the sound is working fine, Audacious has still no problems, but Firefox remained silent.

I tried to fix that with:

```
cat ~/.asoundrc
  defaults.pcm.!card STX
  default.pcm.!device 1
  defaults.ctl.!card STX
```

Finally there is sound in Firefox, but not for long … after some restarts it didn't work any longer. I tried other browsers (Vivaldi, Chromium) – all remained silent.

I disabled in BIOS the sound-chip on the mainboard a long time ago. Now I looked for a way to disable the Nvidia audio. However, I didn't find any button or option in the "Nvidia X server settings" in the newest linux-driver (390.87).

Searching the internet again, I found another hint: the kernel module snd_hda_intel is causing trouble!

```
sudo lspci -vv

…
01:00.1 Audio device: NVIDIA
Corporation GF114 HDMI Audio
Controller (rev a1)
Subsystem: CardExpert
Technology GF114 HDMI Audio
Controller
…
Kernel driver in use:
snd_hda_intel
Kernel modules: snd_hda_intel

…
03:04.0 Multimedia audio
controller: C-Media
Electronics Inc CMI8788
[Oxygen HD Audio]
Subsystem: ASUSTeK Computer
Inc. Virtuoso 100 (Xonar
Essence STX)
…
Kernel driver in use:
snd_virtuoso
Kernel modules: snd_virtuoso
```

To prevent Linux from loading snd_hda_intel during startup I defined a blacklist:

```
/etc/modeprobe.d/blacklist.co
nf:

blacklist snd_hda_intel
```

After a restart Alsamixer shows

```
- default
0 Xonar STX
1 HD Pro Webcam C920
```

the Nvidia is no longer in the list! After enabling card and port with Alsamixer I did an

```
alsactl store
```

After another restart Firefox remained silent; Audacious and

QuodLibet with sound, as before.

At least the Xonar remained always in position 0.

Somebody had written the sound MUST be configured in pavucontrol for Firefox:

```
pavucontrol

>Configuration>Profile>Digital Stereo Duplex(IEC958)

>Configuration>Output Device>Port>Digital Output (S/PDIF)

>Configuration>Input Device>Port>Digital Input (S/PDIF)
```

After another restart, the sound worked fine in Audacious, Mpv, QuodLibet AND Firefox (finally!).

P.S. I've used Linux since 1996, first S.U.S.E, then, around 2004 I switched to Ubuntu, and 2013 to Mint. At the moment, I play around with MX-Linux with XFCE. And yes, sound was always kind of a problem.

References:

https://superuser.com/questions/53957/what-do-alsa-devices-like-hw0-0-mean-how-do-i-figure-out-which-to-use

https://wiki.gentoo.org/wiki/ALSA#Hardware_detection

https://techgage.com/news/disabling_nvidias_hdmi_audio_under_linux/

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Write For Full Circle Magazine

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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.

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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

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- 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

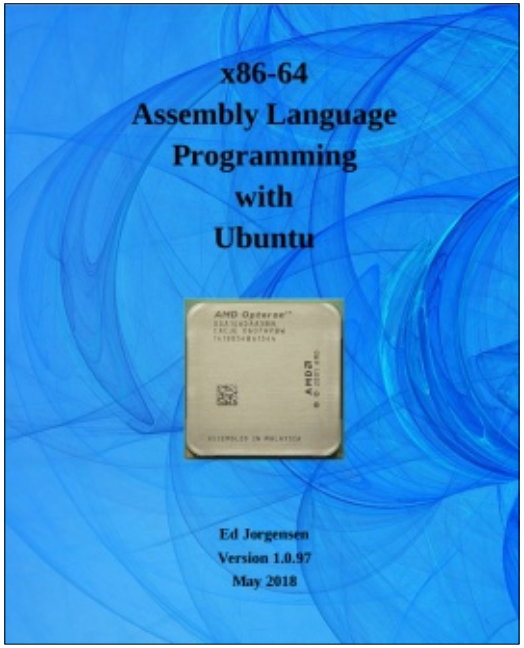
You don't need to be an expert to write an article - write about the games, applications and hardware that you use every day.

BOOK REVIEW

Written by ErikTheUnready

Assembly Language Programming

Author: Ed Jorgensen
Price: free
License: Creative Commons
"*You are free: to Share — to copy, distribute and transmit the work to Remix — to adapt the work*"
Find it here:
http://www.freetechbooks.com/ed-jorgensen-a3979.html



About the author: *He is an Instructor at the Department of Computer Science in the College of Engineering. His teaching expertise and interests in STEM teaching and learning, large courses, flipped classrooms, seeking grants for scholarship of teaching and learning (SoTL).*

This was a book I was given by a friend, when I was looking for material on learning assembly language for the Raspberry Pi. This book is not for ARM RISC cpu's, rather CISC cpu's – I think he confused it with an earlier work of Ed Jorgensen, Assembly on Ubuntu 2016. Be that as it may, I decided to read it anyway.

The layout of the book is friendly, but not beginner friendly; this book is University level reference. That said, I was actually able to follow along in all the explanations, which were nice and clear. I only started having to re-read things around chapter 9. I can definitely see why it is a University reference book as it feels like reading a school book. You will notice at the end of the sections, there are short quizzes, to see if you understood.

To get the most out of this book, you should already be familiar with programming in C and be comfortable with programming concepts. You should also be comfortable reading code and be confident at the terminal or bash, as well as compilers.

The assembler used is YASM, which works well on Linux. The debugger is DDD. so there is no weird software to install if you wish to follow along.

The level of detail in the book falls in the goldilocks zone, not too much and not too little. You start at what is assembly and why assembly, then you are led through the x86 architecture, data representation, program format (with example program), the toolchain, the debugger, and the instruction set, before anything hectic happens.

The only issue I had with this book is that it reminded me of other programming books that tell you all about how things work, but do not take you to the next logical step. In this book, I can excuse it as it is clearly stated that it is a reference. Thus, it makes you want more.

Overall the book is well written and deserves your attention.

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.

LETTERS

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Full Circle Needs You!

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

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

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

DistroWatch.com
Put the fun back into computing. Use Linux, BSD.

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.

Welcome back to another edition of Questions and Answers! In this section we will endeavour to answer your Ubuntu questions. Be sure to add details of the version of your operating system and your hardware. I will try to remove any personally identifiable strings from questions , but it is best not to include things like serial numbers, UUID's or IP addresses.

When I was young and dumb, I had medical research as a client. The company I worked for used to send us to all their labs in the hospitals to repair equipment. You received no safety training or equipment. The medical technicians all wore latex gloves and face masks. Even in the TB lab, you got nothing. The lab technicians worked with stool samples and weird bacterial cultures, then typed on keyboards with silicone covers – that I had to touch with my bare hands. Looking back, I realise how foolish it was, but I knew no better. Now that I am old, everyone around me gets 'flu in winter, gets all kinds of diseases, from gout to diabetes, and, somehow, I do not. I even miss out on the common cold. The only thing I can think of is that my immune system got some tough training in my FSE years. Like one's immune system, don't be afraid to tackle difficult problems, you will be rewarded in the end.

Q: I am running Ubuntu 16.04 on a Lenovo Yoga. English is not my first language, but my keyboard layout is US standard. I have installed the Character tool, but it's not helpful – like windows, where alt+137 would give me a character. How does it work in Ubuntu, or does it even have something like that?

A: You will be pleased to know that the RIGHT HAND ALT key and your normal keys will produce the output you need. Go ahead and experiment in your notepad. I do not have the precise output layout for you, but here is the output of "Y, U, I, O" keys with the Right Alt key: "û, ü, ï, ö".

Q: How does steganography work in Ubuntu? How do I work it? Please explain for dumb people. My computer is a Dell Optiplex with 4GB memory and i3 processor. Is this powerful enough?

A: Wow, you do have a high opinion of us here at FCM! Steganography is a very broad subject. As your question pertains to Ubuntu, I am going to assume you mean digital steganography. Let me address the second part of your question first. Any modern PC is powerful enough, because steganography, unlike encryption, does not need a lot of CPU power or RAM. You can, of course encrypt the text you are hiding, before hiding it. Now, for the first bit. Steganography in Linux is finding a way to hide your code. Media files are great as they are large, but do not be fooled; some malware may hide in the 4 kilobyte favicon in your browser. The idea is not to attract attention. This is 'questions and answers', not a tutorial, so I will link you to some sites. That said if you want a tutorial, let us know.
https://linuxconfig.org/steganography-made-easy-in-linux
https://www.howtoforge.com/tutorial/linux-image-steganography-and-watermarking/

Q: My computer is an HP Compaq 6300 small form factor. It has i5 and 8 GB RAM. I can't get the network up. I have searched for a Linux driver on google, but I can't find any. I have been told that I will have to compile my own kernel with the drivers. I have tried Manjaro, and MX Linux, and Antergos, before switching to Ubuntu. I have read Ubuntu has the best compatibility of all Linux, but it still does not work. Will you help me?

A: There are three possibilities: One - your network adapter is faulty. Two - it is disabled in your BIOS. Three - speaking of BIOS, the

most probable cause is an old BIOS. If it is number three, I have good and bad news. The good news is a BIOS update will fix your problem, the bad news is you need Windows to flash said BIOS. The other option is to purchase a PCI network card if you do not want to go through the trouble.

Q: I want to convert videos on Ubuntu, H.264 and MP4. I use Ubuntu 17.10 with a Xeon 1225 CPU and 32 GB RAM, so I have the raw power, I just don't know how. What is the best way to do it?

A: "Best" is subjective. You did not say if you want to convert to or from H.264. You also did not say if you want to re-encode or not. You also did not say if you prefer the terminal or a GUI. If you want to use a GUI, let me suggest Handbrake. Handbrake can also be used on the command-line (handbrake-cli). The other option I can give you is FFMPEG. There are also front-ends to FFMPEG. Look here: https://www.bugcodemaster.com/article/convert-videos-mp4-format-using-ffmpeg

Q: Why can't Ubuntu Linux connect to our wifi like all our other devices? If I try to connect, the WIFI indicator seems like it is working and then eventually I get a prompt for username and pwd. I attempt to connect but the prompt returns again, ad nauseum. I cannot connect to the wifi. The documentation talks about certificates, but I am dumb, I don't get it. Is there something else I can use other than network manager?

A: I trawled the internet a bit and I think I found the issue. (Usually a restart of the router and your ubuntu device will sort it out if your DHCP range is full). Navigate to /etc/NetworkManager/system-connections, edit the file matching your network SSID. Delete the line that says "phase2-altsubject-matches=" in the [801-1x] section. Save. You should be good.

Q: I got a shiny new SSD for Christmas and I would like to use FDE on it. I have been told that I can't cache anything as it will be unencrypted. What happens when I close the lid of my laptop?

A: It seems the answer is not a simple one, I am going to point you to the interwebs: https://askubuntu.com/questions/620480/how-to-install-ubuntu-with-both-disk-encryption-and-ssd-caching

Q: Computer is a no-name black box with Ubuntu 18.04 on it. I need to install code:blox for school. My problem is that the PPA does not have Bionic in. http://ppa.launchpad.net/damien-moore/codeblocks-stable/ubuntu/dists/. How can I make it work as I need it asap?

A: With Ubuntu 18.04, it is now as simple as: sudo apt install codeblocks (note the spelling, it is important).

Q: I really liked Ubuntu, but I switched to Debian after I read about the spyware thing. https://arstechnica.com/information-technology/2012/12/richard-stallman-calls-ubuntu-spyware-because-it-tracks-searches/, but Debian feels like Ubuntu's little brother, rather than the other way around. It feels less polished. Is there still spyware in Ubuntu, can I switch back?

A: Oh good grief, that is an old article with things probably blown out of proportion. I am going to treat it as a serious question, rather than a trolling attempt. Firstly, you are very welcome to inspect the source code for spyware, as Ubuntu is open source. Secondly, when that article was written, it was more of a knee-jerk reaction to the amazon search function. The choice, however is yours, and you will have to make the decision to switch. If you feel uncomfortable about the situation, why not install something derived from Ubuntu, where those developers would have looked at the source?

Q: I use Ubuntu 16.04, and I want to upgrade to Ubuntu 18.04, but I want to switch to Ubuntu Budgie instead. How can I do this? Do I use the Ubuntu Budgie CD to upgrade?

A: There is no way to upgrade from vanilla Ubuntu to an Ubuntu 'flavour'. You can upgrade, then switch desktop environments. There is one caveat; the desktop environment you switch to will be the vanilla one, without the tweaks the developers of that distro put into it. If you want to switch to Ubuntu Budgie, my advice is do a backup of your data and do a fresh install.

Q: So, I copied my installation to a backup drive as I could not upgrade from 17.10 to 18.04; that installation was a bit worse for wear anyway, time for a new start. I did not want to go through the tedious motions of setting up and installing everything again, so I copied it to my new home. The problem was the next day when I turned my computer on again, that I could not log in. I ended up with a black screen. I was able to log in the previous day before copying my data across. Did I get a virus from the drive? I did not format it again after purchase. Will I lose everything? My computer has an SSHD and someone suggested I clear the cache, but I don't know how.

A: The cache thing does sound plausible though, but I would have to go with the drive you did not format. I am not saying you have a virus, I am saying that it was probably formatted in FAT or NTFS. (Though it is always a good idea to format your drives from your supplier.) Windows file systems do not preserve permissions and are not case sensitive. You would probably have to chown all the data you copy across. Things like .rc files will prevent you from starting the GUI correctly if they are not owned by you. There will be manual work required.

Q&A alumi, Gord, says: When you copied your old system into the new installation, you wiped out essential files that Ubuntu depends upon. Reinstall 18.04, then just copy your data files from the old system.

Q: I would like to play Netflix on my laptop, but Chromium won't allow it. I have a minimal install of Ubuntu as I have a very small SSD. Is it because of my minimal install?

A: Actually, from what I gather, it is Chromium - you need to use Chrome. (I can not test this for you as I can not afford Netflix). There is this, but I can not say if it will work in Ubuntu: https://arcolinux.com/how-to-play-netflix-in-your-chromium-browser/

Q: I have The Enigmatis games from GOG, and I want to install them on my Ubuntu laptop with integrated Intel gfx. They work great on my desktop with an Nvidia GT710 card. I copied the installers to my USB drive and transferred them to my laptop's desktop, as it installs faster than USB key. About two-thirds the way through installing, they all fail. Does the install location matter? Or do I need to install a proprietary driver on my laptop? I don't think this should be the case as the error is in the file copy process when installing, I never even get to running the games.

A: My advice is download the games directly onto your laptop, or do a full format on that USB thumb drive, then copy your stuff across, or even try another USB thumb drive completely. It is very common for USB thumb drives to corrupt large files. I think your copy is corrupted, rather than the avenues you have been going down.

Q: I have a multi-monitor setup on my Kubuntu Bionic PC - the one monitor seems to lose the plot as I move from one monitor to the other, going completely black. Due to the nature of our work, our computers are not connected to the internet, so I can't browse for a solution. I have asked the IT chappie, but he seems baffled too. Most of my colleagues are drones who use Windows, so no help.

A: I have heard of something similar, and the solution was to change the refresh rate on the screens from 60hz to 59hz. However, I suggest asking your Administrator to roll out a newer kernel to you. This will most likely fix your problem.

Version: 2.1.0
Website:
https://hatari.tuxfamily.org/

DISCLAIMER

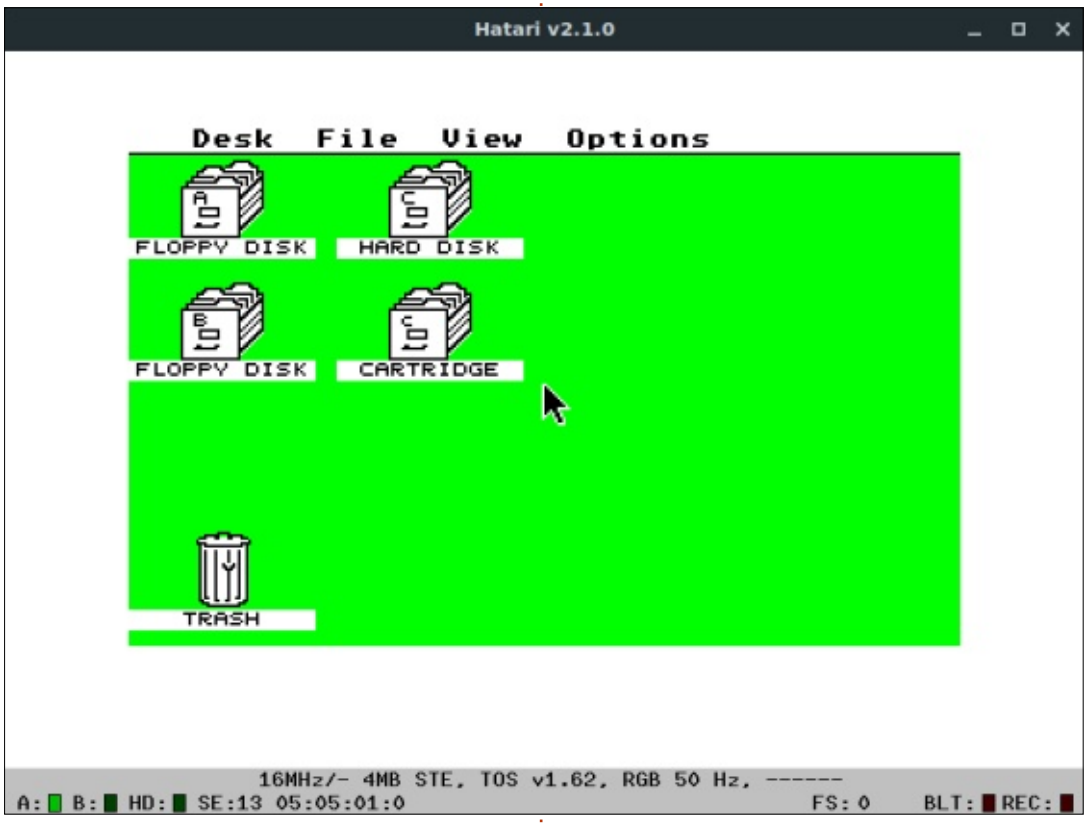
Emulation is a weird subject, It's like recording a song from the radio. You may not be aiming to sell it, but it may be illegal. Americans have like 100 years of copyright, so Americans stop reading immediately :) . Only proceed if you own a legal copy. We did not say anything last issue as we were working with music disks that were free to share, however now we will be talking about games and it must be said.

The Hatari emulator is amazing as it emulates almost any Atari allowing you to play almost every Atari game. The same cannot be said for the demoscene disks. The demoscene disks sometimes exploit hardware or software that Hatari just does not allow. Fortunately for us, the demoscene has many facets: art, music, cracktro's, intro's, bbstro's , music disks and more!

Websites like http://www.pouet.net/ and https://demozoo.org/ contain hordes of these. They have all manner of computers from yesteryear for you to enjoy, but we will be sticking with the Atari as Hatari makes it so simple.

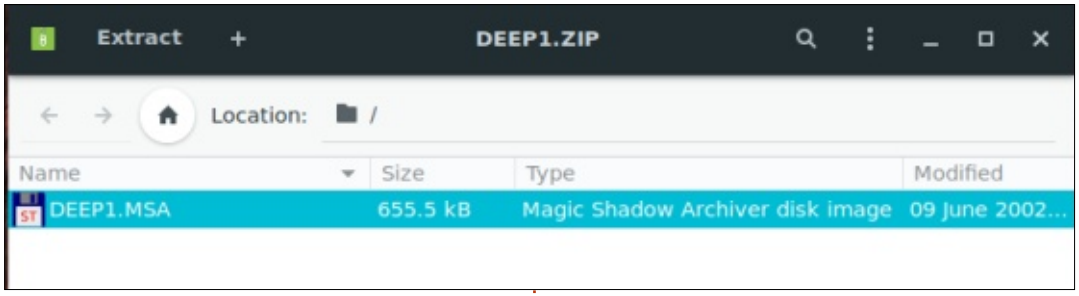
There are quite a few 'homebrew' games available. Many of these disks contain more than one game, so be sure to try pushing the number keys or 'F' keys to try another game on the same disk. Pouet.net is not easy to navigate, but once you get to the right spot, it becomes easy. Use this link, then just change models at the top: http://www.pouet.net/prodlist.php?type[]=game&platform[]=Atari+STe&page=1

Now the old games: I never owned a 16-bit computer in my life (nor were they ever sold here), but wanted to experience it. I only learned about it from other cracktro's for other computers. Thus my knowledge of the games side is from cracking / packaging



groups. There were many in the few years the Atari made a splash. Have a look at the list: http://stonish.net/menus_disks_choice

Should you search for any of these groups with a suffix of "menu disk download" or "compilation disk download", you are sure to find them. Atari ST forums are another place, and there are few websites like: http://atari.8bitchip.info/ASTGA/astgam.php. We cannot link you directly as we do not like DMCA notices. Downloading Atari disk images, you may find many formats. If you followed our first tutorial you should be able to just double-click disks with the ".MSA" extension and run it in Hatari.



Disk images that do not start automatically - you can 'insert' into the virtual 'stiffy drive', using the F12 key and clicking on "floppy disks". A note about machine type, speed and memory: look before you leap. If a game says "Falcon only" you will need to change your machine type and TOS image. Have a look here to see where each TOS fits in: http://www.avtandil.narod.ru/tose.html

The 16-bit CPU that the Atari used was a Motorola 68000. The Atari TT and Falcon used the 68030 and upward chips, so do not confuse the emulator by loading a chip not designed for the model that you chose.

Hatari is aimed at emulating the Atari as close as possible, but it does have "fast floppy access" under floppy disks to speed up the loading. There are a few cases where this does not work, but, in most use cases, it is perfectly okay. Should you have a problem where the Hatari emulator resets after loading a disk image, start here, by turning this off.

The Atari had a real horrible memory routine when using 4MB of memory. Try 2MB if you experience a problem. That said, 90 percent of the disks I have tried work flawlessly on 4MB of RAM.

Now back to those games: The Atari did not get ALL the games, but it had its fair share. The Atari was slightly less powerful than the Amiga, due to its custom chips, which in turn was not as powerful as SHARP X6800 due to its custom chips, but overall it was an awesome machine for games. Thus, do not expect as many colours or sprites or full-screen graphics as the above mentioned two. Most of the classics are represented on the Atari, Bubble Bobble, New Zealand Story, Outrun, etc, and Hatari makes it easy to relive them all!

When you are done playing, press F12 and reset Hatari to choose another option on the menu disk (unless you use HatariUI). That is all you need to know as that is how amazing Hatari is!

Happy retrogaming.

For more reading, head to The Little Green Desktop at:
http://www.atari.st/
or
http://www.atari-forum.com/
or
https://www.exxoshost.co.uk/forum/index.php
or
http://atariage.com/forums/forum/20-atari-stttfalcon-computers/

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

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

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

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